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MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico
(Volume 1 of 4)

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PREFACE

NEIC conducted a multi-media compliance investigation of Los Alamos National Laboratory (LANL), located near Los Alamos, New Mexico, about 25 miles northwest of Santa Fe, New Mexico. The on-site inspection of LANL, a government-owned (Department of Energy), contractor-operated (University of California) facility, was conducted August 2 through 12, 1993. The investigation findings are presented in four report volumes:

Volume 1

- Executive summary
- Environmental management
- Pollution prevention
- Critical habitat

(NOTE: Volume 1 presents an overall perspective of the facility, allowing a better understanding of individual media reports in volumes 2, 3, and 4)

Volume 2

- Resource Conservation and Recovery Act (RCRA)
- Underground Storage Tanks (UST)
- Toxic Substances Control Act (TSCA)

Volume 3

- Clean Water Act (CWA)
  - National Pollutant Discharge Elimination System (NPDES)
  - Spill Prevention Control and Countermeasures (SPCC)
  - Wetlands
- Safe Drinking Water Act (SDWA)
  - Public water supply
  - Underground Injection Control (UIC)

Volume 4

- Clean Air Act (CAA)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

GLOSSARY

GLOSSARY

ACM: asbestos containing materials
AO: administrative order
AQCR: air quality control regulations
ARs: administrative requirements
BHP: boiler horsepower
BOD: biological oxygen demand
BTU: British Thermal Unit
CAA: Clean Air Act
CAAA: Clean Air Act Amendments
CE: civil engineering
CFR: Code of Federal Regulations
CLS: Chemical Laser and Science
CME: comprehensive groundwater monitoring evaluation
COD: chemical oxygen demand
Corps: U.S. Army Corps of Engineers
CWA: Clean Water Act
DMR: discharge monitoring report
DOE: Department of Energy
EDL: economic discard limit
EDM: electrical discharging machining
EHS: extremely hazardous substance
EM: environmental management
EOD: Explosive Ordnance Disposal
EPA: Environmental Protection Agency
EPCRA: Emergency Planning and Community Right-to-Know Act
ESP: electrostatic precipitator
FFCA: federal facility compliance agreement
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
GOCO: government owned, contractor operated
GPD: gallons per day
HE: high explosives
HEPA: high efficiency particulate air
HS-5: Health Services Department
HSWA: Hazardous and Solid Waste Amendments
INEL: Idaho National Engineering Laboratory
JCI: Johnson Controls, Inc.
LANL: Los Alamos National Laboratory
lb/MBTU: pounds per million British thermal unit
LDR: land disposal restrictions
LERC: local emergency response committee
MCL: maximum contaminant level
MEK: methyl ethyl ketone
MLSS: mixed liquid suspended solids
MOU: memorandum of understanding
MSDS: material safety data sheet
NDT: nondestructive testing
NEIC: National Enforcement Investigations Center
NEPA: National Environmental Policy Act
NESHAP: National Emission Standards for Hazardous Air Pollutant
NMAQR: New Mexico Air Quality Standards and Regulations
NMED: New Mexico Environment Department
NOI: Notice of Intent
NON: Notice of Noncompliance
NPDES: National Pollutant Discharge Elimination System
NWP: Nationwide Permit
NWT: program office for aboveground experiments
NWUSTR: New Mexico Underground Storage Tank Regulations
O&M: Operations and Maintenance
OB/OD: open burning/open detonation
PCB: polychlorinated biphenyl
pCi/L: picocuries per liter
PEDE: potential effective dose equivalent
PETN: pentaerythitol tetranitrate (an explosive compound)
PTO: permit to operate
P2: pollution prevention
PVC: polyvinyl chloride
QA/QC: quality assurance/quality control
RCRA: Resource Conservation and Recovery Act
RDX: cyclonite (an explosive compound)
RMMAs: radiological material management areas
SAIC: Science Application International Corporation
SARA: Superfund Amendments Reauthorization Act
SDWA: Safe Drinking Water Act
SERC: state emergency response commission
SIP: State Implementation Plan
SOP: standard operating procedures
SPCC: Spill Prevention Control and Countermeasures

SWPPP: Storm Water Pollution Prevention Plan
SWMU: solid waste management units
SWP: special work permits
SWSC: Sanitary Wastewater Systems Consolidation
SWTR: surface water treatment rule
TA: technical area
TAPS: toxic air pollutants
TCA: 1,1,1-trichloroethane
TCE: trichloroethylene
TCLP: toxicity characteristic leaching procedure
TDS: total dissolved solids
TNT: trinitrotoluene (an explosive compound)
TRU: transuranic
TSF: Tritium Salt Facility
TSD: treatment, storage, and disposal
TSS: total suspended solids
TSTA: Tritium Systems Test Assembly
TSCA: Toxic Substances Control Act
UC: University of California
UIC: Underground Injection Control
UST: underground storage tank
VOC: volatile organic compound
WAP: waste analysis plan
WCS: waste characterization study
WMPO: Waste Minimization Program Office
WWTP: wastewater treatment plant

EXECUTIVE SUMMARY

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INTRODUCTION

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) [Figure 1] located near Los Alamos, New Mexico, about 25 miles northwest of Santa Fe, New Mexico [Figure 2]. LANL is a government-owned (Department of Energy), contractor-operated (University of California) facility (GOCO).

Activities occur in developed areas, referred to as "Technical Areas" (TAs) [Figure 3]. Since commencing operations in 1943, LANL's primary mission has been nuclear weapons research and development. Other research and development activities involve: particle physics, earth sciences, energy resources, lasers, geothermal energy, biomedical and environmental remediation.

OBJECTIVE

The specific objective of the NEIC multi-media investigation was to determine compliance with:

- Hazardous waste management requirements under the Resource Conservation and Recovery Act (RCRA) and associated permits, including Land Disposal Restrictions (LDR) and storage of "mixed" hazardous waste

- Underground Storage Tank (UST) regulations

- Toxic Substances Control Act (TSCA) regulations for polychlorinated biphenyl (PCB) management

Figure 1

Los Alamos National Laboratory Aerial Photograph
Los Alamos, New Mexico

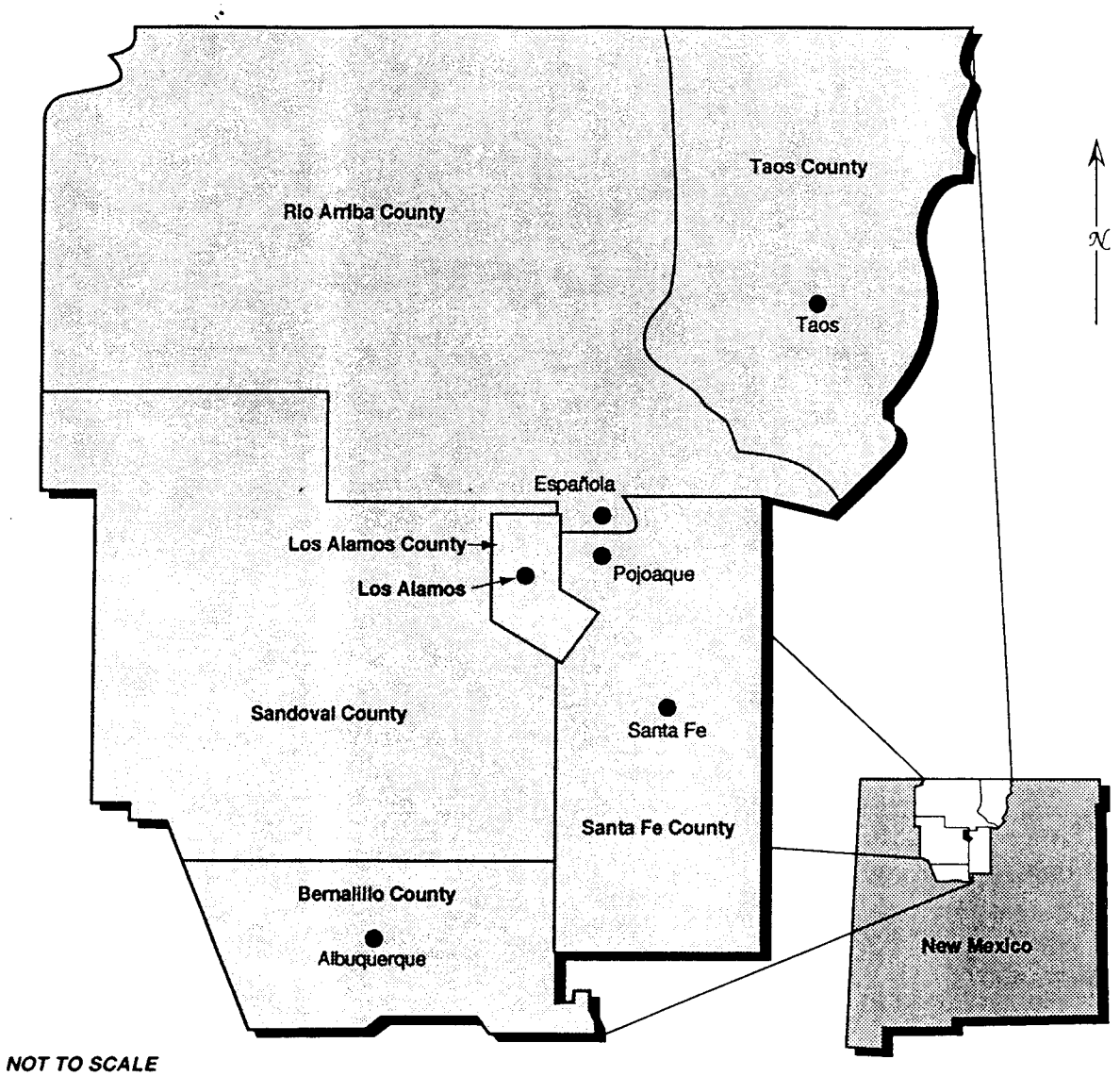

Figure 2
SITE LOCATION MAP
Los Alamos National Laboratory
Los Alamos, New Mexico

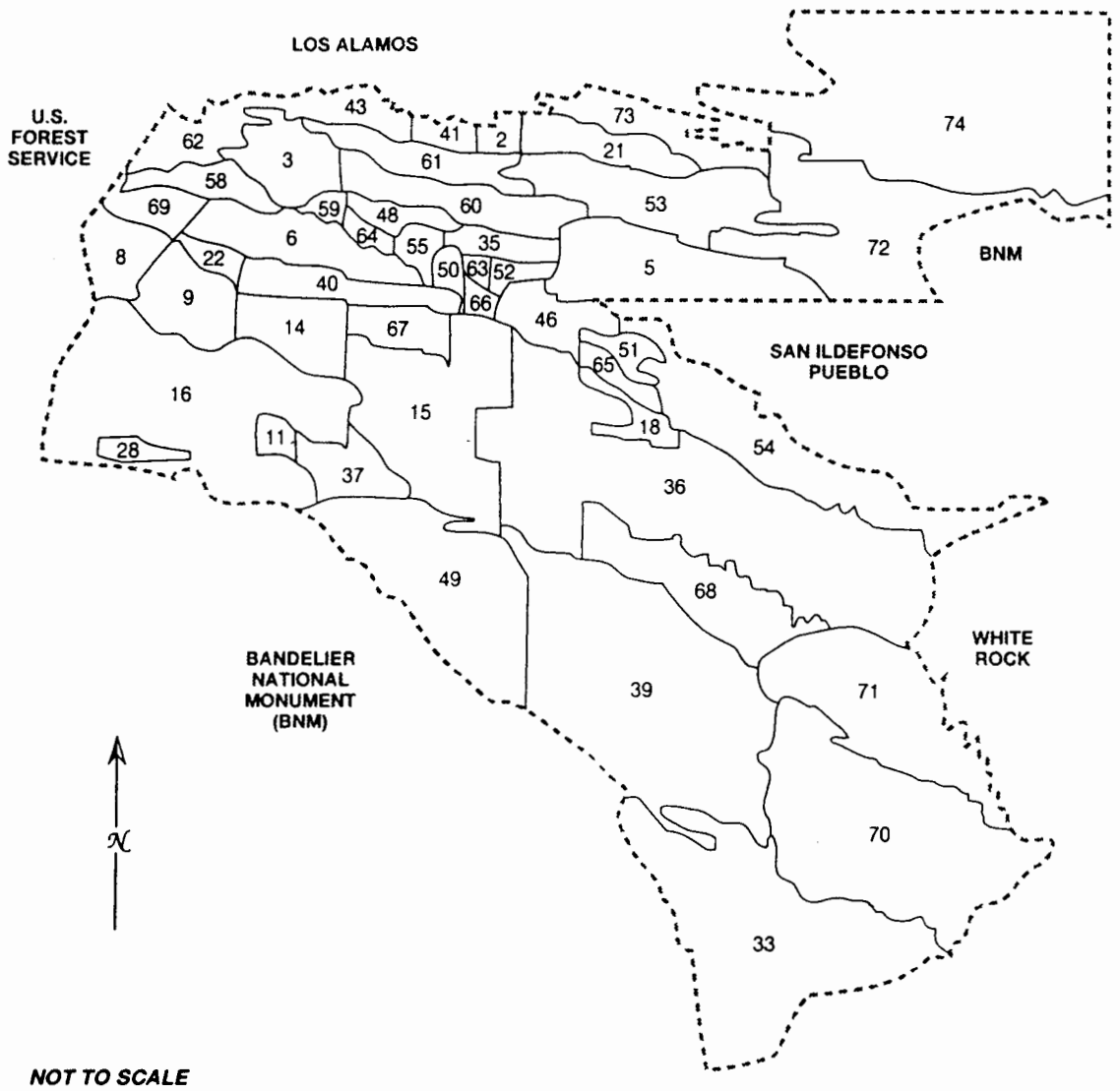

Figure 3
TECHNICAL AREA BOUNDARIES
Los Alamos National Laboratory
Los Alamos, New Mexico

- Water pollution control regulations, including National Pollutant Discharge Elimination System (NPDES) discharge permits, Spill Prevention Control and Countermeasures (SPCC) requirements, and wetlands requirements

- Safe Drinking Water Act (SDWA) regulations, including public water supply, and underground injection control (UIC) class V well requirements

- Air pollution control regulations under the Clean Air Act (CAA), including National Emission Standards for Hazardous Air Pollutants (NESHAPS) (except for radionuclides, as Region 6 just completed a major investigation of these requirements) and point source permits

- Emergency Planning and Community Right-to-Know Act (EPCRA) regulations

- Pesticide management regulations under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

NEIC personnel also evaluated the management organization and facility activities/conditions that, although not specifically regulated, have or could potentially impact the environment. Pollution prevention issues and critical habitat considerations were also noted.

INVESTIGATION METHODS

The on-site inspection of LANL, conducted August 2 through 12, 1993, included:

- Interviewing facility personnel regarding laboratory operations and pollution control practices

- Reviewing and copying, as appropriate, documents including operating plans and records

- Observation and evaluation of material storage/handling areas and other potential emission sources at each targeted TA by a multi-media NEIC team to identify processes and regulated materials generated/handled and to determine regulatory compliance of activities occurring at that TA

Each TA operates somewhat independently of other TAs at LANL, so each was evaluated individually. LANL established various levels of security clearance to visit individual areas. Many areas were inspected without special clearance (EM-8 personnel accompanied the inspectors to most locations); however, LANL identified some areas as national security risk areas. The highest level of security is the DOE "Q" clearance. While "Q" cleared inspectors were allowed immediate access to secure areas, 24-hour notification was required for other inspectors. Activities were planned and coordinated to minimize the impact of this requirement.

Because of the large number of TAs at LANL, and the fact that some TAs probably do not handle/generate substantial quantities of EPA regulated materials or conduct EPA regulated activities, inspection targets were

prioritized in conjunction with EPA Region 6 and New Mexico Environment Department (NMED) personnel. Based on these priorities, some TAs were inspected more thoroughly than others.

REGULATORY BACKGROUND

The activities and/or materials handled/wastes generated at many TAs are controlled by various environmental permits, laws, regulations, and compliance agreements. DOE owns and the University of California - Davis (UC) operates the LANL facility. The UC Environmental Management Division, specifically the Environmental Management group (EM-8), is responsible for ensuring all environmental requirements at LANL are met. Following is a general discussion, by "media," of known regulated activities/ materials/wastes at LANL.

RCRA - Hazardous Waste Management

LANL generates, treats, stores, and disposes of a wide variety of hazardous waste on-site, including non-radioactive and mixed hazardous wastes, discarded laboratory chemicals and process wastes, at various TAs. Therefore, LANL is subject to RCRA and New Mexico hazardous waste management regulations. LANL was issued a RCRA hazardous waste permit (EPA identification number NM0890010515) on November 8, 1989; this permit expires November 8, 1999.

EPA delegated RCRA authority to the NMED, including mixed waste authority (July 25, 1990); the Hazardous and Solid Waste Amendments (HSWA) have not been delegated. Known hazardous waste management units are regulated by: (a) interim status, (b) a state-issued RCRA permit, or (c) RCRA closure requirements. EPA prepared the HSWA module of the Part B

permit which addressed known Solid Waste Management Units. LANL appealed the HSWA portion of the permit. DOE appealed the state's portion of the permit relating to the R&D incinerator. A U.S. District Court ruled against DOE's appeal in August 1992. In May 1993, NMED issued a Compliance Order for alleged violations of mixed waste storage requirements, mostly at TA-54. A federal facility compliance agreement is being negotiated between LANL and EPA Region 6 to address the mixed waste storage violations.

RCRA - UST

LANL uses USTs at various sites and is, therefore, subject to UST regulations. State UST regulations were adopted effective July 26, 1990, and the state was authorized to operate and enforce its own UST program effective November 15, 1990. Most USTs at LANL were installed in the 1940s. Several tanks have recently been removed and/or upgraded. In 1990, there were 92 UST systems. LANL policy has been to remove or upgrade tanks to meet UST requirements. Most of the older tanks have been removed. Eighteen UST systems were remaining at 13 locations during the NEIC inspection.

TSCA

LANL has PCB items on-site and is, therefore, subject to the regulatory requirements of 40 CFR Part 760. EPA Region 6 conducted a PCB inspection on March 17, 1992. Deficiencies involving inadequate transportation and disposal documents in the 1990 Annual Document were discovered.

LANL has PCB transformers, miscellaneous PCB articles, PCB-contaminated transformers, miscellaneous PCB-contaminated articles, PCB capacitors, a storage-for-disposal area, an active PCB landfill cell, two active

PCB disposal pits, and several closed PCB landfill cells and disposal pits regulated by TSCA.

According to LANL documentation, the facility has an ongoing identification/removal and retrofitting program. LANL had a goal to be PCB free by 1993, which they have not accomplished, although they have reduced their PCB inventory. Radioactive PCB items have been landfilled on-site.

NPDES

LANL is regulated by an NPDES permit because they discharge wastewater to numerous arroyos which are tributaries to the Rio Grande River, a water of the United States. EPA Region 6 issued NPDES permit number NM0028355 on January 30, 1990, establishing effluent limitations for LANL. This permit was effective on January 31, 1990, and expired March 1, 1991. The state of New Mexico did not certify the proposed 1991 permit, and the permit issued on January 30, 1990 was administratively extended. The permit authorizes the discharge of wastewater from the LANL facility from 120 outfalls.

LANL has a separate NPDES permit (NM0028576) covering the discharge of wastewater from the TA-57 Geothermal site in Sandoval County, New Mexico, located about 30 miles west of Los Alamos. This permit was issued May 3, 1979; it has an effective date of October 15, 1979 and an expiration date of June 30, 1983. This permit has also been administratively extended, and remains in effect.

EPA Region 6 issued an Administrative Order to the University of California [A.O. VI-92-1306] and a corresponding Federal Facility Compliance Agreement [FFCA VI-92-1305] to the Department of Energy which established

schedules for compliance with final limits for sanitary outfalls (01S, 04S, 09S, 10S, 12S), high explosives outfalls (Category 05A), and the steam power plant outfall (02A-007). In addition, a schedule was established for the completion of a Waste Characterization Study which, through reviewing engineering diagrams and conducting dye studies, would identify all wastewater sources and their discharge location.

LANL has developed a facility Storm Water Pollution Prevention Plan (SWPPP) dated April 1993. Appendix B of this document identifies 22 areas where site-specific SWPPPs have been developed by the user groups. Implementation of these plans is scheduled for October 1993.

SPCC

LANL has greater than 1,320 gallons of aboveground and 42,000 gallons of underground oil storage capacity, and because of their location could reasonably be expected to discharge oil into waters of the United States. Therefore, this facility is required to develop and certify an SPCC Plan. LANL developed an SPCC plan in 1986. This plan was revised in March 1987, March 1990, and September 1993.

Wetlands

Two wetlands within Los Alamos are larger than 10 acres. These two wetlands are located in the lower reaches of Pajarito Canyon and upper Sandia Canyons. Numerous other wetlands are located in canyon bottoms within LANL. Most of the wetlands are small, usually less than 1 acre. Most development at LANL is confined to mesa tops and has minimal impact on wetlands.

LANL conducted two construction projects in Sandia Canyon during 1987 that impacted waters of the United States. One project was a 2.5-acre expansion of the existing 24-acre Los Alamos County sanitary landfill. The other was construction of a sewer extension from TA-41 to TA-3. These projects required notification to the Corps of planned activities covered under nationwide permits (NWP). LANL notified the Corps that the two projects were covered under NWPs for discharge of dredged or fill material into certain waters of the United States. The Corps, Albuquerque District, received the notifications and determined that the area of wetlands affected were under 1 acre. The Corps did not require wetland delineations or mitigation because of the limited size of the area affected.

SDWA - Public Water Supply

LANL has a public water system, presently supplied by 12 groundwater wells, that serves about 26,000 daytime users in the Los Alamos area. The area served includes the towns of Los Alamos and White Rock, Bandelier National Monument, and LANL. The system is regulated by the SDWA, which establishes primary drinking water regulations applicable to public water supply systems.

The state conducted a sanitary survey at LANL in 1988. Findings included the need to check for cross-connections on hose bibs at booster station number 1, and on the Los Alamos well field; and the recommendation that compliance samples of heavy metals, nitrates, fluoride, and radiochemicals be conducted to obtain water samples representative of each well field. The Department of Energy Tiger Team inspection in 1991 found that LANL did not have a formal backflow prevention and cross-connection control program or a formal written drinking water program with implementing procedures.

UIC

LANL has about 30 known septic/sanitary waste holding tank systems on-site. These were to be replaced when the centralized sanitary collection and treatment system was on-line. According to LANL, all septic systems were registered with NMED. Two waste holding tank systems at TA-49 were converted into waste treatment systems using evapotranspiration beds.

CAA

The air pollutant emission sources at LANL include: beryllium operations, radionuclide handling activities (over 150 release points), open burning, an asphalt plant, and power and steam boilers. Other emissions include toxic air pollutants, volatile organic compounds and asbestos.

Six beryllium permits have been issued for the machining operations. NMED requires small beryllium operations with minimal emissions potential to be registered with the state. Five additional beryllium operations have been registered with the state.

Radionuclide emissions are regulated by the NESHAP, 40 CFR Part 61, Subpart H. The provisions of this subpart apply to emissions of radionuclides other than radon from Department of Energy facilities. LANL has been issued two notices of noncompliance (NON). The first, issued in November 1991, identified the following deficiencies:

- Unidentified release points
- Release points not evaluated
- Inadequate sampling systems
- No Quality Assurance/Quality Control program
- Incomplete annual reporting

The second NON was issued in November 1992 for the use of an inappropriate shielding factor in the computer release modeling. Subsequently, a Federal Facilities Compliance Agreement (FFCA) is in negotiation to bring the laboratory into compliance with the radionuclide NESHAP. The FFCA is expected to be signed by LANL in the spring of 1994.

Two open burning air permits have been issued by NMED and two additional open burning air permit applications were submitted to NMED in June 1993. One additional open burning air permit application was under preparation by LANL.

All stationary sources with a potential emission rate of toxic air pollutants (TAPS) greater than the specified regulatory value must register the compound with NMED. LANL submitted a registration for one compound, lithium hydride, in 1991.

LANL has an active asbestos removal program. A contractor, Johnson Controls World Services (JCI), conducts the removal work. Radioactive asbestos has been disposed on-site; LANL reports that non-radioactive asbestos is disposed of off-site.

EPCRA

LANL is subject to the Emergency Planning and Notification and the Hazardous Chemical Reporting: Community Right-to-Know requirements. During the NEIC inspection, LANL was voluntarily complying with the Toxic Release Reporting requirements. LANL has reported only one chemical, nitric acid, on Form R submittals. Subsequent to the inspection, President Clinton signed an executive order which will require LANL to comply with the toxic release reporting requirements.

FIFRA

JCI's roads and grounds group applies pesticides and maintains a pesticide storage area regulated by FIFRA. JCI has licensed commercial pesticide applicators and licensed operators/servicemen for pesticide operations at LANL. Pesticides are stored in building 29 at TA-60, which was built and designed as a pesticide storage facility. The New Mexico Department of Agriculture inspected the pesticide program at LANL on May 1, 1992 and July 29, 1993. No deficiencies were noted in either inspection.

Management Systems

No regulatory requirements exist for specific management systems or styles; however, prior regulatory inspections, including the 1991 Department of Energy Tiger Team assessment, and LANL self-assessment reports, have indicated management deficiencies that may have contributed to past regulatory noncompliance. Organizational charts are presented in figures 1 and 2 in the Management Systems section of this report volume.

FACILITY DESCRIPTION

General

LANL is situated on mesas, about 25 miles northwest of Santa Fe, New Mexico, latitude 35° North, longitude 106° West. The facility employs about 8,000 people involved with a wide range of research and development projects. The total LANL area is about 43 square miles; most is undeveloped land providing isolation for security and safety.

The TAs are numbered 0 through 74 [Figure 3]. Some of the original TAs are inactive or no longer exist, due to decommissioning or incorporation into the town of Los Alamos. Before the NEIC inspection, TAs 3, 16, 21, 35, 41, and 50 were identified as high priority for inspection based on the following criteria:

- Region 6 or NMED concerns with potential compliance issues
- Process information from technical documents, permits, inspection reports, and self assessments revealed potential multi-media compliance issues
- Specific processes or activities created media-specific interest

NEIC also inspected various activities at TA numbers 0, 2, 8, 9, 11, 14, 22, 36, 39, 48, 53, 54, 55, 57, 60, and 61. In the following sections, each TA inspected is described individually, then examples of waste generation at specific areas are presented.

Descriptions of TAs Inspected by NEIC

General discussions of activities and processes observed by NEIC at each TA inspected are presented below. The descriptions are based on inspection observations, discussions with facility personnel, and available literature. Activities within each TA constantly change, so the information represents a snapshot of LANL activities observed during the NEIC inspection. The discussions do not include all waste streams existing at each TA.

TA-0

Facilities designated as TA-0 are those located away from the main LANL TAs. LANL's hazardous waste tracking system inventory identifies three TA-0 facilities as having hazardous waste accumulation areas. One such facility was inspected; TA-0, building 1237, the Pueblo Complex. The Pueblo Complex, occupied by JCI, includes offices and a laboratory where waste samples are analyzed.

TA-2 (Omega Site)

TA-2 includes the Omega West nuclear reactor. This 8 megawatt reactor is utilized for nuclear research, providing a source of neutrons for fundamental studies in nuclear physics and associated fields. LANL's Isotope and Nuclear Chemistry (INC) Division conducts the related research.

In the basement of the reactor building, holes have been drilled in the foundation to alleviate pressure from seasonal rising groundwater levels. Groundwater entering the basement of the reactor is collected in a sump and pumped to Los Alamos Canyon at an unpermitted discharge location.

On December 11, 1992, an emergency shutdown of the reactor occurred. A leak of tritiated water into nearby groundwater was discovered in January 1993. The reactor has been shut down since then.

TA-3 (Core Area)

TA-3 is the main technical area at LANL with approximately 20 divisions and more than 450 structures. The primary administrative functions for LANL are managed out of TA-3. Other activities include laboratory

research, and a range of support services such as data processing, food services, graphics, photography, publishing support, medical services, security, shipping and receiving, etc.

Research activities take place in numerous small and large laboratories. These activities include, but are not limited to, mechanical testing, testing of electrical equipment and properties, chemical and physical evaluations of nuclear materials, astrophysical and radiation measurements, dielectric property testing, and instrument development and calibrations. There are many machine shops associated with equipment fabrication. Utility support services consist of the motor pool and service stations, roads and ground maintenance, and equipment repair shops. Production/processing activities include electroplating of various metals, etching of circuit boards, microwave equipment fabrication, high-tech ceramics production, metal foundries and fabrication, and pipe fitting.

The main electroplating operations for LANL are conducted in TA-3, building 66, and are managed by the Material Science Technology (MST) Group MST-6. Other metal treatment operations include anodizing, dying, and etching. Both ferrous and nonferrous materials are processed. Most liquid waste streams are discharged to the wastewater treatment plant at TA-50. The electroplating operations will be discussed in further detail in the RCRA media report.

TA-8 (GT Site, or Anchor Site West)

TA-8 is located along the western boundary of LANL property. The area contains the administrative offices for the M-Division, records storage, the program office for aboveground experiments (NWT), and radiography research and development (WX). The primary research and work performed at TA-8

involves nondestructive testing of nuclear weapons, various components, and other objects. High speed and neutron radiography, videography, infrared imagery, fluorescent penetrants, and acoustics are used for the testing. Laboratory rheology experiments are also performed where properties of suspension and fluid mechanics are tested.

TA-9 (Anchor Site East)

The M-1 group conducts research on high explosives at TA-9 and the MST-7 group performs polymer research. Wastewater generated in buildings at TA-9 drains through a settling tank to an NPDES outfall. Sludge from the settling tank is thermally treated at the burning grounds at TA-16.

TA-11 (K-Site)

Explosives components and systems are tested under a variety of extreme environments at TA-11. High explosives are subjected to physical variations, such as vibrations and shocks, to determine stability and detonation thresholds.

TA-14 (Q-Site)

TA-14 is a high explosives firing site. Research areas include thermal responses, explosive sensitivities, and small scale diagnostics. Open burning is used to thermally treat high-explosive contaminated wastes. Burns occur in a burn cage, contain a maximum of 50 pounds of high-explosive contaminated combustible waste, and use about one-half gallon of fuel as a starter fluid. Ash remaining after the burn is accumulated in a 55-gallon drum to await analysis before disposal.

TA-16 (S-Site)

TA-16 is the explosives processing area at LANL. TA-16 tenants include Design Engineering (WX), and the Dynamics Testing Division (M Division). Activities include weapons development and design, testing of high-explosive materials, plastics, and adhesives, and decontamination of materials containing high explosives.

A RCRA-permitted incinerator is used at TA-16 to burn solid combustible waste contaminated with high-explosive residues. The ash remaining is handled as a nonhazardous waste.

Four open burning operations occur at TA-16 including: flash burning of high-explosive contaminated material, burning of solid high explosives, burning of hydraulic oil and solvents contaminated with high explosives, and burning of sludge dried high explosive particles. The flash burning operation is permitted by an NMED Air Quality permit; however, the remaining three operations do not require an air permit, because they burn high-explosive material not high-explosive contaminated waste. There are no emission controls for these operations.

Two beryllium operations are performed at TA-16 building 87, surface abrading and swedging. Surface abrading is used to smooth the surface and remove any imperfections from small beryllium parts (gram quantities) used in weapons development. Water is applied to the material being sanded to control any particulate emissions. This beryllium operation is registered with NMED Air Quality division.

Swedging is a process used to reshape small (less than 10 grams) beryllium parts. The parts are placed in an oven equipped with a ventilation

hood and heated to 400 °C. The part can then be manipulated into the desired shape. No cutting or sanding operations are performed, therefore, no air emissions are created.

Wastewater is generated at TA-16 from the washdown of machinery and areas used for weapons analysis. Wastewater from the various process areas is collected in settling tanks to allow the high-explosive materials to settle out. The water is then passed through one of two sand filter burn vessels and four activated carbon filters prior to discharge through NPDES outfall 05A-055. LANL personnel could not document when the sand was last replaced.

TA-21 (DP Site)

Activities at TA-21 consist of a variety of operations administered by several laboratory organizations. Activities include basic research in geophysics, biology, and radiological materials; storage of hazardous and non-hazardous materials; equipment repair; and radioactive wastewater treatment. Specific activities conducted in TA-21 include: tritium systems research performed at the Tritium Systems Test Assembly (TSTA), tritium component research at the Tritium Salt Facility (TSF), radiochemistry and chemistry applied research performed by INC-4, geophysics studies conducted for field applications by EES-3, nonradioactive salt production by NMT-3, and decontamination and decommissioning activities (D and D) conducted by EM- 7 in some of the oldest buildings. For example, the old plutonium facility that was closed about 13 years ago is currently undergoing D and D. Group MST-3 in building 155 conducts radiochemistry experiments.

Groups supporting activities at TA-21 include: EM-7 personnel, who process radioactive liquid wastes at building 257; HSE-1 personnel, who monitor routine and special operations involving radiation and radioactivity;

JCI personnel, who maintain much of the classical infrastructure at TA-21; and engineering groups that ensure that older facilities are repaired and new facilities are designed and constructed to the current codes.

Many buildings at TA-21 were used very early in LANL's history to process uranium and plutonium and have residual radioactive materials in the ventilation and piping systems, under painted surfaces, and in other relatively inaccessible areas.

An internal audit in August 1990 (pre-Tiger Team) focused on six environmental areas: liquid effluents, air emissions, radiation protection/ radiological materials, waste management/RCRA, hazardous materials/toxic substances, and the requirements of the National Environmental Policy Act. The audit reported these major findings of noncompliance: inadequate characterization of stack effluents, improper location of sampling points, improper location for flow rate measurements, insufficient analysis of air samples, and inappropriate or lack of contamination controls.

TA-21 operations generate several types of liquid effluents. Inorganic chemical and radioactive wastes are discharged to the liquid radwaste treatment plant at building 257. Treated effluents are transferred to an outfall at TA-50 through a cross-canyon pipeline. Other liquid wastes are discharged to the environment. There are 13 listed outfalls from TA-21 into the canyons to the north and south.

TA-22 (TD Site)

Development of special detonators to initiate high explosive systems are conducted at this TA. Research activities include rapid shock-induced reactions and high explosive initiation. High-powered explosive detonators for

nuclear devices are designed, developed and fabricated at TA-22. Machine Printed Circuit operations generate high-explosive contaminated wastewater that passes through a settling tank prior to discharge through an NPDES outfall. Waste high explosive sludge from the settling tank is burned at TA-16.

TA-35 (Ten Site)

Experimental research and development activities for nuclear safeguards, chemical lasers, laser fusion, chemical deposition, and high energy plasma physics are conducted at this TA. Testing for the commercial uses of weapons technology is also conducted. Most activities are conducted on a small scale in numerous laboratories located in approximately 40 buildings. Additional buildings are used for support services.

Fourteen operating divisions conduct independent research experiments within the TA. The activities carried out in TA-35 by each division are not necessarily coordinated through a central office. Therefore, discussions were held with the facility manager and the groups which have principal roles. These divisions or groups include the Chemical Laser and Science (CLS), Nuclear Engineering and Technology (N-Division), High Energy Density Plasma Physics (P-1), Inertial Confined Fusion (P-4), and Material Science Technology (MST-7).

CLS conducts laser research in buildings 85, 124, 125, and 128. The group is also involved in the development of useful laser applications. Carbon dioxide, xenonchloride, and krytonfluoride lasers are in use which require the use of numerous electrical transformers and capacitors to provide an adequate power supply. Transformers have been tested and determined to be non-PCB. Several ultrasonic freon degreasers and laser dyes are in use. A portion of the laser dyes are either known or suspected carcinogens.

N-Division activities at TA-35 include development and testing of lasers and supercritical CO_2 for oxidation or cleanup. Research into the possible treatment/destruction of hazardous wastes using pulsed power from lasers is being tested. Simulated hazardous wastes using surrogate materials are used in place of actual hazardous wastes. An application for a RCRA waste treatment permit is being prepared in order to test RCRA hazardous wastes. This division is also testing the viability of using supercritical CO_2 as a replacement for chlorinated or other solvents.

P-1 conducts pulsed power and plasma processing operations in small laboratories in building 207 and 125. Research support activities include vacuum cleaning, acid baths, and machining. Large quantities of electricity are needed in the research and occasionally electrical capacitors are destroyed. Waste acids are neutralized before removal.

P-4 conducts research on fusion in building 87. A photographic laboratory and a machine shop are used in the support of the fusion research.

The MST group conducts polymer and coatings research in building 213. Building 213 is in a secured area and access is controlled. Activities include physical and chemical deposition, polymers research, precision machining, and assembly. Small plating operations are located in two of the laboratories. Permitted and registered beryllium machining operations are conducted in building 213.

TA-36 (Kappa Site)

Explosives testing is conducted at TA-36. Open burning is used to reduce the volume of wood waste accumulated during ordnance detonation experiments. Wood tables are used as test stands for ordnance materials and

may be contaminated with high explosive fragments. Wood waste is accumulated in piles and burned four to five times per year.

TA-39 (Anchor Canyon Site)

TA-39 conducts nonnuclear weapons tests, using shock wave studies and photographic techniques. High-explosives testing, equation state measurements, and pulsed-power systems design are also performed.

TA-41 (W Site)

Engineering design and development of nuclear components is conducted at TA-41. Activities include the design, fabrication, and evaluation of test materials for weapons. Six groups are responsible for the design and development of nuclear weapons. Each group and their specific responsibilities are as follows:

WX-1: Management and engineering
WX-3: Class A explosive handling
WX-5: Design and development of the boost system
WX-11: Environmental testing
WX-12: Design drafting
WX-13: Machine shops

WX-5 is also responsible for handling the various hazardous wastes generated at TA-41.

TA-48 (Radiochemistry Site)

TA-48 activities include production of medical radioisotopes, environmental chemistry on old weapons, dissolving and analyzing samples from the Nevada Test Site, and environmental analysis of research samples from Yucca Mountain. Some areas in TA-48 are radioactively controlled due to the presence of radioisotopes. Hazardous wastes generated within the radioactively controlled areas, such as scintillation cocktails containing RCRA listed solvents, are assumed to be mixed waste. Wastewater is collected and discharged into the radioactive waste line

TA-50 (Waste Management Site)

TA-50 is the main treatment facility for radioactive wastewaters generated at LANL, and contains a variety of waste treatment operations. The waste management group, EM-7, is responsible for wastewater treatment and waste handling at the site; and the environmental chemistry group, EM-9, is responsible for laboratory operations. Inorganic radioactive samples are analyzed in the EM-9 laboratories at TA-50. The main type of samples analyzed are incoming wastewater samples or soil samples with suspected inorganic and radioactive contamination.

The majority of LANL's liquid radioactive wastewater is conveyed to the TA-50 central processing area through a double walled collection system. Some generating facilities are not served by this system, and wastewater is delivered by vacuum truck. Wastewater discharged from TA-55 is pretreated at TA-50-1, Room 60, and then discharged to the central processing area. Treatment at the central processing area consists of flocculation/clarification, filtration, and solids handling. Treated effluent is discharged to Mortandad Canyon from outfall 051. Pretreatment sludge is cemented in drums and

stored at TA-54, Area G as a mixed waste. Sludge from the central processing area is drummed and disposed in the nonhazardous, low-level radioactive landfill at TA-54.

Waste treatment operations at TA-50 include a batch treatment facility, a controlled air incinerator, a cementing operation, and a size reduction facility. The batch treatment facility, controlled air incinerator, and size reduction facility were not in operation during the NEIC inspection.

TA-53 (Meson Physics Facility)

The MP-8 division performs sandblasting operations to clean beryllium oxide optic windows on Klystron tubes. This operation began in 1972 and was last conducted in 1985. Each window is 19.4 centimeters (cm) in diameter and 1.4 cm thick. Approximately 1 millimeter of the beryllium oxide is displaced during the cleaning operation. Blasting is performed outdoors and no containment is used. LANL submitted a registration application to NMED in September 1993 for air emissions from this operation.

TA-54 (Waste Disposal Site)

TA-54 is the central storage, treatment, and/or disposal area for radioactive solid waste, hazardous waste, and mixed waste at LANL. EM-7 handles the physical waste management activities at TA-54, and EM-8 is responsible for classification of the wastes. TA-54 consists of three major waste management areas: Areas G, L, and J.

Area G is used for the disposal of low-level radioactive solid wastes, tritium wastes, PCB contaminated solid wastes, and animal tissue. Area G is

used for the storage of solid-state transuranic (TRU) wastes and radioactive mixed wastes.

Area L is used to process and store hazardous waste generated at LANL before it is shipped off-site. Liquid-state mixed wastes and gas cylinders containing unknowns, hazardous or mixed wastes are also stored at Area L.

Area J is used to package, label, and store asbestos wastes before they are shipped off-site; and contains two disposal shafts for nonhazardous classified waste and three burial trenches for nonradioactive, nonhazardous solid wastes.

TA-55 (Plutonium Facility)

Plutonium processing and research in plutonium metallurgy are done at TA-55. The area includes more than 50 structures under the supervision of the Nuclear Materials Technology (NMT) Division. Activities include safeguard studies primarily for materials development, laser research and development, chemistry and physics research, fusion work, and other experimental research. Formerly, the area was used for source manufacturing, manufacturing of specialty materials, and reactor development.

TA-57 (Fenton Hill Geothermal Site)

TA-57 is known as the Fenton Hill Geothermal Site (Fenton Hill) or the Fenton Lake Site. During the inspection, the research projects at the site were inactive. Fenton Hill is noncontiguous with the rest of LANL, so it has a separate EPA identification number (EPA ID).

TA-60 (Sigma Mesa)

TA-60 contains various physical support and infrastructure facilities. Facilities include the motorpool (vehicle repair, maintenance, and storage); pesticide storage; the Rack Assembly and Alignment Center (RAAC), where experimental racks are assembled prior to shipment to the Nevada Test Site; and the Pull Test Facility, where strength tests are performed on large scale components. Painting of large pieces of equipment and components is conducted in a paint bay in building 17.

TA-61 (East Jemez Road)

TA-61 includes physical support and infrastructure facilities, including the sanitary landfill. The C-4 Communications Division is housed in building 23. C-4 maintains communications equipment for LANL.

Waste Generation

LANL generates many different types of wastes at many TAs. Examples of wastes and pollutant sources observed during the inspection are presented in Table 1.

Table 1

EXAMPLE WASTES/OBSERVED POLLUTANT SOURCES*
Los Alamos National Laboratory
Los Alamos, New Mexico

Technical Area	Solid Waste/Source	Air Emissions/Source	Wastewater Source
0	Laboratory wastes	---**	---
2	Nuclear reactor wastes, laboratory wastes, spent solvent contaminated rags, and solder wastes	---	Ground water from reactor basement
3	Printed circuit board production wastes, electroplating wastes, spent solvents and batteries, laboratory wastes, motor pool and painting wastestreams, metal foundry wastes, off-specification/excess chemicals, medical operations, aluminum anodizing dye baths, photographic processing	Beryllium milling, cutting, grinding, and electrical discharge machining; gas atomization and consolidation of beryllium; cutting, wet sanding, and melting of beryllium samples; polishing of beryllium samples; radionuclide emission; asphalt plant	Cryogenics, rolling mill, Chemistry Metallurgy Research, diatomaceous earth backwash, spent demineralizer regenerants, electroplating and anodizing rinsewaters, and laboratory shop wastewaters
8	Radiography and videography laboratories, fluorescent penetrant testing, infrared imagery, spent solvent contaminated rags, photographic development wastes	---	Photographic development wastewater
9	High explosives (HE) machining and research, polymer research, laboratory experiments	---	HE wastewater
11	Explosive component and systems testing	Open burning	HE wastewater
14	Explosive development wastes, ash	Open burning	---

* *This table does not include all waste streams and pollutant sources for each TA. Examples are based on inspection observations, and not all areas of all TAs were inspected. Cooling water and sanitary wastewater not included on this table.*

** *Designates that waste streams for this media were not identified in the portion of TA inspected by NEIC.*

Table 1 (cont.)

Technical Area	Solid Waste/Source	Air Emissions/Source	Wastewater Source
15	---	---	Photographic development wastewater
16	High explosive, adhesives, and plastics formulation and testing, ash residue from burning, laboratory operations	Open burning/open detonation, incineration, surface abrading and swedging of beryllium parts; radionuclide emission; flash burning of HE; burning of solid HE; asbestos removal projects	HE wastewater, boiler blowdown, neutralized demineralizer regenerant wastewater, photographic development wastewater
21	Geophysical research, biological and radiological laboratories, painting/ maintenance operations, photographic development	Radionuclide emissions	Chemical and radioactive liquid wastes, treated cooling water, noncontact cooling water, and boiler blowdown
22	Detonator development, printed circuit board etching, spent solvents, HE-contaminated wastestreams	---	HE contaminated wastestreams, printed circuit board waste treatment effluent, photographic development wastewater
30	---	---	Radioactive wastewater
33	---	Radionuclide emissions	---
35	Polymer and coating research, precision machining, electroplating, laboratory research, spent solvents	Beryllium drilling and milling, punching and cutting of beryllium; radionuclide emission	Radioactive wastewater, photographic development wastewater
36	Wood wastes contaminated with HE	Open burning	Photographic development wastewater
41	Engineering design and development of nuclear components, spent solvents	Radionuclide emissions	---
48	Medical radioisotope production, environmental chemistry of old weapons, radioactive testing, spent solvents, laboratory wastestreams	Radionuclide emissions	Radioactive wastewater

Table 1 (cont.)

Technical Area	Solid Waste/Source	Air Emissions/Source	Wastewater Source
50	Lead decontamination operations, scintillation cocktail wastes, inorganic laboratory wastes, wastewater treatment sludge	Controlled air incinerator (not in operation during inspection), radionuclide emissions	Radioactive wastewater streams (from other TAs)
53	---	Sandblast cleaning of beryllium oxide optic window, radionuclide emissions	---
54	Barium nitrate treatment residues	---	Barium nitrate treatment wastewater, cascading rinse treatment system effluent
55	Plutonium research and processing, waste salts	Oxygen sparging furnace, beryllium (contaminated with TRU) drilling and milling, radionuclide emission	Radioactive wastewater
57	Parts cleaning/spent solvents	---	Geothermal wastewater
59	---	---	Radioactive wastewaster
60	Motorpool operations, painting/maintenance operations	---	---
61	Spent batteries	---	---

SUMMARY OF FINDINGS

The areas of noncompliance and areas of concern* identified during the investigation are summarized below. These findings are detailed in separate media sections of this report.

RCRA - HAZARDOUS WASTE MANAGEMENT

Areas of Noncompliance

The following areas of noncompliance with New Mexico Hazardous Waste Management Rules and/or 40 CFR §§ 262, 264, 265, 268, and 270 were identified during the investigation:

40 CFR § 262.11	An adequate waste determination had not been made for the following solid wastes generated at the facility: • Metal-containing wastes being removed from a septic tank at the former Catholic Church [TA-0-030(g)] and disposed of at the LANL low-level, radioactive landfill • Metal-containing treatment sludges from the circuit board production at TA-22, building 91 • Wastewater treatment sludge generated at TA-50 • Container pending analysis at TA-50, building 114

* *Areas of concern are inspection observations of potential problems that could result in noncompliance with permit or regulatory requirements, or are areas associated with pollution prevention issues.*

	• Approximately 148 gas cylinders stored at TA-54 gas cylinder storage area
40 CFR § 262.20(a)	During the NEIC inspection, hazardous wastes were transported on public roads without the required hazardous waste manifests, EPA form 8700-22, OMB Control Number 2050-0039.
40 CFR § 262.34(a)(3)	Waste high explosives accumulating in rest house TA-16, building 261, were stored in six containers that were not labeled or marked clearly with the words, "Hazardous Waste."
40 CFR § 265.31, as referenced by 40 CFR § 262.34(a)(4)	The TA-21, building 427 less-than-90-day accumulation area metal building, containing ignitable liquids, was not grounded to minimize the possibility of a fire, explosion, or any unplanned sudden release of hazardous waste.
40 CFR § 265.32 (a), as referenced by 40 CFR § 262.34 (a)(4)	No internal communications or alarm system equipment was available which was capable of providing immediate emergency instruction to facility personnel in the following areas: • TA-3, building 2133 • TA-21, building 427 • TA-22, building 91
40 CFR § 265.32(b), as referenced by 40 CFR § 262.34(a)(4)	No devices, such as a telephone or hand-held radio, were available to summon emergency assistance in TA-3, building 2133.
40 CFR § 265.32(c), as referenced by 40 CFR § 262.34(a)(4)	No portable fire extinguisher or fire control equipment capable of putting out fires for hazardous waste stored at the TA-21, building 427 less-than-90-day accumulation area.
40 CFR § 262.34(c)(1)	RCRA hazardous wastes were not being accumulated under the control of the operators of the processes generating the wastes in the following locations:

	• TA-0, building 1237, room 203 (Pueblo Complex) • TA-3, building 40, entrance to corridor • TA-3, building 40, room W112 • TA-3, building 66, room P1A • TA-11, building 24 • TA-21, building 3, room 361S • TA-35, building 46, room 102 • TA-35, building 85, room 106B • TA-35, building 125, room F108 • TA-35, building 255, room 101 • TA-60, building 1
40 CFR § 265.173 (a), as referenced by 40 CFR §262.34(c)(1)(i)	A container in TA-35, building 213, room B24, accumulating RCRA hazardous waste was left open when wastes were not being added or removed.
40 CFR § 262.34(c)(1)(ii)	Spent trichloroethane solvent waste was not clearly marked with the contents or the words "hazardous waste" in TA-3, building 66, room P1A.
40 CFR § 262.34(c)(2)	Greater than 55 gallons of waste were being accumulated at a satellite accumulation area at TA-35, building 85, room 106B, without a permit or interim status. The containers holding the excess accumulation of hazardous waste were not marked with the date the excess amount began accumulating. There were six waste streams present at the area.
40 CFR § 264.13(b)	The waste analysis plan in the permit has not been modified to specify procedures used to sample and analyze wastes for the Toxicity Characteristic Leaching Procedure (TCLP).
40 CFR 264.16(c)	Ten facility personnel did not take part in an annual review of the hazardous waste management program. Records were reviewed for 13 LANL employees.

40 CFR § 268.7(a)(1)(iii)	Manifest numbers were not included on the LDR notifications for 13 shipments of restricted hazardous waste.
40 CFR § 268.7(a)(4)(ii)	The waste analysis plan for treatment of restricted hazardous waste in containers at the lead decontamination trailer at TA-50 was not filed with the Region or NMED.
40 CFR § 268.7(b)(7)	Copies of LDR notifications were not retained for 23 manifests for shipments of restricted hazardous waste.
40 CFR § 268.50(a)(2)(i)	The accumulation start date was not marked on the following containers: • Three drums of mixed waste stored in shed 144 over pit 33 at TA-54, Area G • Five gas cylinders of restricted hazardous and mixed waste at TA-54 gas cylinder storage area
40 CFR § 268.50(b)	The following containers of restricted hazardous wastes have been stored beyond 1 year not for the purpose of accumulating quantities necessary to facilitate proper recovery, treatment, or disposal: • One one-third full 55-gallon drum of waste spent trichloroethane solvent sludge at TA-3, building 66, room P1A • One container of hazardous waste at TA-54, building 32 • Five containers of hazardous waste at TA-54, building 69 • Over 600 gas cylinders of hazardous waste at TA-54 gas cylinder storage area

40 CFR § 270.71 (a)(2)	The facility treated hazardous wastes at TA-16 in five units by processes not specified in the Part A permit application or amendments. The units were: building 387, flash pad; buildings 388 and 399, burn pads; and buildings 401 and 406, sand pit vessels. In addition, a burn cage treatment unit is being utilized at TA-14 to treat HE contaminated wastes. This unit is also not identified in LANL's Part A permit application or amendments.

Areas of Concern

The following areas of concern were identified:

- Dates are often incorrectly marked on hazardous waste labels when containers begin accumulating waste at satellite accumulation areas. Although it is a good management practice to record how long a given container accumulates waste, the date on the label could be mistaken for the date required to be marked when greater than 55-gallons are accumulated. Start of accumulation dates at satellite accumulation areas should be recorded, as required, and other dates should be recorded in a location other than the label, such as a notebook, to avoid confusion.

- Some areas were designated as satellite accumulation areas, but were not located at or near any point of generation. For example, at TA-57, building 56, a sign indicated a chemical storage area was a satellite accumulation point, but no identified waste generation processes were identified nearby.

- Prior to April 6, 1990, barium sand and ash waste (waste code D005) generated at the TA-16 OB/OD sites may have contained the spent solvents toluene and methyl ethyl ketone (MEK). During the NEIC inspection, containers of product toluene and MEK were observed in bay 102 at TA-16, building 363. Facility personnel indicated that these solvents occasionally have been used in the area, with the last time being April 6, 1990. If any wastes burned at the OB/OD sites contained toluene or MEK, the ash would meet the listing for F005. The ash and barium sands are transported to TA-54 where they are treated and disposed of as a nonhazardous waste.

- Wastewater treatment sludges, meeting the listing of EPA waste number F006, have been improperly disposed of in the nonhazardous, low-level radioactive landfill at TA-54. The facility did not make an adequate waste determination for the sludge from the main wastewater treatment facility at TA-50. TA-3, building 66, discharges wastewater from electroplating operations to the main wastewater treatment facility at TA-50.

- If the aluminum anodizing dye tanks at TA-3, building 66, are being discharged to the TA-50 wastewater treatment plant, the wastewater treatment sludge may contain heavy metals. Conflicting statements were made regarding the discharge of the dye tanks. One of the employees stated that the four dye tanks are discharged to TA-50 every 3 months, while the supervisor stated that the tanks had not been discharged for the last 7 or 8 years. MSDSs indicated the dyes contained total chromium ranging from 3 to 10%. The wastewater treatment sludge from

TA-50 is drummed and disposed of in the nonhazardous, low-level radioactive landfill at TA-54.

- In the TA-54, Area G, building 49 storage dome, the berm was cracked and several holes were present in the pad. The crack in the berm was located at column 69 in the storage dome. Only solid mixed wastes are stored, and the berm is used to prevent run-on, not to contain spills.

- The TA-54 mixed waste container storage area slopes toward the nearby canyon through a stormwater channel. There are no berms or runoff protection devices for the drums stored. If the drums leaked, wastes would runoff into the canyon.

- LANL will need to obtain a treatment permit for the thermal decomposition unit at TA-55 prior to treating any hazardous waste. LANL is in the process of changing an incinerator to a thermal decomposition unit to treat hazardous waste rags. The thermal decomposition unit will treat the waste to reduce the volume and make it more amenable for recovery. The reclamation of the plutonium occurs in the nitration process when a usable product is generated. Therefore, reclamation does not occur in the thermal decomposition unit and the unit must be permitted for thermally treating a hazardous waste.

- The EPA ID used on manifests at TA-57 (the Fenton Hill Geothermal Site) prior to the inspection, NMP360026994, was provisional. Provisional numbers have limited use, so Region 6 assigned the permanent number NMD986676807 after the NEIC inspection.

- The inspection form used for storage areas throughout LANL is not specific to the separate storage and treatment units; especially at TA-50 and TA-54, Area L. The specific storage or treatment unit is not indicated on the inspection form, which makes it difficult to determine if all storage units were thoroughly inspected.

- The executive summary of LANL's biennial report, written by the Waste Minimization Program Office, reported that funding is the major problem in implementing LANL's waste minimization program.

- The job title for each position related to hazardous waste management and the written job description is required to be documented and maintained by the owner/operator [40 CFR 264.16]. Many of the subcontractor (JCI) employees generate and/or manage RCRA hazardous wastes. These employees do not have written job descriptions and LANL does not have a listing of job titles for JCI positions which relate to hazardous wastes. Many of the job descriptions for LANL employees which handle RCRA hazardous wastes are vague and do not specify RCRA-related duties.

- In several of the TAs, employees stated that low toxicity solvents (i.e., acetone, alcohols) were being used on rags and wipes for cleaning but higher toxicity solvents were found in squirt bottles and chemical storage cabinets (i.e., Freon 113, 1,1,1-trichloroethane). If these higher toxicity solvents are being used on rags and wipes for cleaning, then the associated RCRA wastes

may be characterized incorrectly. The higher toxicity solvents were found in TA-8, TA-16, TA-35, TA-60, and TA-61.

RCRA - UST

Areas of Noncompliance

The following areas of noncompliance of the UST requirements were identified during the investigation:

NMUSTR Part V, §501(b)/40 CFR § 280.31(b)	The cathodic protection on UST system TA-16-197, installed in September 1990, was not tested within 6 months of installation.
NMUSTR Part VIII §800/40 CFR §280.70	TA-21-325 was temporarily closed on November 23, 1992 when the tank was emptied, but the piping is still intact. Temporary closure of a UST system for 3 months or more requires that vent lines be left open and all other lines, pumps, manways, and ancillary equipment be capped and secured.

Areas of Concern

The following areas of concern were identified:

- The tank farm fueling pad is located in an area where stormwater runoff collects and was under water during the NEIC on-site inspection.

- Soil contamination from a waste oil tank had not been completely addressed yet. Corrective action for soil contamination from a

waste oil tank (TA-3-MP-3) removed from the motor pool at TA-60 was ongoing during the on-site inspection.

- A monitoring probe for one of the tank farm UST systems was not working during the on-site inspection. This probe is used for inventory control and tank tightness testing that will be required for this tank beginning December 22, 1993.

- LANL does not have a UST corrosion protection program for required testing as well as the increased testing that will be required in 1998.

- UST system design was questionable in three cases:

  (1) Stormwater runoff at the tank farm floods the collars surrounding the fill pipes.

  (2) The fill pipe cover near the gas pump at the TA-60 motor pool is dislodged by traffic and then the fill pipe collar can be filled by precipitation or other contamination.

  (3) The fill pipe at the TA-3 gas station is exposed between a parking lot and sidewalk.

TSCA

Areas of Noncompliance

The following areas of noncompliance of the TSCA requirements were identified during the investigation:

40 CFR §761.30(a)(1)(viii)	Combustible materials were stored within 5 meters of eight PCB transformers.
40 CFR §761.40(a)	Three out-of-service PCB capacitors were not marked with the PCB mark.
40 CFR §761.65(a)	One drum of PCB cleanup material, dated February 21, 1992, was still on-site and not in the storage-for-disposal area.
40 CFR §761.65(a)	Thirty-four drums of radioactively contaminated PCBs have been in storage for disposal for more than 1 year.
40 CFR §761.75(a)	Approval conditions for PCB disposal at LANL were not met. Water analyses, required by 40 CFR §761.75(b)(6)(iii), were not conducted for PCBs, pH, specific conductance, and chlorinated organics.
40 CFR §761.180(a)(1)(iii)	The LANL PCB database does not have an accurate total weight in kilograms for each PCB article.

Areas of Concern

The following areas of concern were identified:

- The PCB database is being improved by an ongoing survey, but some of the information is based on information/assumptions made in 1984 and is inaccurate.

- Waste is determined to be radioactively contaminated PCB waste by where it comes from instead of testing. Therefore, some

nonradioactive PCB waste may be improperly identified and handled as radioactively contaminated.

- PCB equipment is taken out of service by user groups at individual TAs, but does not enter the disposal system until the user group fills out a waste profile sheet and submits it to the Waste Management Group. The interval between out of service and disposal can be several years. Additionally, once a waste profile sheet is submitted to the Waste Management Group, it often takes several months for approval and for the waste to be moved to the storage-for-disposal area. The removal from service/storage date listed by LANL is the date the item is moved to the storage-for-disposal area.

- LANL has prioritized PCB items with potential for environmental contamination and has retrofilled, dechlorinated, or removed many of these items, but there are still PCB items in high priority areas such as TA-36-0138 near a stream course where a spill would be costly both to LANL and the environment.

- The inventory of PCB transformers sent to the fire department is incomplete. A more recent inventory identified an additional PCB transformer not on the fire department's inventory.

- Certificates of disposal included in the 1992 annual document did not always contain all required information such as a list of PCB items and method of destruction. This would be an area of noncompliance for the off-site disposal areas.

CWA - NPDES

Areas of Noncompliance

The following areas of noncompliance of the water pollution control requirements were identified:

NPDES Permit NM0028355 Section A. Effluent Limitations and Monitoring Requirements	DMRs document 77 daily maximum limitation exceedences at industrial wastestream outfalls during the time period between January 1990 through January 1993.
NPDES Permit NM0028355 Section A. Effluent Limitations and Monitoring Requirements	DMRs document 13 daily maximum limitation exceedences at sanitary wastestream outfalls during the time period between January 1990 through January 1993.
NPDES Permit NM0028355 Section A. Effluent Limitations and Monitoring Requirements	All required effluent monitoring and reporting is not conducted: • Outfall 051 requires continuous pH monitoring; however, LANL is reporting a weekly grab sample result on the DMRs. • No monitoring is being conducted on the TA-21 radioactive treatment plant effluent. • The sanitary effluent is not being monitored for all applicable parameters when it is used as cooling tower make-up water and discharged from a cooling tower blowdown outfall. • Additional effluent monitoring is being conducted by some of the user

	groups and not being reported on the DMRs. • LANL is not reporting daily average exceedences as a separate violation on the DMR when there are daily maximum exceedences.
Administrative Order VI-92-1306 and Federal Facility Compliance Agreement VI-92-1305	LANL did not meet the Waste Characterization Study (WCS) compliance schedule, which required all reports to be completed by July 1993.
40 CFR Part 122.1(b) 40 CFR Part 122.21	Unpermitted wastewater discharges are occurring at LANL. Additionally, wastewater from sources not identified in the NPDES permit application is being discharged through permitted outfalls. The WCS identifies numerous unpermitted outfalls (such as the tritium contaminated water being discharged to Los Alamos Canyon from the TA-2 reactor basement) and permitted outfalls discharging from unauthorized sources (such as noncontact cooling water outfall 04A-013, which discharges wastewater from equipment rooms and sinks while cooling water discharges have been ceased/recycled).

Areas of Concern

The following areas of concern were identified:

- Although the Sanitary Wastewater Systems Consolidation (SWSC) facility provides more reliable treatment than the individual sanitary systems it replaced, a few areas of concern were identified:

- Despite being completed approximately 1 year ago, an operation and maintenance (O&M) program is not yet in place for the facility. It is essential that the O&M program be completed and implemented to ensure continued facility performance.

- The sanitary collection system has 40 lift stations. Due to the size of the wastewater collection system and remote locations, auto-dial, high-level alarms should be installed at all lift stations.

- If process performance continues to be impacted by unusual influent characteristics, LANL should implement upstream sampling/analysis to identify and eliminate nondomestic wastewater discharges that could impact plant performance or contaminate sludge.

- Automatic soda ash feed equipment would provide better process control for nitrification.

- An operator's manual should be developed for SWSC which establishes process control parameter (MLSS, D.O., etc.) ranges for optimal plant performance. This document should be updated as additional plant performance information is developed.

- The central radioactive wastewater treatment facility is 30 years old and is reaching the end of its useful life span. The grit chamber has been removed because of leakage which has resulted in radiological groundwater contamination. Organic solvents are

discharged to the TA-50 radioactive wastewater treatment facility. The plant is not designed to treat this type of waste and the permit only contains limits for COD (not specific organic compounds). LANL has only recently initiated predesign studies for replacing this facility, and it may take 10 years before a new facility can be constructed and operational. One of the major contributors to the TA-50 wastewater treatment plant is electroplating/metal finishing operations, and it is not clear from the permit fact sheet whether the effluent guidelines for Metal Finishing included in 40 CFR § 433.10 or more stringent limits have been applied to this discharge.

- The influent storage tanks for the radioactive treatment facility at TA-21 have an overflow pipe which discharges into a tile drain field. LANL personnel could not demonstrate through a mass balance that all the wastewater pumped from TA-21 was received at TA-50. Both the raw wastewater collection system and the effluent pipeline are single-walled steel pipe and do not have a leak detection system.

- High-explosives manufacturing at LANL results in the discharge of organic compounds which are not removed by the existing treatment facilities. High-explosive wastewater from sumps with high organic concentrations should be transported to the burn pad area for treatment in the existing carbon filters until the new centralized high-explosive wastewater facilities are completed in accordance with the established compliance schedule. Mass based limitations were not established in the NPDES permit, in accordance with Effluent Guidelines, and non-high-explosive

wastewater sources are providing significant dilution at these outfalls.

- Better management and control of the photographic processing wastewater would be obtained by consolidating these facilities. Spills of photographic processing chemicals could be discharged directly to the environment through 13 outfalls.

- LANL should be required to develop a compliance schedule for correcting deficiencies identified in the Waste Characterization Study that is prioritized based on the potential for environmental contamination.

- There are over 800 identified Solid Waste Management Units (SWMUs) at LANL, which may be significant contributors of pollutants to stormwater discharges. Other significant areas of potential stormwater contamination include the blasting areas, sewage sludge disposal site, and the waste storage/disposal sites at TA-54. The LANL Storm Water Pollution Prevention Plan (SWPPP) outlines a three-stage sampling/analysis program for assessing the stormwater impact from SWMUs. In order to ensure implementation of their SWPPP, LANL should be required to develop a specific stormwater monitoring program and schedule.

CWA - SPCC

Areas of Noncompliance

The following areas of noncompliance with the SPCC requirements were identified:

40 CFR § 112.7	LANL's September 27, 1993 SPCC Plan is not complete; individual user groups have not completed the site-specific spill plans.
40 CFR § 112.3	LANL has not fully implemented its SPCC plan. Section 8 of the Plan requires secondary containment for storage of drums; however, during the NEIC inspection seven drums of oily water were stored adjacent to Sandia Canyon without secondary containment.
40 CFR § 112.3	LANL has not fully implemented its SPCC plan. There is no tank integrity inspection program in place, as required by the plan.

Areas of Concern

The following areas of concern were identified:

- The location of the JCI refueling station is poorly designed; ponded stormwater floods the refueling station and minor spills will contaminate stormwater. The refueling station should be relocated or more controls instituted (additional inspection documentation and occasional sampling of stormwater).

- The success of the SPCC program at LANL is dependent on the individual user groups, who must develop site-specific plans and

are responsible for SPCC implementation. Based on observations during the inspection, there is inconsistent facility-wide implementation of LANL policies. It is LANL policy that there shall be no discharge of stormwater from less-than-90-day secondary containment structures. However, at TA-22-91, facility personnel stated that rainwater accumulated in the less-than-90-day secondary containment structure outside the printed circuit board facility is pumped directly to the environment. In order to ensure consistent implementation of SPCC policies, LANL should periodically conduct internal inspections and audits of the user groups.

- The Oil Pollution Act of 1990 required facilities that could reasonably be expected to cause substantial harm to the environment by discharging oil to waters of the United States to develop Facility Response Plans by February 18, 1993. LANL personnel stated that they concluded they were not subject to these requirements, because they had below 1 million gallons of total oil storage capacity. However, EPA has not yet promulgated final regulations which specify the facilities required to develop these plans.

CWA - WETLANDS

Areas of Noncompliance

The following areas of noncompliance of wetland regulations were identified:

33 CFR § 323.3(a)	The wetland in Sandia Canyon below the sanitary landfill was filled without a permit.
33 CFR § 330.4(a)	Conditions of Nationwide Permit No. 12 were not met for both stabilizing exposed slopes and finishing final grade to pre-construction contours.

Areas of Concern

The following areas of concern were identified:

- LANL filled a wetland area in TA-22 with old building debris during construction of new facilities in 1984/1985. Although this activity was exempted by a Nationwide Permit at that time, this degradation of a wetland did not comply with Executive Order 11990.

- The wetland at the head of Sandia Canyon has been, and continues to be, adversely impacted by chemical releases and other LANL activities associated with TA-3. Efforts should be made to prevent further disturbance of this wetland.

SDWA - PUBLIC DRINKING WATER SUPPLY

Area of Noncompliance

The following area of noncompliance of SDWA requirements was identified:

New Mexico Water Supply Regulations, Part II Water Supply Control, §205 Maximum Microbiological Contaminant Levels	LANL exceeded the MCL for total coliforms during August 1993 and was required to meet public notification requirements.

Areas of Concern

The following areas of concern were identified:

- Areas of water stagnation exist in the LANL distribution system. A formal flushing program needs to be initiated where stagnation problems are known to occur. Noncoliform bacteria identify areas of the facility where stagnation is a problem. The microbiological and residual chlorine sampling results in June indicated there was a problem at TA-33 with nondetectable chlorine residual (<0.1 mg/L). The water storage tanks are often sized to meet fire protection needs and not drinking water use. Addition of chlorination facilities at outlying areas may be warranted.

- Strontium-90 is present in the water system at 2.5 to 5.2 pCi/L. There is no strontium-90 MCL for groundwater. LANL personnel stated that their monitoring results indicate the strontium-90 levels are not caused by LANL activity.

SDWA - UIC

The following area of noncompliance of underground injection control requirements was identified:

Area of Noncompliance

40 CFR 144.26	LANL did not submit inventory information for the following Class V well: TA-22-93, high explosive discharge.

Areas of Concern

The following areas of concern were identified:

- Proper plugging and abandonment of closed injection wells at TA-16 has not been verified.

- The vent pipe on an inactive class V well at TA-22 was not capped.

- Floor drains leading to septic system drain fields at TA-39 building 2 and other locations with industrial processes are not all properly plugged.

- The 4 1/2" - 9 5/8" annulus of the inactive injection well at the TA-57 Fenton Hill Geothermal Site has a leak at zero injection pressure.

- Influent storage tanks for the TA-21 radioactive wastewater treatment facility have an overflow pipe which discharges into a tile drain field. If this overflow pipe has received radioactive wastewater, then this would be an unpermitted Class V well.

CAA

The following areas of noncompliance were identified during the NEIC investigation:

Areas of Noncompliance

NMAQR Permit No. 634-M-1	Pollution control equipment identified at TA-3 building 141 beryllium operations is not the same as the pollution control equipment outlined in the permit application for these beryllium operations.
NMAQR 702	LANL failed to permit a beryllium drilling operation at TA-35 building 213. One beryllium operation was identified in the permit application submitted to NMED for this building and two operations are performed.
NMAQR Permit No. 632	Pollution control equipment identified at TA-35 building 213 beryllium operations is not the same as the pollution control equipment outlined in the permit application for the beryllium operations.
NMAQR 752	LANL did not register seven operations emitting toxic air pollutants (TAPS) that were used in excess of the screening levels. The TAPS include: • Sulfuric acid (at two locations) • Osmium tetroxide • Phosgene (at two locations) • Mineral oil mist • Ammonia

Areas of Concern

The following areas of concern were identified:

- All regulated beryllium operations at LANL may not yet be identified. The major machining operations have likely been identified, but the smaller operations may have been overlooked. Various correspondence from EM-8 has been relayed to laboratory group leaders requesting information on beryllium operations. Information requests have been sent since 1986; however, beryllium operations continue to be identified. Alleged violations for beryllium permitting have been identified and are outlined in the Areas of Noncompliance section.

- Emissions data for nonradioactive sources may be inaccurate. Emission estimates are based on a 1990 survey. New activities using various toxic and/or volatile compounds have been started since 1990. Additionally, many activities have been discontinued or undergone major changes since 1990 which may alter the emission estimates.

- A significant quantity of VOCs are emitted from painting operations within LANL. The laboratory is exploring the use of water-based paints to reduce this emission source and should be encouraged to pursue this and other waste minimization activities.

- LANL does not have a complete inventory of all emission sources. For example a listing of all degreasing and painting operations is not available. Additionally, a listing of all pollution control

equipment for each stack or discharge exhaust is not available. This type of information will be needed to complete an operating permit application, as required in the CAAA.

- Friable asbestos containing materials (ACM) identified by LANL are exposed to the atmosphere at several areas. The steam lines are insulated with ACM, and are damaged in several locations exposing the asbestos to the atmosphere.

EPCRA

Areas of Noncompliance

No areas of noncompliance of the EPCRA requirements were identified during the investigation.

Areas of Concern

The following areas of concern were identified:

- LANL has no written follow-up procedures in the event of a release of an extremely hazardous substance (EHS). There have been no reported EHS releases; however, these procedures should be formalized.

- LANL may have to report significantly more chemicals on the annual Tier II submittal. LANL used reporting levels of 10,000 pounds for hazardous chemicals and 500 pounds for extremely hazardous substances. LANL reported only 10 chemicals exceeding these reporting levels. The minimum reporting level

for chemicals may be lowered to zero pounds if requested by the SERC, LERC, and/or the fire department. Potentially, hundreds of additional chemicals may need to be reported on the Tier II forms.

- LANL has no method to accurately determine if reporting levels or threshold quantities have been exceeded. Chemicals are acquired through various purchasing procedures. An accurate accounting is not maintained because of the multiple purchasing options. LANL is starting a new purchasing approach whereby all acquisitions will be purchased through a central office.

- The 1992 LANL Form R submittal for nitric acid does not include all releases. Only the nitric acid released from TA-55 was included on the Form R submittal. Other sources and uses of nitric acid throughout the laboratory were not included on the release estimates.

- To be in voluntary compliance with Form R requirements, LANL should have provided Form R submittals for chlorine. LANL uses in excess of 10,000 pounds of acrylic acid and chlorine annually.

FIFRA

Areas of Noncompliance

No areas of noncompliance of the FIFRA requirements were identified during the investigation.

Areas of Concern

The following areas of concern were identified:

- Two different LANL groups (EM-7 and JCI) handle disposal of pesticide containers. Based on size and rinseability of the container, it is either landfilled on-site or managed by EM-7. However, label directions may require specific disposal methods that JCI, with specific pesticide training, is aware of, but EM-7 may not be.

- The request for purchase of restricted use pesticides is made by a certified pesticide applicator, but the actual purchase is made through procurement channels by purchasing personnel. Outside vendors have never checked for restricted use pesticide licenses, according to LANL personnel. This would be a potential area of noncompliance for the outside vendors.

MANAGEMENT SYSTEMS

The NEIC findings regarding LANL management systems are similar to those discussed in prior inspections, audits, and self assessments. Despite management's efforts, the following problem areas continue to be identified within the laboratory: lack of individual accountability, failure to establish effective laboratory-wide communications, and lack of an effective system to ensure compliance with environmental regulatory requirements. Management systems are not static, and they were evolving during this review. One potential problem, under a proposed restructuring of the laboratory's management systems, is the disbursement of environmental management functions.

POLLUTION PREVENTION

LANL has implemented some pollution prevention activities. For example the conversion to water based paints has reduced the emissions of volatile organic wastes emitted by LANL. Additional opportunities exist to reduce pollution, such as the consolidation of the numerous photographic laboratories. Other pollution prevention activities have been identified in the "Areas of Concern" presented in the summary of findings in the individual media reports.

NEPA - CRITICAL HABITAT

Areas of Noncompliance

No areas of noncompliance with critical habitat requirements were identified.

Area of Concern

The following area of concern with critical habitat requirements was identified:

- The peregrine falcon is the only endangered, threatened, or proposed for listing species positively identified at LANL. There has not been a peregrine falcon nesting at LANL in 2 years.

TECHNICAL REPORT

MANAGEMENT SYSTEMS REVIEW

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY (LANL)
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Investigator

Mike Webb, Civil Investigator
EPA-NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a review of the management systems as part of the multi-media compliance investigation of the Los Alamos National Laboratory (LANL), Los Alamos, New Mexico. This report, one of a series, addresses investigation findings and discusses environmental management at LANL.

REGULATORY SUMMARY/OBJECTIVE

No regulatory requirements exist for specific management systems or styles; however, prior regulatory inspections, including the 1991 Department of Energy Tiger Team assessment, and LANL self-assessment reports, have indicated management deficiencies that may have contributed to past regulatory noncompliance. The objective of the management review is to identify management structure as it relates to facility environmental protection/compliance and identify any weaknesses or areas of concern that might inhibit effectiveness.

ON-SITE INSPECTION SUMMARY

The management review, conducted during the period August 2 through 12, 1993, consisted of interviewing 50 employees from a variety of professional levels and occupations within different divisions and groups of LANL, as well as reviewing the most recent environmental compliance and organization structural documents currently available.

This report is not a comprehensive overview of the organizational management systems currently used within LANL. The report is, however, a snapshot of how the current management systems are perceived by many of LANL's line managers and other staff employees. The information provided

should be useful not only to federal agencies interested in the operation and regulatory management of LANL, but also to LANL management as changes are made or contemplated regarding environmental management.

Historical Perspective

Since becoming operational in 1943, LANL has been operated by the University of California as the primary contractor, first for the U.S. Army, then the Atomic Energy Commission, the Energy Research and Development Administration, and finally, the Department of Energy. Historically, LANL was sheltered from governmental regulatory agencies by federal laws or policies due to the nature of its research and development activities of atomic and nuclear weaponry. In the mid- to late- 1980s, federal policy changes allowed both state and federal regulatory agencies to require LANL compliance with environmental, health, and safety regulations, and to conduct inspections/audits to ensure such compliance. LANL management admittedly has been slow to respond to these changes.

Because of the many years of exemptions from regulatory compliance, LANL developed a culture that placed a higher value on scientific research and development activities than on regulatory compliance and other management issues. A great amount of effort has apparently been expended by senior management to change this culture by educating the staff in their personal responsibilities regarding environmental, safety, and health issues. The success of these efforts is noticeable among upper- and mid-level management, but less so among lower managers and staff members. There remain pockets of resistance to any cultural values other than "pure scientific research." Such resistance can result in individuals and groups within the organization refusing to accept any personal responsibility in regards to regulatory compliance.

LANL historically operated within a very decentralized management system (i.e., the laboratory is broken down into directorates, divisions, groups and sections). Decentralization could result in strong loyalty to an individual's section or group, but not to LANL as a whole.

The LANL Environmental, Safety, and Health (ES&H) Self-Assessment Report, published in September 1991, and the DOE Tiger Team Assessment, conducted during the period September through November 1991, appear to have motivated many of the directors and other line managers to become actively involved in ES&H issues. The ES&H Self-Assessment, Key Finding/KF.1 states, "The Laboratory Director did not, until recently, become sufficiently involved personally in ES&H issues to provide the necessary leadership for the laboratory's ES&H initiatives." Since this time, the LANL director and his key line management staff have become actively involved in environmental and other regulatory compliance issues; however, it is taking some time for the remainder of the organization to respond to the changes. A Laboratory Environmental Compliance Program Task Force, which published its initial recommendations in April 1993, recently interviewed more than 100 individuals concerning every aspect of the laboratory's environmental compliance program. Many of the same types of problems and perceptions prevalent during the 1991 assessments still existed during the Task Force's review and the NEIC management systems review. LANL management plans to implement a new management organization in November 1993, which they believe will improve their ES&H compliance.

LANL Management Systems

NEIC evaluated the overall management system, and the environmental management system. Both management systems were evaluated under their current and proposed organizations.

Current Overall Management Organization

During the period of the NEIC management systems review, the LANL management structure was a vertical hierarchal organization with the Director responsible for overall line and programmatic management. He is supported by a deputy director, eight associate directors, a controller, a director of Human Resources, a laboratory counsel, and an executive staff director. The Public Affairs Office is also assigned to the director's office.

Associate directors manage the efforts of organizational units called divisions. Each division has a division leader, and the divisions are subdivided into groups, with each group having a group leader. Some of the groups are further subdivided into sections and they are run by section leaders. Due to the complexity of LANL's operations, other line managers, called program directors and program managers, are included within the management structure. Program directors are considered division level managers and program managers considered group level managers. In addition, some line management responsibilities may also rest with building landlords (usually division leaders selected for these positions by peers who occupy space in the same building), and construction project managers responsible for LANL construction safety. An organizational chart shows LANL's structure, through the group level, at the time of the NEIC inspection [Figure 1].

Proposed Overall Management Organization

During the NEIC Management Systems Analysis, LANL was initiating a restructuring under a program known as Continuous Quality Improvement (CQI). CQI appears to be very similar to the Total Quality Management (TQM) programs used within many federal facilities. Similar programs have

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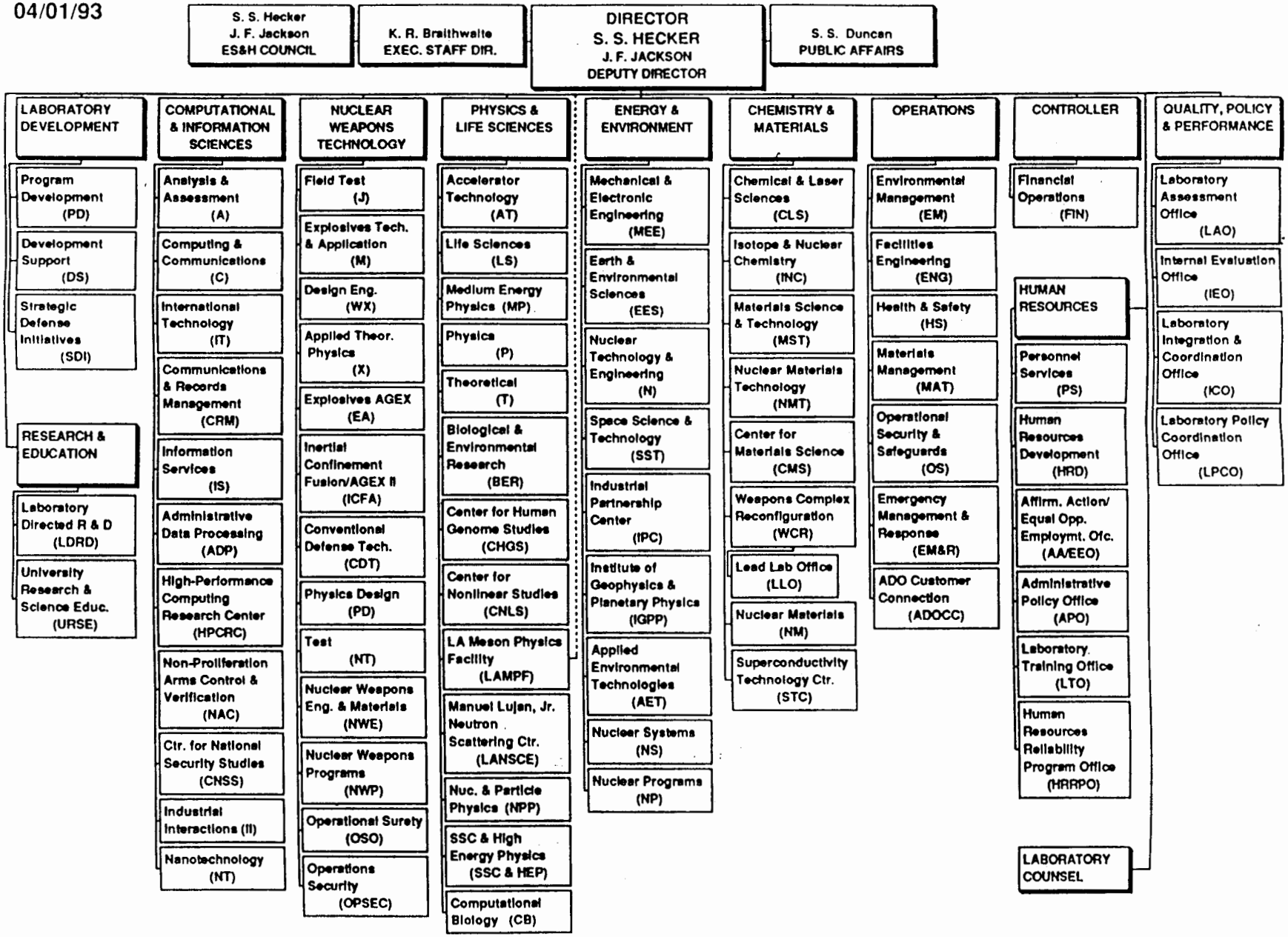

Figure 1

LOS ALAMOS NATIONAL LABORATORY ORGANIZATIONAL CHART
Los Alamos National Laboratory
Los Alamos, New Mexico

also been used by major corporations (e.g., Motorola, AT&T, Ford Motor Company, etc.).

Mr. Sig Hecker, LANL's Director, is committed to restructuring LANL utilizing the CQI system. Mr. Hecker stated in the July 23, 1993 edition of the Los Alamos Newsbulletin that "I have seen what can be done by organizations that truly empower their people and make quality an obsession." As part of the reorganization, the management structure will be flattened out. Two line management levels, the associate director and division director positions, will be eliminated. Under the new structure, 27 capability organizations will report directly to the LANL director's office. There will be 14 technical capability divisions, 4 support and operation capability divisions, and 9 program capability divisions. Groups will again be established within the divisions.

The director's office will include the director; deputy director; staff coordinator; deputy staff coordinator; and five functions: Public Affairs, Government Relations, Quality and Planning, Legal Counsel, and Internal Evaluations and Audits.

Under the restructured organization, senior management will include three councils; the Technical Council, a Management Council, and a Leadership Council. The functions of each are briefly described below.

- Major Technical Council functions will include establishing scientific, technical, and programmatic direction; reviewing and assessing programs; planning technical competencies; establishing and tracking metrics for technical performance; and establishing priorities and resolving conflicts.

- Major Management Council functions include reviewing and establishing operational and administrative policies; ensuring that LANL operates in a productive and cost effective manner; setting priorities and resolving conflicts; maintaining oversight of the indirect budget; and making laboratory-wide cross-cutting administrative decisions, as required.

- The Leadership Council will consist of all 27 directors and its major function will be to work with the director and deputy director on key policy issues that affect the entire laboratory.

During the NEIC management systems analysis, vacancy announcements for 23 of the 27 capability directors were published. Four of the positions were recently filled, and were not announced. Current associate directors and division leaders have to compete for the positions or revert to nonmanagement roles within LANL. After the new capability directors are hired, LANL's director anticipates using the month of October for management team building before the new directors assume their duties on November 1.

Under the restructuring model, some groups will be moved in total from one division to another to facilitate LANL's missions. It is anticipated that by shifting the entire group, delays or disruptions will be minimized.

Current Environmental Management

Environmental management is consistently grouped with safety and health management and referred to as Environmental, Safety & Health (ES&H), and every management level is assigned some form of ES&H responsibility. Senior managers serve on the ES&H Council which makes policy decisions in these areas. Divisions have ES&H officers, and many of the

laboratory organizations have ES&H committees to advise the appropriate managers on ES&H matters. Enforcement of and compliance with environmental regulations and policies is the responsibility of all levels of line management within the new organizational structure, with the ES&H council and LANL's director having ultimate responsibility and authority.

The Environmental Management Division functions within the Operations Directorate and is subdivided into four groups [Figure 2].

- Waste Management (EM-7) is responsible for collection, storage, treatment, and disposal of radioactive and hazardous wastes.

- Environmental Protection (EM-8) is responsible for conducting LANL's environmental and effluent monitoring programs; for providing environmental regulatory compliance expertise; and for developing environmental documentation, including permit application and NEPA documents.

- Health and Environmental Chemistry (EM-9) is responsible for providing analytical chemistry support to LANL's bioassay program, industrial hygiene program, waste management programs, and other environmental programs.

- Environmental Restoration (EM-13) is responsible for managing LANL's Environmental Restoration Program which is designed to identify potential threats to health and the environment from past waste disposal actions at the laboratory, and to mitigate those threats through corrective actions that comply with applicable environmental regulations.

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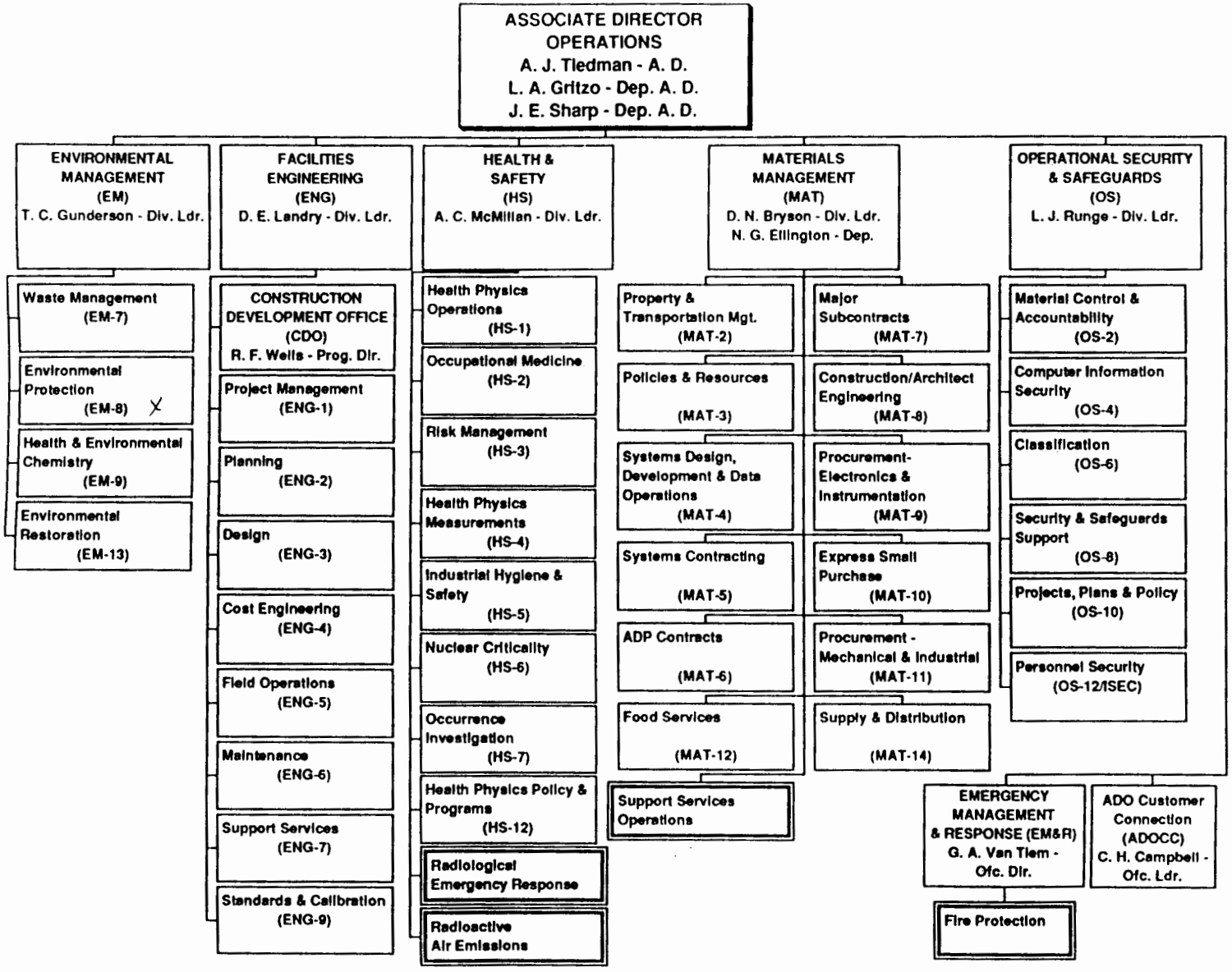

Figure 2

OPERATIONS DIRECTORATE ORGANIZATIONAL CHART
Los Alamos National Laboratory
Los Alamos, New Mexico

Another important aspect of LANL's environmental management program is handled by the Laboratory Assessment Office (LAO) which is a division of the Quality, Policy, and Performance Directorate. LAO sends out internal assessment/audit teams, one of which conducts environmental compliance assessments of various technical areas and programs within LANL. If regulatory compliance violations are discovered, the responsible division or group must prepare a corrective action plan (CAP) with milestones and deadlines, and is then held accountable for taking corrective actions. Due to limited resources, reported collective actions are not normally followed up on. If CAP milestones are not complied with, monthly reports are sent to the laboratory director.

Proposed Environmental Management

Under the planned reorganization model, the Environmental Management Division will no longer exist; however, the four environmental groups will remain intact. The groups will be separated and each group transferred to another division [i.e., the Waste Management Group (EM-7) will be moved to a Facility Operations Division which includes engineering and facility maintenance groups]. The Environmental Protection Group is being moved to the Operational Assurance Division. Present plans are for other groups within the division to be involved with some type of compliance actions or quality assurance. The basic functions of each group will remain the same, and environmental enforcement and compliance will remain the responsibility of line managers. It is anticipated that environmental audits will be one of the functions of the Internal Assessments and Audits organization within the director's office.

SUMMARY OF FINDINGS

The NEIC findings regarding LANL management systems are similar to those discussed in prior inspections, audits, and self assessments. Despite management's efforts, problem areas continue to be identified within LANL. Major problems are: the continued lack of individual accountability, a failure to establish effective laboratory-wide communications, and the lack of an effective system to ensure compliance with environmental regulatory requirements. Management systems are not static, and they were evolving during this review. One potential problem, under a proposed restructuring of LANL's management systems, is the disbursement of environmental management functions.

AREAS OF CONCERN

The following areas of concern were listed by LANL employees during the NEIC management systems review as they existed or were perceived to exist at that time. Most, if not all the concerns have been discussed in prior audits, inspections, and self assessments, but are still considered to exist as management problems. If solutions to some of the problems have been found or implemented, the word has not reached all the people interviewed or perhaps the proposed solution did not correct the problems. Whether restructuring LANL will correct any or all of the problems discussed remains to be determined. Virtually everyone interviewed felt that many of LANL's problems are less severe now than they were prior to the Tiger Team assessment. Most felt that LANL's upper level management was genuinely concerned with improving the management systems. However, LANL personnel felt many problems remain unsolved.

Problem areas identified with LANL management systems are discussed below:

Management Structure

- A major problem with the current and proposed management systems is the lack of one single organization that is responsible, and has the authority, to enforce environmental compliance. The Environmental Management Division is advisory, and there are so many levels of line management it is difficult to hold any one individual accountable for compliance.

- The Environmental Management (EM) Division functions at too low a level with the LANL hierarchy. Although the Operations Director can and may act in behalf of environmental management, elevating EM to an associate director position would demonstrate EM's importance within LANL, and could have a positive influence on environmental compliance.

Communications

- The present system of laboratory-wide communications is ineffective. Many employees, particularly those with ES&H responsibilities feel that they are "bombarded with paper." They claim to receive general policies, procedures, and regulatory orders and/or compliance information without clarification or clear direction on how they are to be implemented.

- Facility size and organization makes it difficult for employees to communicate with anyone outside their respective sections or groups.

Some long-time, nonsupervisory employees indicate that there is virtually no communication with management above the group level.

- Interpretation of policies and regulatory requirements is not centralized. Formal interpretations are hard to obtain and the process is time consuming. This results in unclear or conflicting interpretations within LANL as each division, group or section interprets a given regulation, policy, or order differently. Many employees rely on informal (grass roots) communication among their peers. This system frequently results in the wrong interpretations being spread to other groups or divisions.

- The failure of LANL to effectively communicate policies, orders, and regulatory requirements to individuals frequently results in misdirected work assignments, and unnecessary delays in completing projects while clarification or interpretations are being sought. The lack of effective communications is a drain on limited resources as work has to be redone due to unclear directions.

Accountability

- A central point has not been designated within LANL with accountability to ensure environmental compliance, thus, no one is held directly accountable. Employees at most levels within the LANL organization feel that if the group or section leaders are not sensitive to ES&H, and compliance is not stressed to the individual employees, the end result will be a lack of personal accountability.

- Employees believe that their performance standards do not clearly spell out management expectations. The standards need to be reasonable and fair, and manager/supervisors need to enforce them, identifying both

poor and superior performers. Many employees feel that managers do not fairly evaluate individual performance because the procedures are too cumbersome to discipline or discharge poor performers. "It is frequently easier to transfer or even promote a poor performer than it is to discipline or train one." Some employees feel that the laboratory also fails to recognize superior performance in any meaningful way.

- Senior managers and nonmanagement employees expressed concern over what they perceive as an unwillingness by lower level line managers to make decisions because the managers fear the consequences of such a decision. Lower level managers believe that, since the Tiger Team Assessment, accountability is at least being discussed, and that the lowest level of line management fears they will eventually be held accountable, even for good faith errors in judgment. It appears that lower level managers equate decision making with risk taking, and prefer to pass the decision making to higher levels of management.

Regulatory Compliance

- Senior management has not developed an effective oversight system to ensure full compliance with environmental regulations, orders, or policies. Compliance responsibilities and accountability have not been completely defined and communicated to all levels of line management.

  Line management is responsible for LANL operations, as well as compliance with environmental policies, regulations, and laws. This may cause a conflict of interest resulting in environmental issues having a lower priority in relationship to LANL's other functions. LANL management has decreed that the environmental management group's functions are advisory because there is no need for an "environmental

police force." Similarly, environmental managers and committees within the divisions or groups are advisors to line management. This lack of an independent enforcement group contributes to continuing environmental violations within the laboratory.

- Once a technical area has been audited, either by the LAO internal environmental audit team or an external agency (e.g., the DOE Tiger Team), the responsible LANL organization is required to comply with a Corrective Action Plan (CAP), which prioritizes the action, assigns a net benefit to cost index figure, and establishes dates for actions to be completed (milestones). Major concerns about this system are:

  - The LAO has only one environmental audit team to conduct environmental audits of technical areas within laboratory. With only one team, it may be 2 to 3 years between audits of any given technical area. This precludes timely follow-up audits of those areas certifying that violations listed in the CAP have been corrected. Independent verification is virtually nonexistent at present.

  - LANL assigns priorities to correcting violations. The priorities are determined based on many factors including seriousness of the violation, potential harm to the environment, and the net benefit to cost. If violations receive a low priority, considering budget constraints, it may be possible to delay correcting the problem indefinitely.

- There is concern that the independence and commitment to environmental compliance by the four environmental groups will be diluted under the restructuring plan, which eliminates the

Environmental Management Division and transfers these groups to divisions whose primary concerns are not environmental matters. Of particular concern was the transfer of the Environmental Protection Group to the Quality, Environment, Safety and Health Assurance Division along with some quality control and health and safety groups. It is perceived that current ES&H activities are health and safety oriented, and this division will be dominated by safety and health activities, resulting in environmental compliance being relegated to a secondary role within the organization.

- Historically, LANL tries to fix environmental problems without finding and correcting the causal factors or management systems that created or contributed to the problem.

- Because many line managers do not routinely perform walk-through inspections in areas under their control, and facility inspections by senior management are very rare, it is possible that false regulatory compliance information is being reported to line managers who have no verification system.

- Some building landlords and/or managers felt they were being pressured to enforce environmental compliance, but that they lacked any real authority to enforce regulatory or policy compliance by tenants of the building.

- Some line organizations claim they are committed to environmental compliance while others are not, and the key seems to be how committed individual managers are. It appears that environmental compliance efforts are personality-versus-organizationally driven.

- Trying to obtain timely and consistent interpretations of ES&H regulations was a major problem for many of the individuals interviewed. As a result, many divisions and/or groups were making their own interpretations. LANL has initiated a program of farming out environmental professionals from a central organization to technical divisions or groups. It is anticipated that these professionals will follow the policy and regulatory interpretations of the central organization, thus ensuring consistent interpretations and, thereby, improving environmental compliance.

- There were several complaints regarding long delays in getting hazardous waste analyzed by the Environmental Chemistry Group (EM-9). Environmental Management Division Leaders indicated that EM-9 is backlogged and that some analysis functions will soon be contracted out to other laboratories to alleviate the problem.

LANL Culture

- Although it is generally accepted that LANL has to comply with federal and state statutes regarding ES&H compliance, pockets of resistance to scientists spending their time on anything other than "pure research and development" still exists. Many individuals felt that regulatory compliance should be ensured by ES&H professionals who should be held accountable. There was a perception among some of the managers and support organizations that newer staff members were more likely to accept personal responsibility for regulatory compliance.

Training Programs

- It appears that many training opportunities are available to all employees through their divisions, groups, or other LANL training organizations. Some interviewees said that environmental compliance training should be better coordinated and that the quality of the training provided should be monitored by managers or other professionals to maximize the benefits of the training. Some groups actively pursue environmental training, are more knowledgeable, and are more likely to be in regulatory compliance than others.

Subcontractor Responsibilities

Overall feedback regarding subcontractors at LANL was positive. The only problem brought out during the interviews was directed toward the skilled craftsmen support provided by Johnson Controls World Services, Inc (JCI).

- In the past, the same work crews were used throughout a project, but JCI recently implemented a program of rotating its work crews. This means that workers are assigned to different projects each day. This makes it difficult to hold anyone responsible for substandard performance.

DOE/UC Interaction

Feedback from managers and employees of the University of California indicated that the relationship between the owner and operator of LANL has significantly improved since the Tiger Team assessment. Although time constraints did not permit many interviews with DOE employees, the discussions that were held supported the belief that DOE and UC have

established an equitable professional relationship. Some LANL employees felt differently, but they were a distinct minority.

POLLUTION PREVENTION

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico

Investigation Dates

August 2 through 12, 1993

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL). This report, one of a series, discusses pollution prevention issues at LANL.

REGULATORY SUMMARY

In the "Pollution Prevention Act of 1990," Congress declared the promotion of pollution prevention to be a national policy of the United States. EPA has a pollution prevention strategy, general guidelines, and objectives. The Hazardous and Solid Waste Amendments of 1984 (HSWA) previously mandated minimization of hazardous waste generation and land disposal by encouraging product substitution, recovery, recycling, reuse, and treatment.

HSWA has three waste minimization requirements that have been promulgated as regulations under RCRA. They are:

- Hazardous waste generators must submit waste minimization information as part of the biennial reports.
- Generators must certify on the manifest that they have a waste reduction program in place.
- Treatment Storage and Disposal Facilities (TSDFs) must certify, at least annually, that they have a waste reduction system in place.

LANL is both a generator and a permitted TSDF and is, thus, required to have a waste reduction program and to submit waste minimization information as part of their biennial reports. Any waste minimization issues

addressing RCRA requirements at LANL are presented in the RCRA media report.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager, LANL. Following a general discussion of environmental activities, a facility tour was conducted. Later, discussions were conducted with LANL personnel regarding waste minimization and pollution prevention.

Waste Minimization and Pollution Prevention

Waste minimization was discussed with EM-8 personnel as part of the Resource Conservation and Recovery Act (RCRA) discussions. NEIC reviewed the "Los Alamos National Laboratory Waste Minimization and Pollution Prevention Awarenss (sic) Plan" [Appendix A], prepared by Environmental Management staff. Pollution prevention opportunities were assessed by NEIC as part of other media inspections.

Current pollution prevention activities identified at LANL during the NEIC inspection are presented in Table 1. The majority of the current activities involve product substitution or elimination of use of certain materials. Potential pollution prevention opportunities were also identified [Table 2]. The current and potential pollution prevention opportunities identified during the NEIC inspection have been included on the "Federal Facility Pollution Prevention Summary" [Appendix B].

The Office of Federal Facilities Enforcement has prepared a "Pollution Prevention (P2) Opportunities Profile For Los Alamos National Laboratory" which is presented in Appendix C. This document was prepared as a tool to

assist in identifying and documenting pollution prevention opportunities at LANL.

SUMMARY OF FINDINGS

Based on inspection observations, discussions with facility personnel, and review of documentation, LANL has implemented some pollution prevention activities. For example, the conversion to water-based paints has reduced the emissions of volatile organic wastes emitted by LANL. Additional opportunities exist to reduce pollution, such as the consolidation of the numerous photographic laboratories. Other pollution prevention activities have been identified in the "Areas of Concern" section presented in the summary of findings in the individual media reports.

Table 1
CURRENT POLLUTION PREVENTION ACTIVITIES AT LANL
Los Alamos National Laboratory
Los Alamos, New Mexico

Activity	Pollution Prevention Initiative
Testing the use of water-based paint, instead of solvent-based paint, for road painting operations.	If successful, this will reduce major source of fugitive volatile organic compound (toluene and MEK) emissions.
Anti-freeze recycling	Reduces amount of used and amount of waste generated
When working with refrigeration systems, CFCs are captured for reuse or disposal.	Reduces amount of refrigerant used and amount of CFCs emitted
Solvent distillation	Reduces amount solvent used and amount of waste generated
Initiating a computerized inventory control system for purchasing chemicals	Reduces disposal of excess chemicals.
In 1991, spray guns were added above electroplating rinsewater tanks.	Reduces dragout, minimizes ion concentrations in rinsewater.
Some electroplating operations have either been discontinued or noncyanide plating baths have been substituted.	Reduces pollutant levels in wastewater and reduces hazardsous waste generation.
As mandated, LANL has attempted to change operations to eliminate or minimize the generation of mixed hazardous wastes.	Reduced generation and storage of mixed wastes.
Substitution of citrus based detergent, household cleaners (such as Fantastic™ or 409™), acetone, and ethanol for chlorinated solvents and Freon for cleaning and degreasing.	Reduces toxicity of waste and VOC emissions.
Discontinued use of five chemicals listed in New Mexico Air Quality Regulations as Toxic Air Pollutants. Chemicals discontinued include: osmium tetroxide, phosgene, ammonia, mineral oil mist, and sulfuric acid.	Reduces toxic air emissions.
Blueprint machine replaced with printer.	Eliminated waste stream of ink and solvent waste stream, acetone, and 1,1,1-trichloroethane, and contaminated rags
Replaced 1,1,1-trichloroethane with soap for vibrasonic removal of flux from microelectronics.	Reduces toxicity of hazardous waste generated.
Using Ultima Gold® and Opti-fluor® as the solvent in scintillation cocktails	Reduces generation of toluene and acetone

Table 2

POTENTIAL POLLUTION PREVENTION ACTIVITIES
Los Alamos National Laboratory
Los Alamos, New Mexico

Activity	Pollution Prevention Opportunity
Painting	Use water-based or lower VOC paints.
Paint stripping	Eliminate all nonessential paint stripping operations. Increase use of mechanical paint strippers in contained areas.
Solvent degreasing	Recycle halogenated solvents on-site. Reduce the number of different solvents in use. Reduce the number of experiments or the amounts of solvents. Change to citrus-based or less toxic solvents or detergent-based degreasing.
Photo development	Consolidate photo development areas, increase number of silver recovery units where appropriate. Eliminate outfalls where spills of photographic processing chemicals could be discharged directly to the environment.
Oil/water separation	Implement a formal inspection and maintenance program for all oil/water separators.
Soldering	Where feasible, replace lead solder flux with silver flux, which can be reclaimed.
Cleaning with solvents using paper wipes	Segregate wipes contaminated with solvent from oily wipes (some areas inspected within LANL were doing this already). Use less toxic solvents or soap.
Discharge of industrial and sanitary wastewater	Quantify and reduce environmental impact from direct discharges of industrial and sanitary effluent through pretreatment.

APPENDICES

A Los Alamos National Laboratory Waste Minimization and Pollution Prevention Awareness Plan

B Federal Facility Pollution Prevention Summary

C Pollution Prevention Opportunities Profile for Los Alamos National Laboratory

APPENDIX A

LOS ALAMOS NATIONAL LABORATORY WASTE MINIMIZATION AND POLLUTION PREVENTION AWARENESS PLAN

LA-UR 92-1306

Los Alamos National Laboratory is operated by the University of California for the United States Department of Energy under contract W-7405-ENG-36

TITLE Los Alamos National Laboratory Waste Minimization and Pollution Prevention Awarenss Plan

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Environmental Management Division

SUBMITTED TO

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Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Los Alamos National Laboratory Waste Minimization and Pollution Prevention Awarenss Plan

by
Hilary Noskin

June 1992

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EXECUTIVE SUMMARY

The Los Alamos National Laboratory (LANL) Waste Minimization and Pollution Prevention Awareness Plan is prepared by the Waste Minimization Program Office (WMPO) in the Environmental Management Division Office (EM-DO). This plan is required by Federal, State and DOE regulations, including DOE Orders 5400.1, 5400.3, and 5820.2A.

The LANL Waste Minimization and Pollution Prevention Awareness Plan establishes the LANL Waste Minimization and Pollution Prevention Awareness Program. This plan discusses those activities and methods to reduce waste generation at LANL, and incorporates the objectives of the WMPO to promote an effective and comprehensive program at LANL.

This plan is based on a format for Waste Minimization Plans issued complex-wide through the Implementation Guidance for DOE Order 5400.1. Therefore, pages 5 through 21 contain general information that is standard across the complex. Specific information, directly related to LANL operations, is provided in Appendixes A, B, C, and D.

I. INTRODUCTION/BACKGROUND

A. Purpose. The purpose of this plan is to establish the Los Alamos National Laboratory (LANL) Waste Minimization and Pollution Prevention Awareness Program. The plan discusses those activities and methods that will be employed to reduce the quantity and toxicity of waste generated at the site. This plan will be in accordance with all federal, state, and Department of Energy (DOE) requirements. The Pollution Prevention Awareness Program is included with the Waste Minimization Program as permitted by DOE Order 5400.1. Major requirements are discussed in paragraph C.

B. Scope. A waste minimization program is an organized, comprehensive, and continual effort to systematically reduce waste generation. The Waste Minimization and Pollution Prevention Awareness Program is designed to eliminate or minimize pollutant releases to environmental media from all aspects of the Laboratory's operations. Included are methods of reducing hazardous chemical waste, transuranic waste, low-level radioactive waste, radioactive liquid waste, mixed waste, and sanitary/industrial waste. This program offers increased protection of public health and the environment and yields the following additional benefits:

1. Reduces waste management and compliance costs,

2. Reduces resource usage,

3. Improves product yields,

4. Reduces or eliminates inventories and releases of hazardous chemicals reportable under the Emergency Planning and Community Right-to-Know Act, and

5. Reduces or eliminates civil and criminal liabilities under environmental laws.

The program reflects the goals and policies for waste minimization of the Laboratory, and represents an ongoing effort to make pollution prevention/waste minimization part of the Laboratory's operating philosophy.

The objective of the waste reduction effort at the Laboratory is to identify ways that minimize the quantity of waste being generated. The methods that the Laboratory uses includes the following:

1. Process modification and materials substitution to reduce or eliminate waste at the source;

2. General principals of abatement, housekeeping and segregation, and reuse and recycling to minimize the waste generated;

3. Education, training, communication, technical bulletins, procedure, and policy changes, and publicity to implement change;

4. Specific principles of purchasing discipline and procedure reviews to prevent problems;

5. Information data bases to identify solutions to the problems; and

6. Design reviews, waste tracking, prioritization, and Waste Management Coordinator input to identify and anticipate problems in advance.

The plan is a reference tool and guidance document for managers, operations personnel, and support staff. It contains the policy, objectives, strategy, and support activities of the Waste Minimization and Pollution Prevention Awareness Program. Waste minimization goals, the development of waste generation baseline information through waste minimization assessments, and a process for continual evaluation of the program are primary elements of the plan. Various waste minimization techniques will be implemented with the support of employee training and awareness programs to reduce waste and still meet the requirements for quality, productivity, safety, and environmental compliance.

This plan applies to all LANL operations and associated support operations. This plan will be reviewed annually and revised a minimum of every three years.

The Plan has been distributed to affected employees and site contractors, and the policy, goals, objectives, and strategy of the plan have been explained to all employees.

C. Legal and policy Background. The Resource Conservation and Recovery Act (RCRA) requires hazardous waste generators to establish a program to reduce the volume or toxicity of waste to the degree determined by the waste generator to be "economically practicable." Hazardous waste generators must certify in their waste manifests that this requirement has been fulfilled. Generators must also identify in their biennial reports to the Environmental Protection Agency (EPA) the efforts undertaken during the year to reduce the volume and toxicity of waste generated and the changes in volume and toxicity actually achieved. Waste generators also have the option to report waste minimization results in their

annual submission of toxic chemicals release inventories to EPA. RCRA reauthorization, new toxic release reporting, and the Pollution Prevention Act of 1990 make the federal requirements for waste minimization more stringent. In addition, the State of New Mexico is a regulatory authority and has primacy over RCRA regulations. This plan will comply with all federal and state reporting requirements.

DOE Orders 5400.1, 5400.3, and 5820.2A mandate that the management of radioactive wastes and other pollutants shall be accomplished in a manner that minimizes the generation of such wastes.

DOE Order 5400.1 establishes environmental protection program requirements and responsibilities for ensuring compliance with environmental protection laws. The order requires the establishment of a Waste Minimization Program "that will contain goals for minimizing the volume and toxicity of all wastes that are generated" and a Pollution Prevention Awareness Program. The Waste Minimization Program and the Pollution Prevention Awareness Programs are to be established through implementation plans. The implementing guidance permits the two programs and implementation plans to be consolidated.

DOE Order 5400.3 establishes DOE hazardous and radioactive mixed waste policies and requirements and implements the requirements of RCRA within the framework of the environmental programs established under DOE Order 5400.1. The order states that it is DOE policy to "implement waste minimization measures as specified in RCRA for hazardous and radioactive mixed wastes." The order requires the heads of field organizations to "implement a waste minimization program for hazardous and radioactive mixed wastes."

DOE Order 5820.2A establishes policies, guidelines, and minimum requirements by which DOE manages its radioactive and mixed waste and contaminated facilities. It states that the "generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and Local environmental, safety, and health laws and regulations and DOE requirements." The order requires the preparation of a waste management plan for each site that generates, treats, and stores, or disposes of DOE wastes. The elements of the waste management plan are incorporated into the site-specific plan, which "will

indicate actions to minimize hazardous waste generation" as specified in the order.

DOE Order 5820.2A contains specific waste minimization requirements for management of high level, transuranic, and low-level waste. These requirements include process modification process optimization, and materials substitution.

DOE has instituted a "Waste Reduction Policy Statement." The policy consolidates the requirements of DOE Orders 5400.1, 5400.3 and 5820.2A for either a waste minimization or a waste reduction plan and attaches guidance for satisfying the reporting requirements of those orders. The statement adopts the hierarchical approach to waste reduction and applies the policy to all types of waste. The policy requires waste reduction to be a "prime consideration" in research activities, process design, and facility design and operations.

D. Mission and Site Description. Los Alamos National Laboratory (LANL) is owned by the U.S. Government, which co-operates the facility with the University of California, the prime contractor for those operations involving waste generation and management. The prime contract is administered by the DOE Albuquerque Operations Office, through the DOE Los Alamos Area Office. Johnson Controls Incorporated (JCI) provides the major support work for the Laboratory and generates waste from it's own operations.

The Laboratory comprises 43 square miles in north-central New Mexico (See Appendix A) and employs approximately 12,000 people. The principal mission of the Laboratory is the design and development of weapons for the nation's nuclear arsenal. In addition, considerable research and development is directed toward developing the peaceful uses of nuclear energy, including research on fission reactors, nuclear safeguards, laser fusion, and medium energy physics. Extensive basic research programs in physics, chemistry, metallurgy, mathematics and computers, earth sciences, and electronics support these efforts. Biomedical and environmental research programs include programs in molecular biology, radiobiology, radioecology, and industrial hygiene. Expansion into nonnuclear areas is represented by applied technology development of solar and geothermal energy and superconducting power transmission lines. The facilities that eventually became LANL were originally constructed in the middle 1940's.

LANL is committed to environmental protection, and responsible waste management. As a result, waste

minimization is given top priority while waste management and corresponding activities are carefully controlled.

II. RESOURCES

A. Program Budget. In Appendix B, the Los Alamos National Laboratory Annual Waste Reduction Report, the budget for the Waste Minimization and Pollution Prevention Awareness Program itemizes the funds allocated in the program.

B. Personnel. The number of full-time and part-time employees assigned is described in Appendix B.

III. POLICY

A. Statement of Management Support/Commitment. The Senior Laboratory Management and the Waste Minimization Program Office (WMPO) are totally committed to minimizing the generation of waste by giving preference to source reduction, material substitution, and environmentally sound recycling over treatment, control and disposal of such wastes. Senior management will take appropriate action to provide adequate personnel, budget, training, and material on a continuing basis to ensure that the objectives of the Waste Minimization and Pollution Prevention Awareness Program are met. Evidence of this commitment is a written Directors Policy (DP105) that establishes the Waste Minimization Program at LANL. DP105 as presently approved is shown in Appendix D. A draft of a revised Directors Policy, with increased emphasis on Waste Minimization is also shown in Appendix D. This revised Directors Policy is currently being reviewed.

B. Relevant Site Directives or Guidance. Waste Minimization techniques will be included in all relevant standard operating procedures for waste generating activities at LANL. The Administrative Requirements (as noted in the LANL Environment, Safety, and Health Manual) directing Waste Minimization and Waste Management are:

10-1 Radioactive Liquid Waste
10-2 Low-Level Radioactive Solid Waste
10-3 Nonradioactive Chemical Waste
10-4 Polychlorinated Biphenyls
10-5 Transuranic (TRU) Solid Waste
10-7 Excess Government Personal Property
10-8 Waste Minimization

IV. STRATEGY, OBJECTIVES, AND GOALS

A. Strategy. A waste minimization program has been developed to obtain accurate and current information on

waste stream generation and waste management cost which provide the basis for the implementation of specific waste minimization techniques and technologies. The program develops methods for collecting information, evaluating options, and identifying cost-effective waste minimization techniques. The essential elements of the strategy are to (1) maintain an organization that comprises line and staff representatives who develop and administer the waste minimization program, (2) define targets of waste to reduce, and (3) develop a method for tracking the performance and progress of the program.

B. Program Objectives. The objectives of the Waste Minimization and Pollution Prevention Awareness Program are the following:

1. Foster a philosophy to conserve resources and create a minimum of waste and pollution in achieving Laboratory strategic objectives. Promote the use of nonhazardous materials in plant operations to minimize the potential risks to human health and the environment. Reduce or eliminate the generation of waste materials through input substitution, product reformulation, process modification, improved housekeeping, and on-site closed-loop recycling to achieve minimal adverse effects on the air, water, and land.

2. Enhance communication of waste minimization objectives, goals, and ideas among site organizations. Promote integration and coordination of waste generators and waste managers on waste minimization matters. Characterize waste streams and develop a baseline of waste generation data.

3. Identify and implement methods and technologies for waste minimization. Target policies, procedures, or practices that may be barriers to waste minimization.

4. Create incentives for pollution prevention.

5. Develop and implement employee pollution prevention awareness and occupational training programs. Collect and exchange waste minimization information through technology transfer, outreach, and educational networks. Develop mechanisms for fully disseminating current technical information to Laboratory users.

6. Enhance employee awareness of pollution prevention goals.

7. Develop reasonable goals and schedules for waste minimization activities.

8. Comply with federal and state regulations and DOE requirements for waste minimization.

C. Goals. Appendix B includes those qualitative and quantitative milestones for the Waste Minimization and Pollution Prevention Awareness Program. These goals include numerical reduction and programmatic milestones for a comprehensive program. LANL has an overall waste reduction goal of 20% over three years. In addition, waste reduction goals for specific activities include: 20% through administrative controls and process modifications due to PWAs, 20% LLW through segregation, 40% through chemical recycle, 60% through solvent substitution and recycle, and 75% in electroplating wastes through process modification.

D. Schedule of Activities. A schedule of waste minimization activities and milestones is presented in Appendix B, and Appendix C, the Process Waste Assessment Plan.

V. ORGANIZATION AND STAFF RESPONSIBILITIES

The Environmental Management Division (EM-DO) has primary responsibility for the management of the Waste Minimization Program. The Director and the staff in support of the DOE field or Operations Office have general oversight and implementation responsibility of the program.

The waste minimization organization consists of the Waste Minimization Program Office (WMPO) of EM-DO and the Waste Management Coordinators that are assigned within each waste generating group. This core organization is supported by the Laboratory Training Office and personnel from other HS/EM groups (Figure 1).

The minimization goals of the WMPO are to provide every generating group with a base of technical knowledge in waste minimization, waste management, appropriate procedures, to identify applicable problems, and appropriate solutions in waste minimization and waste management.

The WMPO also interfaces with generators to anticipate changes that arise from program changes, emerging technologies, changing disposal requirements, and regulatory changes. From this proactive position, the WMPO will continue to identify waste minimization opportunities.

The program organizational structure is designed to maximize the dissemination and collection of waste minimization information and provide waste generating organizations with managerial responsibility for the development, design, construction, and implementation of waste minimization projects.

A. Waste Minimization Program Office. The WMPO charter includes oversight of administrative and technical methods for waste minimization, segregation, and education. Team members take the necessary steps to change procedure and policy, when required. They provide waste management overview and guidance for administrative efforts dealing with waste generation, disposal, and minimization.

The WMPO develops educational and training materials and teaches some of the waste management and minimization courses. This educational process includes formal classroom settings, informal briefings to generating groups and Waste Management Coordinators, and individual sessions for solving specific problems. Team members also develop and distribute technical bulletins on waste minimization and other pertinent information. The WMPO maintains the electronic data base required to supply the technical information needed for process changes and substitutions.

The responsibilities of the WMPO include:

- Serve as the Site Waste Management Coordinator
- Defining the objectives of the waste minimization program in accordance with this plan,
- Obtaining waste generator support and input for the program,
- Facilitating integration and coordinated interaction between waste generators and waste managers on waste minimization matters,
- Establishing waste minimization goals and objectives,
- Sponsoring ongoing employee awareness and training,
- Coordinating program participation by represented areas,
- Prioritizing waste streams or facility areas for assessment,
- Assisting teams to conduct process waste assessments,

LANL Waste Minimization Hierarchy

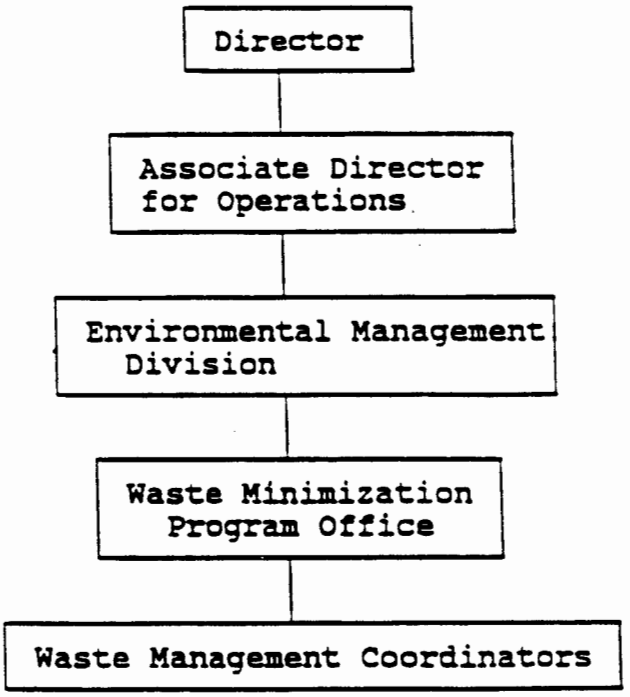

Figure 1

- Recommending and ranking options for management implementation,

- Monitoring performance of waste minimization options that have been implemented and evaluating performance accordance to success criteria,

- Monitoring and reporting progress of the waste minimization program, utilizing audits and monthly reviews,

- Recommending personnel for achievement and incentive awards, and

- Facilitating technology transfer and pollution prevention awareness.

B. Waste Minimization Steering Committee. A permanent committee will be established to define an effective waste minimization system and oversee the waste minimization program. The committee will be composed of senior representatives from line and staff organizations that have a significant interest in the results of the program. The members of the committee will be appointed by the Laboratory Associate Directors. The LANL Waste Minimization Coordinator (a member of the WMPO) will chair this Committee.

The primary functions of the Waste Minimization Committee will include: providing employee awareness of the Waste Minimization and Pollution Prevention Awareness Program, identifying tasks which help to implement the program, and providing a mechanism for inter- and extra-laboratory communication regarding waste minimization. This Committee will have oversight of the WMPO and work in conjunction with the WMPO.

C. Waste Management Coordinators. Each waste generating group must provide a coordinator who is the focal point of waste minimization and waste management within the group.

Waste management coordinators need to know the processes and systems that generate waste within their groups. HS provides coordinators with additional training to enhance their ability to minimize and manage waste. Coordinators are encouraged to review their operations in detail and find specific ways to reduce waste on an ongoing basis.

VI. COST ACCOUNTING

A cost accounting system will be devised that accounts for the "true cost" of waste that is generated at the Laboratory and permits meaningful reviews and audits to be conducted. The system will calculate the short- and long-term costs arising from (1) under utilization of raw materials found in the waste stream, (2) management of the wastes that are generated, (3) waste disposal, and (4) third-party liabilities if the waste is improperly disposed of. Associated costs will include personnel, recordkeeping, transportation (including on-site movement), pollution control equipment, treatment, storage, disposal, liability, compliance, and oversight costs. Currently, the WMPO provides informational bills to waste generating groups which includes comparative waste generation volume data. By September, 1992, the bills should also include waste disposal cost information. Appendix B, Figure 3, shows cost accounting milestones.

VII. PROCESS WASTE ASSESSMENTS

Process Waste Assessments (PWAs) will be conducted as part of an ongoing program to identify, screen, and analyze options to reduce the generation of waste. A process waste assessment determines the amount of material in a workplace that is disposed of as waste during work operations. It provides a summary of hazardous materials usage and waste production and identifies those processes and operations that need to be improved or replaced to promote waste minimization. The assessment provides a basis for prioritizing the specific modifications to site processes or other waste minimization options that are developed during the assessment.

Assessments of all waste-generating operations at the site will be performed by Process Waste Assessment Engineering Teams organized by the WMPO. The leader of each team will be an intermediate-level manager who has line responsibility, familiarity with the site's production and waste management operations, and proven technical and problem-solving abilities.

The remainder of each assessments team will be drawn from line, staff, or subcontractor organizations, who can furnish the types of specialized expertise that will be needed to conduct the assessment.

The WMPO will determine the priority of site operations to be assessed. Each Waste Assessment Team will develop process area flow diagrams, material balances, process descriptions, and waste stream characterizations for the assigned assessment area. Guidance found in the <u>Waste Minimization</u>

Guidance for Process Waste Assessments and EPA Manual for Waste Minimization Opportunity Assessments will be used in conducting the assessments. Completion of the flow diagrams, material balances, and related narratives will permit the identification process inefficiencies that may be modified or corrected to reduce waste generation. These waste minimization opportunities will be evaluated and identified with specific projects, which when implemented will reduce the volume and toxicity of the waste streams. Each team will report the data and findings from its assessment and recommend options for waste minimization. In identifying waste minimization options, the Waste Assessment Teams will concentrate first on source reduction options, followed by recycling technologies.

The WMPO has developed a methodology to provide generator ownership of Process Waste Assessments that meet the needs of a dynamic laboratory environment that exists at LANL. This methodology will allow the Process Waste Assessment Engineering Teams to train and work with the generator so that the PWAs can be done on an ongoing basis. In addition, the methodology includes a database with a graphical interface to provide the user with a process modeling tool. Appendix C, the Process Waste Assessment Plan includes milestones and goals for the initiation of PWAs at LANL. The initial database was developed in October, 1991.

VIII. WASTE MINIMIZATION TECHNIQUES

Waste minimization includes those activities that minimize or eliminate the generation of waste and recycling processes that use, reuse, or reclaim a material from a waste stream. Some activities commonly thought to be waste minimization are waste treatment. The following activities are not considered waste minimization:

1. Transfer of hazardous constituents from one environmental medium to another.

2. concentration conducted solely for reducing volume.

3. Dilution as a means of toxicity reduction, unless later recycling steps are involved.

If the activity is to make the material more amenable for disposal (e.g., reduce volume or toxicity before storage or disposal) then the waste is being treated, not minimized.

Techniques that are appropriate for particular types of waste are described in Appendix B. The following waste minimization techniques will be employed to minimize the generation of waste.

Inventory Management. Current methods to control the types and quantities of materials in the site inventory will be reviewed. Where necessary, inventory control techniques will be revised or expanded to reduce inventory size and hazardous chemical use while increasing inventory turnover. In particular, inventory control techniques will be used to reduce waste resulting from excess, out-of-date, and no-longer-used raw materials. Similarly, material controls will be revised or expanded to reduce raw material and finished product loss and damage during handling, production, and storage.

The inventory management techniques will be applied to waste material as well as to raw materials and finished products.

The review of inventory management techniques will include a study of how existing inventory management procedures can be applied more effectively, whether new techniques should be added to or substituted for current procedures, the need for review and evaluation approval procedures for the purchase of materials, and the need for additional employee training.

Operational Procedures. The generation processes within the site will be examined to determine whether significant reduction of waste at its source can be achieved by improvements in process efficiency. Operating procedures are be examined to determine whether the elimination or revision of SOPs can contribute to the reduction of waste. The revision and review of operating procedures will be fully documented and incorporated as part of the site's employee training program. In addition, the WMPO will participate in the LANL Environmental, Safety and Health Questionnaire Committee to review projects and plans prior to initiation. This will allow potential generators to include waste minimization in the conceptual design phase of a project.

Maintenance Program. The site equipment maintenance program will be reviewed to determine whether improvements in corrective and preventive maintenance can reduce waste generation caused by equipment failure. The methods for maintenance cost tracking and preventive maintenance scheduling and monitoring will be examined.

A determination will be made as to whether maintenance procedures are contributing to the production of waste in the form of process materials, scrap, and cleanup residue. The need for the revision of operational procedures, equipment modification, source segregation, and recovery as they apply to maintenance will be examined.

Material Change and Process Equipment Modification. The replacement, reformulation, reduction, or elimination or hazardous material sin production, maintenance, and cleaning

processes will be examined. The effect of waste reduction by the installation of new equipment or the modification of existing equipment will be considered. Techniques, such as segregation, to separate hazardous wastes and recoverable wastes from the total waste stream will be explored.

Recycling and Reuse. The recovery of wastes will be used as an option in the waste minimization program after first considering reducing the amount of waste generated at the source. Opportunities for reclamation and reuse of waste materials will be explored whenever feasible. Decontamination of tools, equipment, and materials for reuse or recycle will be used to the extent practicable to minimize the amount of waste for disposal.

IX. TRAINING, AWARENESS, AND INCENTIVES

A. Training Goals. One of the most important elements of the Waste Minimization and Pollution Prevention Awareness Program is training. The training program includes all levels of personnel within the site. The goal of the training program will be to make each employee aware of waste generation, its impact on the site and environment, and ways waste can be reduced and pollution prevented.

B. Employee Orientation Program. A waste minimization and pollution prevention awareness orientation program is established and is integrated into the General Employee Training (GET) orientation program for all employees. The orientation program will include the following elements:

- The need for, and benefits to be derived from, waste minimization and pollution prevention;
- The contribution each employee can make to an improved working and living environment;
- Management commitment to waste minimization and site waste minimization policy;
- Improved operation practices for reducing waste generation; and
- solicitation of waste minimization and pollution prevention ideas and the discussion of solution to identified problems.

C. Specialized Training Program. Specialized training sessions on pollution prevention policy and procedures and waste minimization techniques will be tailored for management, line, and staff position. These sessions will be incorporated into the regularly scheduled

training program. The adequacy of training procedures and of any special equipment needed to perform waste minimization functions will be evaluated annually by the WMPO.

D. Procedures Qualification. As part of quality assurance (QA), certain employees are required to be trained and examined on their knowledge of site SOPs prior to performing work. Waste minimization will be incorporated into operating, administrative, and waste procedures requiring documentation using data sheets or forms. Training on waste minimization, therefore, will also be conducted as part of the QA procedures qualification process.

E. Performance Evaluation. Waste minimization goals, objectives, and accomplishments will be incorporated into annual evaluations of job performance for those persons who have waste minimization responsibilities. These evaluations will be done annually, according to written procedures which include QA review.

F. Pollution Prevention Awareness. The Pollution Prevention Awareness Program required by DOE Order 5400.1 has been incorporated with the Waste Minimization Program. The purpose of the Pollution Prevention Awareness Program is to foster the philosophy that prevention is superior to repudiation. The goal of the program is to incorporate pollution prevention into the decision-making process at every level throughout the organization.

The Pollution Prevention Awareness Program has the following objectives:

- Make employees aware of general environmental activities and hazards at the site and waste minimization program requirements, goals, and accomplishments;
- Inform employees of specific environmental issues;
- Train employees on their responsibilities in pollution prevention;
- Recognize employees for efforts to improve environmental conditions through pollution prevention;
- Encourage employees to participate in pollution prevention;
- Publicize success stories.

The program consists of four elements: (1) Pollution Prevention awareness campaign, (2) Awards and recognition, (3) Information exchanges, and (4) Training.

The Pollution Prevention Awareness Campaign will be conducted at least once each year. It will be developed by the Waste Minimization Committee.

The Campaign will make extensive use of site newsletters, seminars, bulletin boards, signs, and slogans to enhance employee awareness of and participation in pollution prevention at the site.

The remaining elements of the Pollution Prevention Awareness Program are described in other sections of this plan. Incentive Awards and Recognition are discussed in Paragraph G. Information exchange is discussed in Section XII. Training has been discussed in Section IX, Paragraphs A through D.

G. Incentive Awards and Recognition. There is a Waste Minimization Employee Award Program at LANL. This program was initiated in October, 1991 and first awards will be given by the end of Fiscal Year 1992. Details on training and awareness milestones are shown in Figure 3, Appendix B.

X. TRACKING AND REPORTING SYSTEMS

A. Tracking From Point of Generation to Point of Disposition. A computerized tracking system will be developed to identify waste reduction opportunities and provide essential feedback to successfully guide future efforts. The system will identify program resource requirements and report cost benefits realized from implementation of waste reduction projects. The data collected by the system will be used for internal reporting and to meet external reporting requirements discussed in Paragraph D.

The system will track waste from point of generation to point of final disposition. The system will also permit the tracking of hazardous materials from point-of-site entry to final disposition ("cradle to grave") to comply with environmental regulations and reporting requirements. The system will collect data on input material, material usage, type of waste, volume, hazardous constituents, generating system, generation date, waste management costs, and other relevant information. A method will also be developed to track materials that are being recycled or reclaimed and volumes of wastes eliminated due to waste minimization efforts.

B. Procurement Control Systems. Procedures for control and purchase of hazardous chemicals or other material will be reviewed to determine whether improvements in those procedures will aid in the achievement of waste minimization goals. The tracking system described in Paragraph A will be used to track the purchase and usage of hazardous materials.

C. Program Activity Tracking. A computerized system will be developed to provide feedback on the progress of the Waste Minimization and Pollution Prevention Awareness Program, including the results of waste minimization technologies and other implemented waste minimization options.

D. Federal and State Reporting Requirements. Tracking systems developed under this program will be designed to facilitate reporting waste minimization data and accomplishments to the Department of Energy, Environmental Protection Agency, and New Mexico Environmental Department.

XI QUALITY ASSURANCE

Guidance implementing DOE Order 5820.2A stresses the requirement and need for quality assurance in conducting waste reduction activities. It indicates that waste reduction programs are required to "retain an appropriate level of documentation and accountability. The documentation of these programs should be designed to satisfy all requirements of the Waste Operations Quality Assurance Program at each field office."

A. Quality Assurance Program Plan. The proper documentation of waste minimization activities is critical to attaining an adequate level of confidence that the requirements of the DOE orders requiring minimization of waste are being met. A QA program plan will be developed for the Waste Minimization and Pollution Prevention Awareness Program as required for all programs by DOE Order 5700.6B and WMP 2.3.1. "Development of Quality Programs/Project Plans." The plan will be consistent with the Waste Operations Quality Assurance Program of Albuquerque Operations Office. The plan will specify documentation that will enable verification of data reported in manifests and biennial reports, and ensure that the character of all wastes can be verified and traced to their source. QA personnel will have yearly input to the program evaluation process. This process will be in place by September, 1992.

B. Quality Assurance Training. Site QA training will be revised to include waste minimization procedures and documentation. As discussed in Section IX, Paragraph D,

the QA procedures qualification process will include training and qualification on waste minimization procedures.

XII TECHNOLOGY TRANSFER AND INFORMATION EXCHANGE

All program staff are encouraged to make regular use of the EPA database (PIES) and the WIN system. The Waste Minimization Committee will foster participation in business, education, and government forums that are designed to provide technical assistance and exchange waste minimization information. Involved individuals will attend the semiannual DOE Workshop on Waste Minimization and to regularly participate in the New Mexico Hazardous Waste Management Society conferences.

The transfer of federally developed technology between laboratories and potential users is a contractual responsibility of DOE facilities and laboratories. Activities involving technology transfer should be coordinated through the office or committee within the facility that has been designated to represent the facility on the Federal Laboratory Consortium (FLC) for Technology Transfer. The consortium promotes technology transfer through links to the public and private sectors and through support services such as training and assistance in implementing partnership opportunities (e.g., cooperative agreements and patent licensing). Opportunities for transfer of technologies specific to waste minimization programs may develop from information exchange systems, workshops, or topical conferences. Direct exchanges of process technology between facilities are encouraged, but the support services of FLC should be used where appropriate. Technology projects that are identified and implemented should be coordinated with the Headquarters' Office of Technology Development. The WMPO team personnel regularly attend and present papers at off-site technical conferences. In addition, the research atmosphere of LANL promotes development of new technologies. The WMPO team acts as a liaison between those in fields with practical problems and those who develop solutions.

Information exchange at seminars, conferences are enhanced with monthly articles in the employee Newsbulletin.

XIII RESEARCH AND DEVELOPMENT

Proposals for research and development (R&D) would be expected to arise from the WMPO evaluation and ranking of waste minimization options. Some options may require development work before being implemented. The assessment may also identify process inefficiencies that offer the

potential for significant waste reduction, but specific process modifications may require R&D work before implementation can be scheduled. Budget requests should include support for appropriate R&D. Specific proposals for R&D work would be coordinated through Operations Office and the Office of Technology Development at Headquarters to ensure effective allocation of resources. Activities involving technology transfer are reviewed and approved within LANL to maintain coordination through the Federal Laboratory Consortium.

XIV PROGRAM EVALUATION

The Waste Minimization and Pollution Prevention Awareness Program will be evaluated annually. All major activities will be reviewed. The evaluation will document program achievements and identify potential areas for improvement. QA personnel will have performed the final quarter of the fiscal year.

Generally, the evaluation of potential waste reduction techniques is performed by those who eventually apply the techniques. The WMPO team will do some preliminary testing to eliminate particular technologies if it is determined that those technologies are not applicable to LANL waste problems. However, most waste reduction techniques are application-specific and evaluation by the user is much more reliable than evaluation solely by the WMPO team. The techniques and their application. An audit of the 1990 Waste Minimization Program was done by a private contractor. Those issues raised have been addressed in the 1991 plan.

The following success criteria will be used to demonstrate the effectiveness of waste minimization efforts:

1. Reduced amount of hazardous waste,
2. Reduced amount of all waste,
3. Reduced waste management costs,
4. Improved regulatory compliance,
5. Reduced health risks,
6. Improved public relations, and,
7. Increased production efficiency.

The WMPO team will address these criteria when evaluating the success of process or their changes to achieve waste volume or toxicity reductions. An accurate assessment for each of the appropriate criterion will be provided in evaluating the

success of each waste minimization option that has been implemented.

The report will be made to the Laboratory ES&H Council and Director and will contain current-year data, performance trends, forecasts, and measures used to gauge the performance of waste minimization activities. The evaluation report will be used to establish future waste minimization goals and program objectives. The report will also be used to determine changes to this plan.

Procedures for a Waste Minimization program evaluation was drafted by 9/30/91 in conjunction with the Quality Assurance Program and will be used for the Calendar Year 1991 program evaluation by the end of Fiscal Year 1992. The milestones for program performance evaluation are shown in Appendix B.

XV. WASTE GENERATION

Available waste generation data, baseline data, and priority waste generators is shown in Appendix B.

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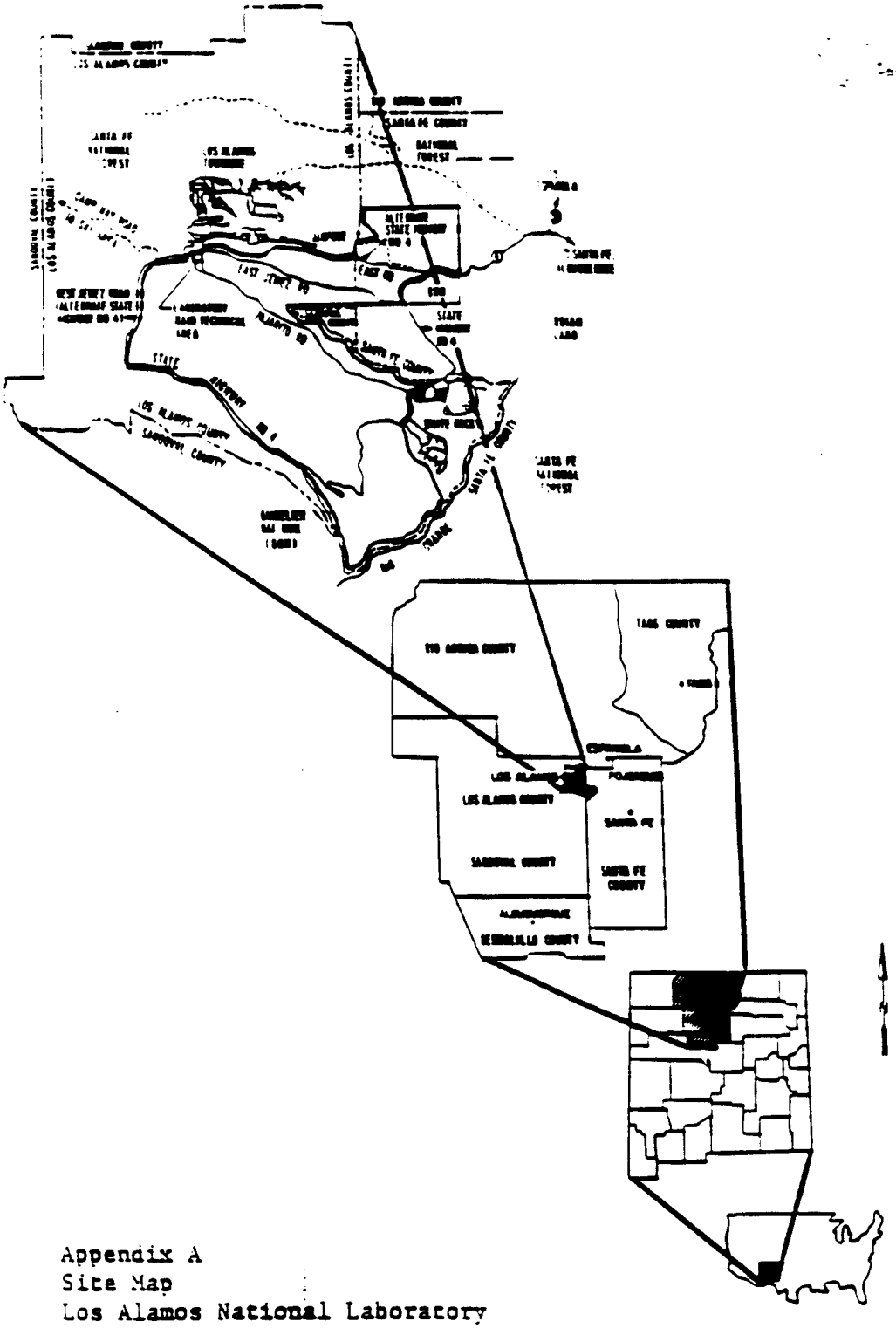
APPENDIX A

SITE MAP



Appendix A
Site Map
Los Alamos National Laboratory

APPENDIX B

LANL ANNUAL WASTE REDUCTION REPORT FOR 1991

LOS ALAMOS NATIONAL LABORATORY
1991 WASTE REDUCTION REPORT

MARCH, 1992

WASTE MINIMIZATION PROGRAM OFFICE

EXECUTIVE SUMMARY

The Waste Minimization Program Office (WMPO) at Los Alamos National Laboratory (LANL) is committed to a proactive and innovative program at LANL. The information in the Annual Waste Reduction Report tracks, for calendar year (CY) 1991, waste minimization activities at LANL as adminimistered through the WMPO. In addition, this report describes how waste minimization activities have been managed by the WMPO. Specific information described includes: program administration, budget, waste generation data, programmatic and numerical milestones, and pollution prevention awareness.

The Annual Waste Reduction Report is required by DOE Orders 5400.1 and 5820.2A.

1. INTRODUCTION

The Waste Minimization Program at Los Alamos National Laboratory (LANL) is administered through the Waste Minimization Program Office (WMPO) in the Environmental Management Division Office (EM-DO). The WMPO provides oversight to the Waste Minimization Program and technical assistance to generators at LANL.

2. PROGRAM ADMINISTRATION

This section outlines the organizational structure of the Waste Minimization Program at LANL, waste generation data, baselines, and those administrative milestones designed to ensure a quantifiable and effective Waste Minimization Program.

A. Structure of Waste Reduction Program

The Waste Minimization Program at LANL is made of four hierarchical tiers. The Directors Office is the top of the organizational structure, followed by the Associate Director for Operations, the Environmental Management Division Office, the WMPO, and, finally, by the Waste Management Coordinators (WMC) who are personnel from each waste generating organization trained to disseminate information regarding waste reduction efforts and methods to the waste generators. The WMPO currently has a program manager and four technical members in addition to vacancies for two process waste engineers. Additional support is provided by off-site contractors. These organizational structures are depicted in the organizational charts, Figures 1 and 2.

B. Waste generation data, baselines, and stream prioritization

Appendix A shows waste generation by Group and Division at LANL for hazardous, low-level waste (LLW), transuranic (TRU), and mixed waste. Appendix B includes baseline generation data from Fiscal Year (FY) 1986 through FY1990 versus FY1991, trends in waste generated from FY1986 through FY1991, types of waste managed during FY1991, and major generating groups for each waste category described above. The tables list every waste generating organization at LANL; blanks in the data for a given waste category indicate that the organization did not generate that type of waste.

The baseline is an average of solid waste generated from FY1986 through FY1990. A comparison is made with waste generated in FY1991 (Figures 6 and 7). This data is for a dynamic

laboratory environment, so there are limitations inherent in attempting to provide baseline data. These limitations will be improved with the initiation of the Process Waste Assessments (PWAs).

The types of waste managed show that hazardous and LLW are the major categories of waste generated (Figures 8 and 9). Major generators shown in Figures 10-13 of Appendix B are the priority generators. PWAs and walkthroughs with these groups should reduce these significant waste generation figures. Prioritization is done with regard to a number of criteria, however, the major considerations are: identifying the largest waste generators, and the largest types of wastes generated. When the priority generators and wastes are defined (Figures 6-13 in Appendix B), walkthroughs, site-specific plans, and application of the PWA system for those waste streams which are the most feasible for reduction can be targeted as a high priority activity. Increases in the volume of waste generated in FY1991 (compared to past years) are assumed to be the direct result of preparation for the Tiger Team visit in late 1991.

C. Administrative activities and milestones

This section describes those programmatic and regulatory milestones established to increase the effectiveness of the Waste Minimization Program. Most of these goals/milestones are qualitative, and the milestone chart is shown in Figure 3.

SENIOR MANAGEMENT POLICY STATEMENT: LANL has a draft Waste Management and Minimization Policy Statement to be issued by the Senior Management Group. This is a revision of a previous policy statement which will have greater Waste Minimization emphasis. The milestone for issuance is July, 1992.

EM/DP WASTE MINIMIZATION COORDINATION: Funding for waste minimization restricts Environmental Management (EM) to fund planning and oversight activities while Defense Programs (DP) and other generators fund implementation. To coordinate these funding restrictions, a LANL coordinator has been designated as a liaison between the funding responsibilities of EM and DP, allowing future waste minimization activities to proceed more efficiently.

WASTE MINIMIZATION STEERING COMMITTEE: The WMPO and LANL senior management are organizing a Waste Minimization Steering Committee to facilitate inter-laboratory communication and the identification, research, development, implementation, and funding of waste minimization techniques. The draft charter has been prepared and committee members should be identified in Spring 1992. The Committee Chair will be the LANL EM/DP funding coordinator discussed in the previous paragraph.

LANL Waste Minimization Hierarchy

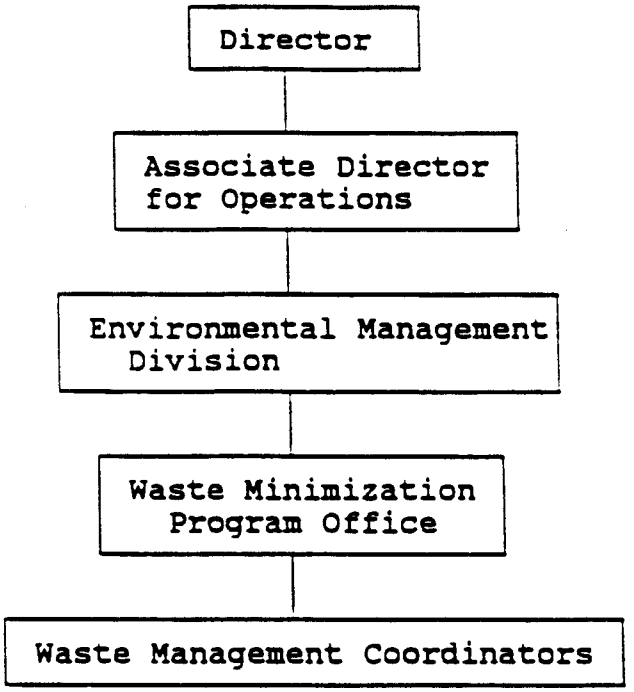
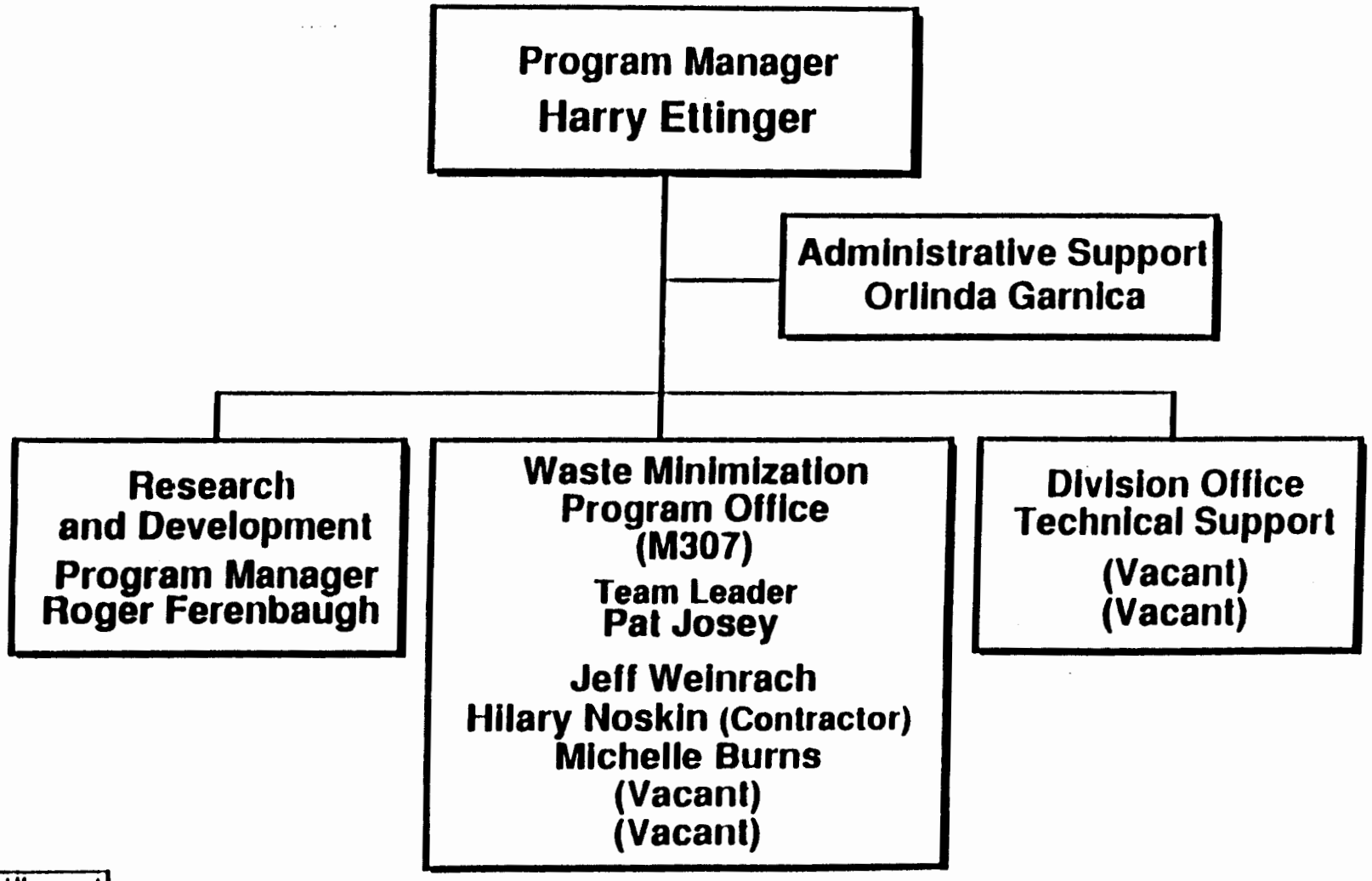


Figure 1

Waste Minimization/Technical Support

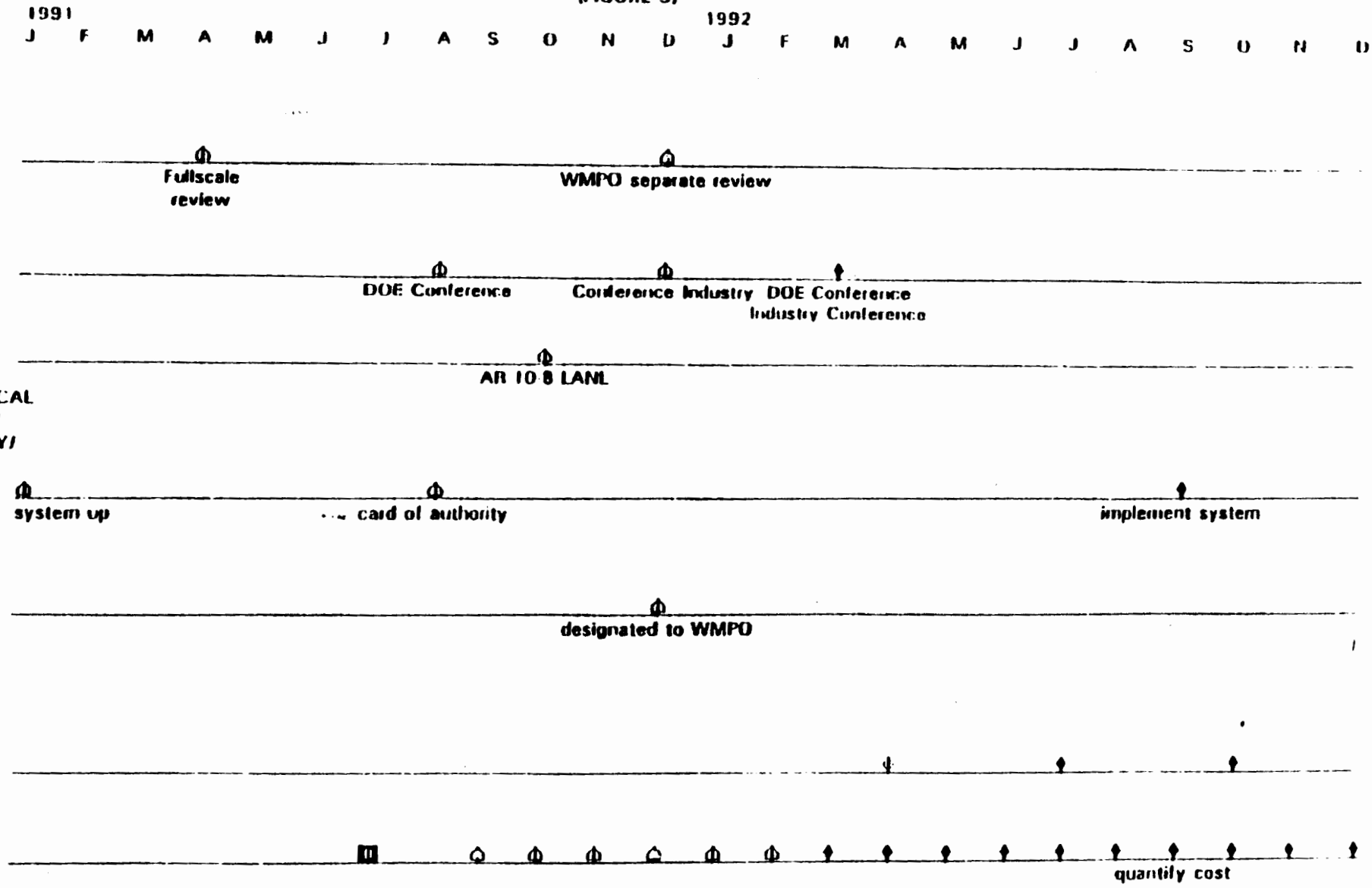


Environmental Management Division

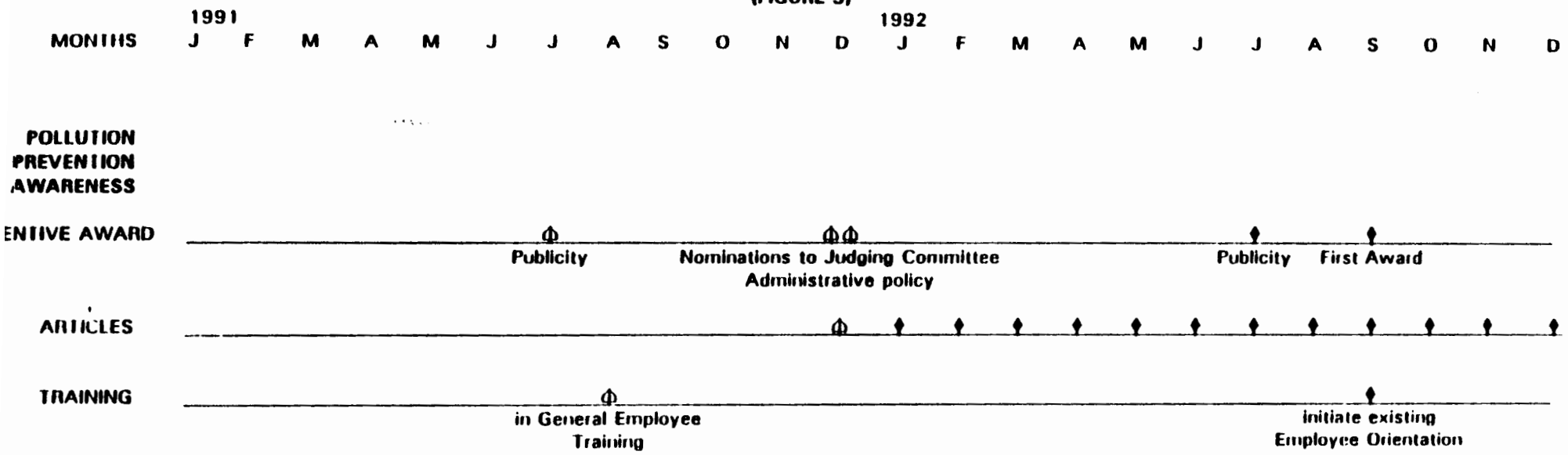
Los Alamos

Figure 2

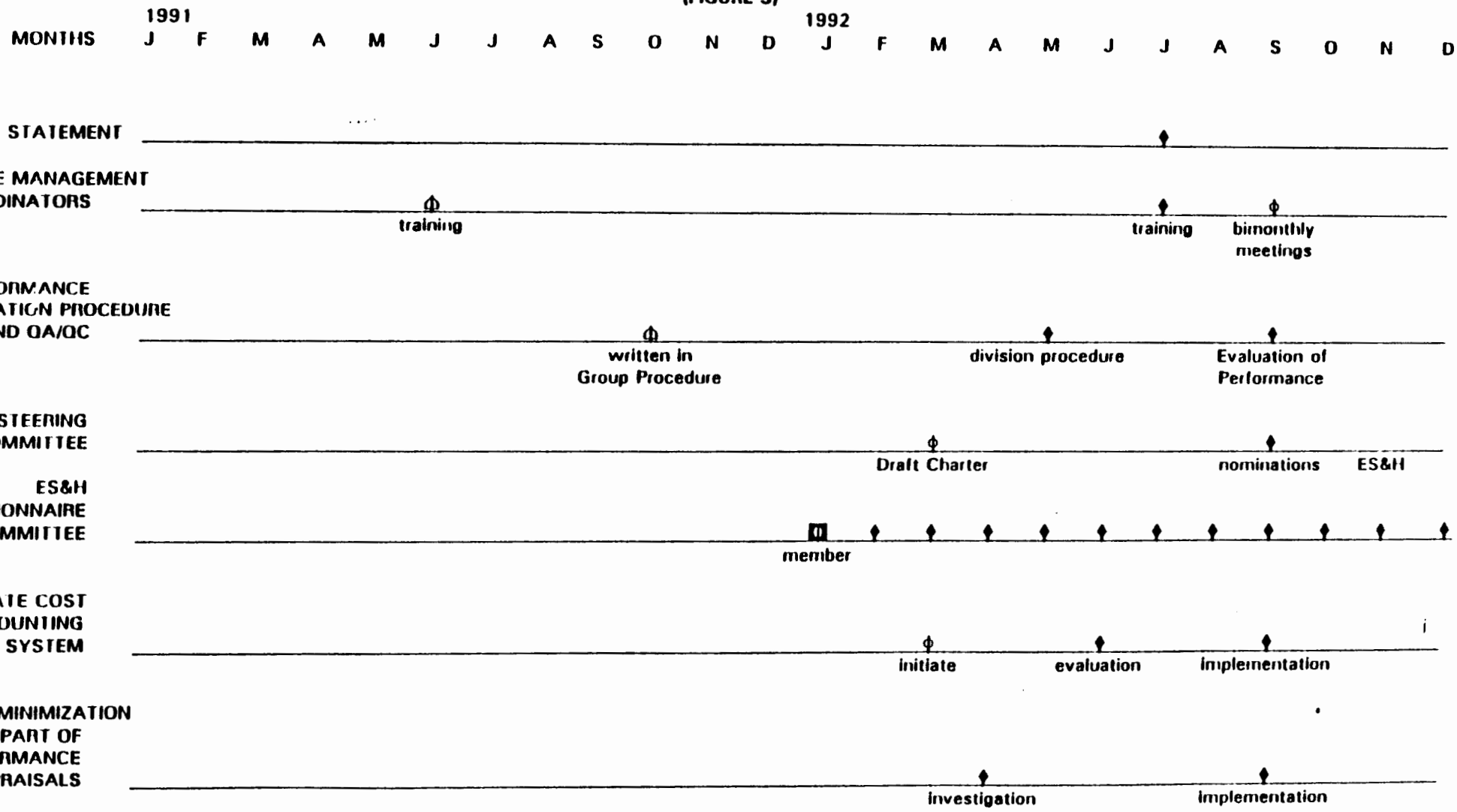
ADMINISTRATIVE MILESTONES
1991 - 1992
(FIGURE 3)



ADMINISTRATIVE MILESTONES
1991 - 1992
(FIGURE 3)



ADMINISTRATIVE MILESTONES
1991 - 1992
(FIGURE 3)



Project Initiated ^Ongoing

WASTE MANAGEMENT COORDINATORS: To ensure that LANL generators are in contact with the WMPO, Waste Management Coordinators (WMCs) have been assigned in every division for information dissemination. WMCs are part of the LANL Waste Minimization organizational structure, as described in Section 2-A.

ADMINISTRATIVE REQUIREMENT: The LANL Environment, Safety, and Health manual includes an Administrative Requirement (AR 10-8) concerning waste minimization. This document identifies the management and employee responsibilities to minimize waste to the maximum extent feasible.

ES&H QUESTIONNAIRE COMMITTEE: The WMPO currently has a member on the LANL Environment, Safety, and Health Questionnaire Committee which is a mechanism for LANL to address ES&H issues prior to project initiation. WMPO membership on this committe was established in January, 1992; this involvement is a valuable tool for identifying waste minimization opportunities in the conceptual design stage.

STANDARD OPERATING PROCEDURES: The WMPO reviews Laboratory Standard Operating Procedures for those processes that do or have a potential for generating waste. This review ensures that waste minimization techniques are employed throughout the operating process. This is a continuing activity.

PERFORMANCE MEASUREMENTS/PERFORMANCE INDICATOR PROGRAM: The WMPO is working with Laboratory generators to measure waste minimization successes, and waste reduction efforts. Generators complete periodic reports and send them to the WMPO; the reports are compiled and folded into the LANL Performance Indicator Program (PIP). The PIP is sent to DOE Headquarters. The generator reports were initiated January, 1992, and will be included in the April, 1992 PIP report.

PERFORMANCE EVALUATION PROCEDURE/QA/QC: The WMPO has procedures for a program performance evaluation/self-assessment to be conducted annually. The performance evaluation will be conducted annually and will be independently reviewed by LANL QA/QC personnel. This evaluation will allow WMPO to identify qualitative and quantitative strengths and weaknesses, and a method of action to improve on both.

INFORMATIONAL BILLS: The WMPO generates monthly informational bills to waste generatoring divisions. These bills allow the divisions to track their waste generation, as compared to the volumes produced during a similar portion previous FY. In the future, the WMPO anticipates modifying the format of these bills to inform generators of the costs to the Laboratory for managing the wastes they generate. This effort will assist the WMPO in developing a method to accurately account for the costs of waste generation and reduction.

TECHNOLOGY TRANSFER: The members of WMPO are active in many different technology transfer activities. Technology transfer mechanisms include: DOE and industry conferences, Pollution Information Exchange System (PIES) through the Environmental Protection Agency, Waste Information Network (WIN) through DOE, the Alternative Treatment Technology Information Center (ATTIC), papers in DOE and Industry publications, and DOE/LANL/industry collaborations.

CARD OF AUTHORITY/PURCHASING DISCIPLINE: Through the Automated Chemical Inventory System (ACIS), the WMPO and Administrative Data Processing Division at LANL are designing a "Card of Authority" system for purchase of chemicals. This system will allow only those people holding the card to purchase chemicals. To receive the cards, the employees must obtain training that is updated annually. This training includes waste minimization, environmental compliance and waste management procedures. This effort will reduce the purchase of excessive quantities of materials which will result in the production of wastes.

WASTE MINIMIZATION AS PART OF PERFORMANCE APPRAISALS: The WMPO is also working to have an item included on employee performance appraisals that identifies waste minimization as a part of their employment responsibilities.

3. PROGRAM DESCRIPTION

This section describes the budget for oversight of waste minimization, the milestones and activities for PWAs, and information about the LANL Pollution Prevention Awareness Program.

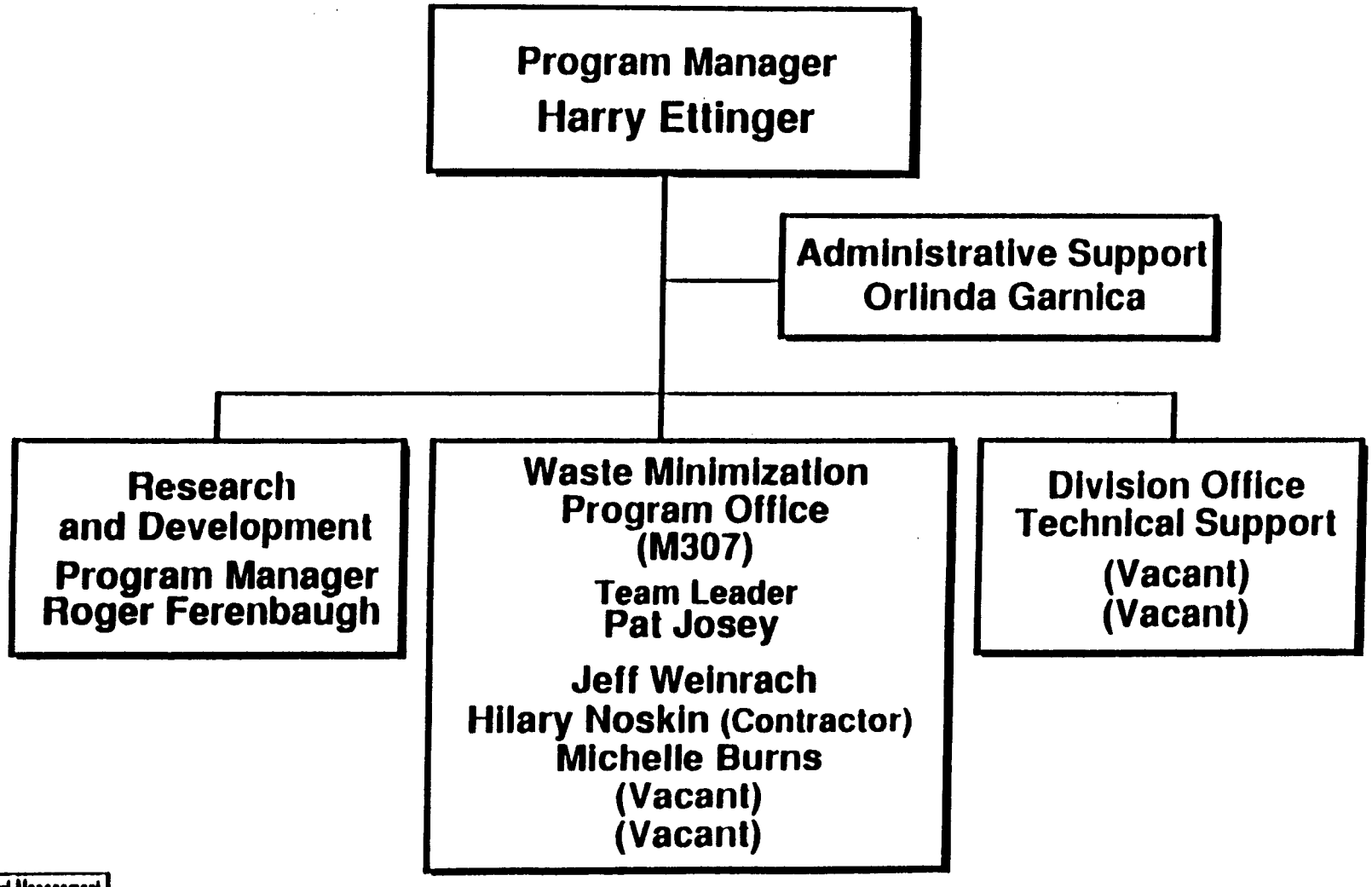
A. Budget

WMPO expenditures for FY1992 to date (through the end of December, 1991) include:

- $202.9K for full-time employees, materials and travel,
- $ 30.5K for Card of Authority,
- $ 62.7K for LANL Management Taxes, and
  (Annual tax for FY1992, not due in last 3 quarters)
- $ 92.2K for Waste Management Tracking Database

Funding for the Waste Minimization Program support, guidance, and oversight for FY1992 is $1.9 million and supports 7 full time employees. Funding for implementation by programmatic sources has not been identified or requested. An additional allocation of $80K funds has been targeted for PWAs.

Waste Minimization/Technical Support



Environmental Management Division

Los Alamos

Figure 2

B. Administrative Radiation Limits

The administrative "background" radiation limits already applied during operations by the LANL Health Physics services groups has been determined to be 0.03-0.07 mr/hr.

C. Process Waste Assessments

PWA methodology has been designed for the dynamic laboratory environment at LANL. The PWAs are the backbone of the Waste Minimization Program and will serve not only as a tool to measure process efficiency, but will allow the generator to model processes for identification of waste minimization opportunities and their feasibility. After identifying waste reduction opportunities through modeling with the PWA software, technologies available for modifying the modeled process are researched. The PWA software also enables evaluation of identified technical solutions on a cost/benefit/risk basis. Milestones reached as of January, 1992 include database development, modeling, data justification/validation, and testing initiation. Five PWAs are due to be done by September, 1992. The milestone chart for PWAs is shown in Figure 4.

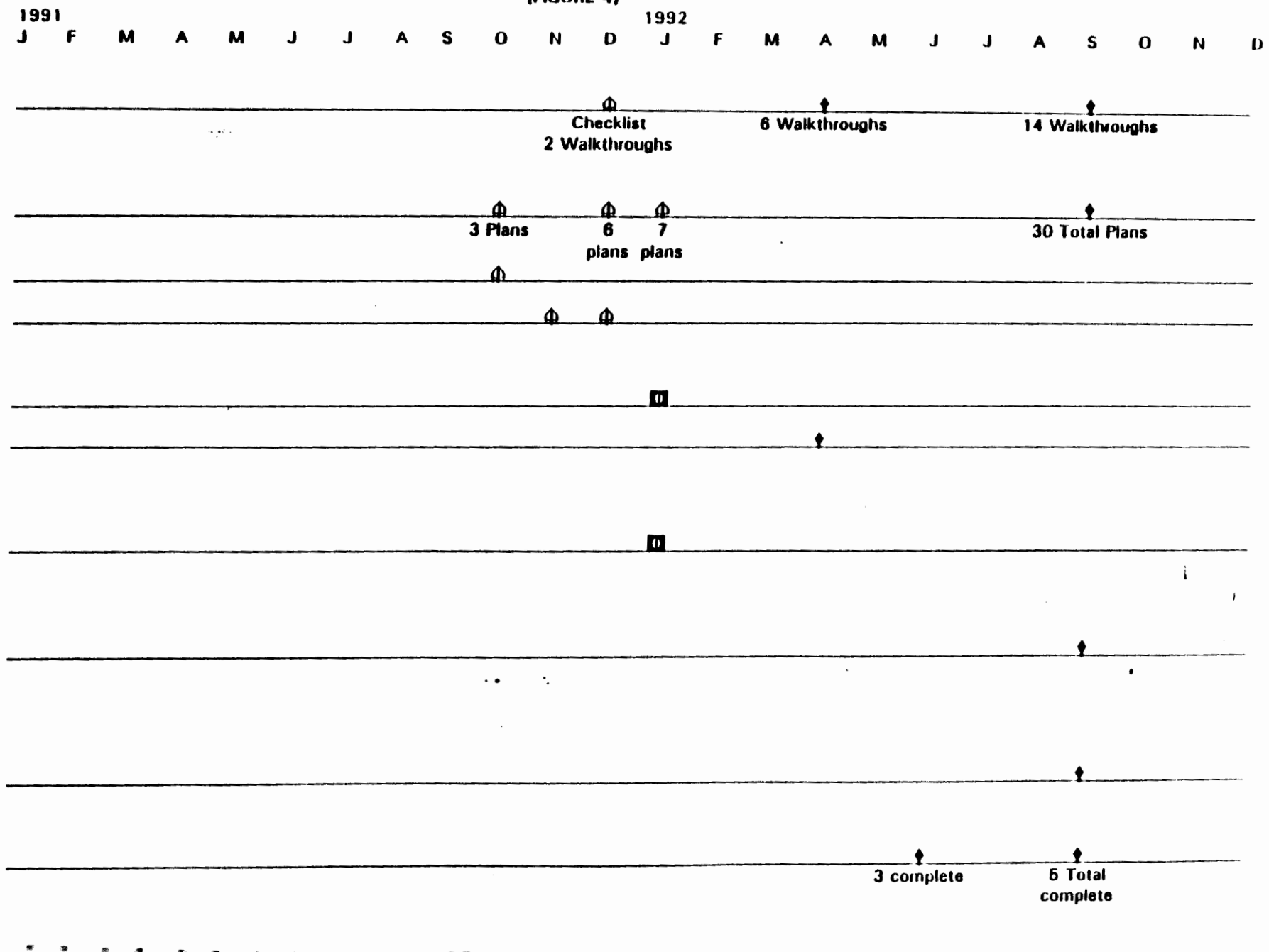
WALKTHROUGHS: The WMPO provides technical assistance to generators to assess their operations/processes on a site specific basis. The WMPO member and the generator "walk through" the operation/process and identify waste minimization opportunities for the generator to prioritize and implement. The walkthrough checklist and 2 walkthroughs have already been completed; 14 total walkthroughs are to be completed by the end of FY1992.

SITE SPECIFIC PLANS (SSP): SSP are written by the generator about their specific process/operation, and provide descriptive information about the process/operation to aid identification of waste minimization opportunities and implementation activities. Thirty of these plans are scheduled to be completed by September, 1992.

D. Pollution Prevention Awareness

TRAINING: New employee orientation and existing employee training for waste minimization has been developed. As of August, 1991, all new employees receive the Waste Minimization Orientation Video and training within the General Employee Training (GET). GET is required prior to receiving a badge as an employee of LANL. Waste Minimization Orientation Training for existing employees will begin by the end of FY1992 (Figure 3).

PROCESS WASTE ASSESSMENT MILESTONES
1991 - 1992
(FIGURE 4)



INCENTIVE AWARD PROGRAM: LANL has established a Waste Minimization Awards Program. This program is designed to award Laboratory employees for new or recently-implemented waste minimization ideas. The awards are cash, and can be up to $2,000 per person. The policy has been in effect since December, 1991, and the initial prizes will be awarded by September, 1992 (Figure 3).

ARTICLES IN EMPLOYEE NEWSBULLETIN: The LANL employee Newsbulletin has a monthly waste minimization article. This space is provided by the Newsbulletin and the article is prepared by the WMPO and a journalism professional from the Newsbulletin. The articles provide information designed to heighten employee awareness of waste minimization techniques and opportunities (Figure 3).

4. PROGRAM PERFORMANCE

This section describes performance successes and milestones for actual process changes to reduce waste. Table 1 lists those specific successes documented in CY1991.

A. Technical Activities and Milestones

This section outlines some technical activities on which the WMPO is providing assistance, or gathering information. Technical activities are performed by various LANL line organizations and indicate the breadth of interest/support for waste minimization at LANL. The milestone chart is shown in Figure 5.

ATLAS: ATLAS is a steam evaporator for nitric acid recovery from a plutonium/nitric acid effluent. Operators hope to recover 99% of the nitric acid for recycle and reuse in plutonium processing. The system also provides data for future scale-up engineering. The pilot scale project has been completed, and "hot" testing is underway. System hook up will begin in September 1992, with complete implementation in 12 months.

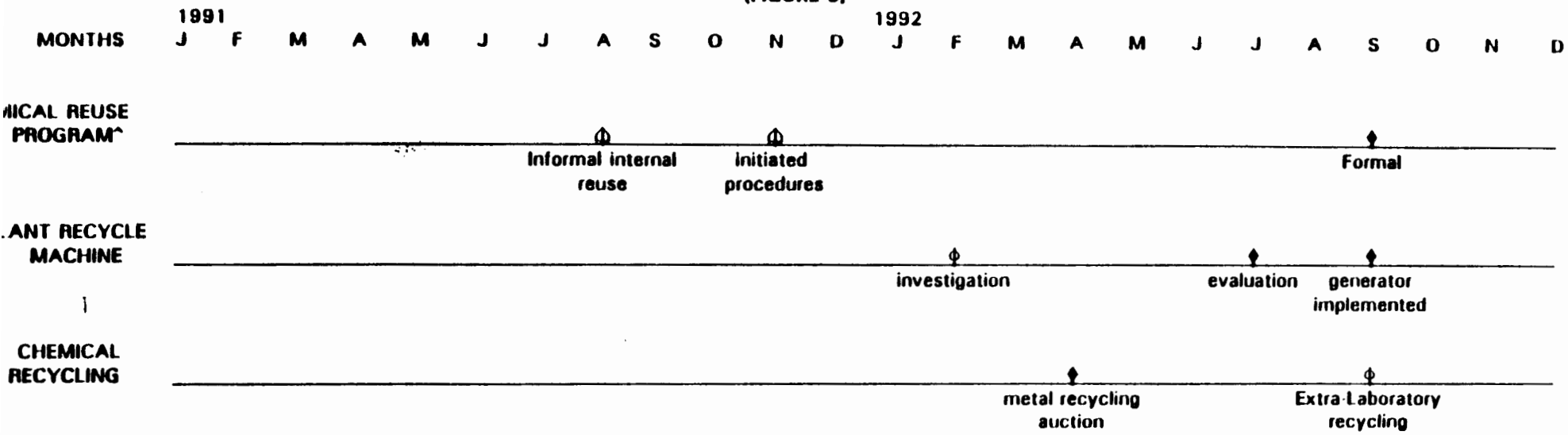
RADIOACTIVE MATERIALS MANAGEMENT AREA: The WMPO, in conjunction with the Waste Management Group, has been addressing the issue of adequate delineation of radiation areas for proper segregation of materials, employee awareness, and reduction of LLW. A new project directive and problem identification is being developed. An Administrative Requirement outlining the details of a Radioactive Materials Management Area (RMMA) should be developed by September, 1992, if operational problems can be overcome.

TABLE 1

LOS ALAMOS NATIONAL LABORATORY WASTE REDUCTION SUCCESSES

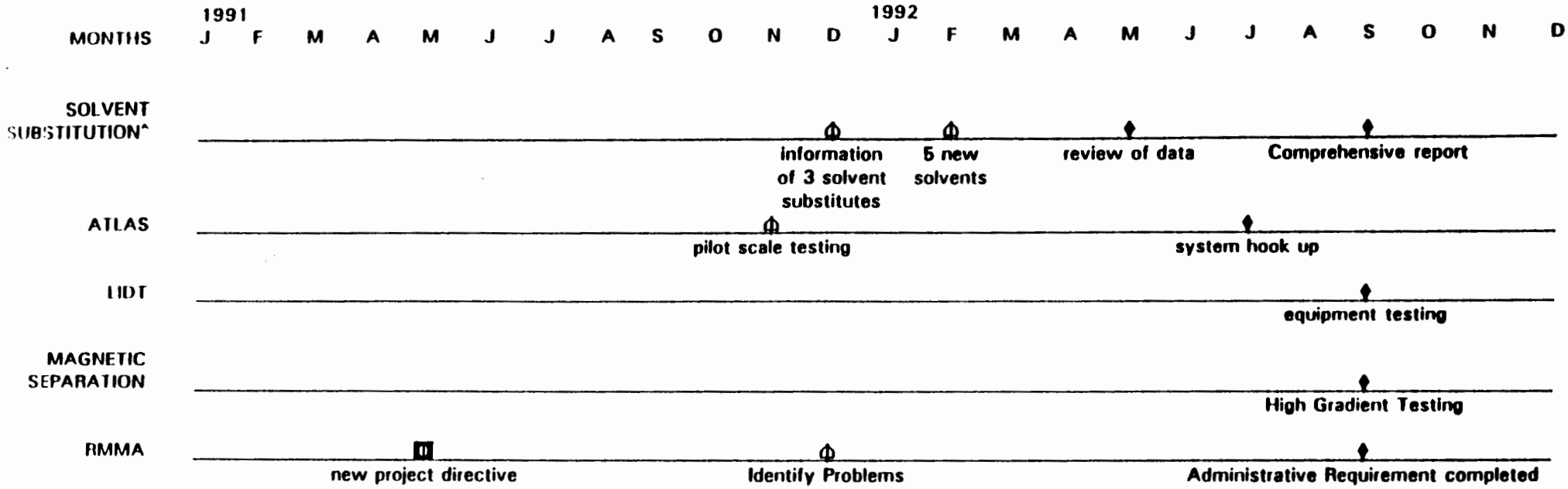
Waste Category	*Process/ Operation*	*Amount Reduced*	*Reduction Method*	*Dollar Savings*
Hazardous	Maintenance	1320 gal.	Solvent Recycle	$ 27,324
Liquid (Haz, Rad, Mixed)	Electroplating	208,000 gal.	Process Modification	686,400
Hazardous	Throughout LANL	1000 lb.	Reuse/Exchange Program	20,700
Sanitary	Throughout LANL	75% by volume	Recycling	no information
Sanitary	Throughout LANL	50% by volume	Salvage/Reuse	no information
Hazardous	MEC-Div Machine Shops	28,290 gal.	Materials/Solvent Substitution	311,514
Industrial-Fuel Oil	Throughout LANL	140.5 m3	Recycle through Fuel Blending	23,270

RECYCLING MILESTONES
1991 - 1992
(FIGURE 6)



▲ Milestone ⊕ Initiate Project ⊡ Project Initiated ^Ongoing

TECHNICAL MILESTONES
1991 - 1992
(FIGURE 5)



♦ Milestone reached ▲ Milestone Φ Initiate Project ▣ Project Initiated ^Ongoing

ELECTROPLATING: The WMPO has been providing technical guidance to the LANL electroplating shop to modify processes, for waste reduction. In 1991, spray guns were added above rinsewater tanks to reduce dragout. The subsequent reductions were 90% ion concentration reduction in rinsewater, allowing for 75% increase in use. The projected waste reduction from this modification for 1991-1992 is 208,000 gallons.

SOLVENT SUBSTITUTION: The WMPO is advising LANL machinists and scientists during their efforts to gather information on solvent substitution. As of December, 1991, information on three solvents had been acquired. The milestone is to test five more solvents by September, 1992, and compile a report from information available throughout the DOE complex and industry. In addition, the machine shop has put a limitation on general use of Methylene Chloride, Acetone, 1,1,1-Trichloroethane, Toluene, Xylene, Benzene, Kerosene, Trichloroethylene, Methyl Ethyl Ketone, Carbon Disulfide, Carbon Tetrachloride, and Tetrachloroethylene that has resulted in a waste reduction of 28,290 gallons of hazardous waste.

LiD-T RECOVERY: This unit is a water process unit which converts unusable Tritium to usable Tritium. Equipment testing will begin by September, 1992, and implementation by the generator will be by September, 1993.

MAGNETIC SEPARATION OF PLUTONIUM: This process recovers Plutonium from material mixtures including sludges and aqueous solutions. The process is projected to recover 100% of the Plutonium from the mixture. High-gradient testing will begin by September, 1992. Implementation is targeted for March, 1994.

B. Recycling Activities and Milestones

This section describes recycling activities at LANL, and is separated from the Technical section to provide a clear deliniation between source reduction and recycling. The milestone chart for these activities is shown in Figure 5.

CHEMICAL REUSE PROGRAM: LANL has two phases of a chemical reuse/reclamation program. The first is an informal, internal network where generators distribute information within the laboratory and users may claim these materials, thereby avoiding disposal. The second phase is a formal network with a centralized chemical repository, electronic database, and integrated into the ACIS. Procedures for the central facility have been written, and the system should be initiated by September, 1992. In addition, a fuel oil recovery system

exists at LANL and through fuel blending there was a resultant waste reduction of 140.52 m3.

EXTERNAL CHEMICAL RECYCLING: LANL is in the process of defining the contractual and regulatory mechanisms for recycling chemicals outside of the Laboratory. Initial estimates indicate that as much as 65% of used chemicals are readily recyclable. This program includes, but is not limited to fuel oil and metals. It is anticipated that this program will be operational by October 1992.

PAPER RECYCLING: LANL has as active paper recycling effort including white and colored paper. This project is ongoing and has been in effect since 1989. Approximately 75% of the Laboratory's paper waste has been recovered due to the recycle program.

SALVAGE: LANL has an active salvage program. This program is a method for reuse and sale of industrial and office materials that would otherwise go to the landfill. The items that are salvaged include: scrap metal, office furniture, lubricating oil, automotive batteries, and machine equipment.

SOLVENT RECYCLING: The WMPO and the Hot Dry Rock Project have been working together to reduce wastes generated at the Fenton Hill Site. The result has been a solvent recycling contract with Safety-Kleen, started in January, 1992, that will result in a 110 gallon/month reduction in hazardous wastes. LANL also has a mechanism for solvent recovery, of certain solvents, within the Laboratory. This program will be used more aggressively in 1992.

COOLANT RECYCLING MACHINE: The machine shop is investigating the use of a coolant recycling machine that has a potential to reduce the generation of hazardous waste by 19,140 gallons. Implementation, by the generator, of the machine will occur by September, 1992, if feasible.

APPENDIX A

WASTE GENERATION DATA

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
A	1						0.00		0.00	0.00
A	3						0.00		0.00	0.00
A	4						0.00		0.00	0.00
A	5						0.00		0.00	0.00
A	DO						0.00		0.00	0.00
A	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ACT	TOTALS	0.08					0.02		0.08	0.01
ADCM	TOTALS						0.00		0.00	0.00
ADDRA	TOTALS						0.00		0.00	0.00
ADNWT	TOTALS					1.70	0.34		1.70	0.28
ADP	1						0.00		0.00	0.00
ADP	5						0.00		0.00	0.00
ADP	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADR	TOTALS						0.00		0.00	0.00
AT	1	0.03	0.53				0.11		0.56	0.09
AT	2			0.03			0.01		0.03	0.01
AT	3						0.00		0.00	0.00
AT	4	0.50		4.25			0.95		4.75	0.79
AT	5						0.00		0.00	0.00
AT	6						0.00		0.00	0.00
AT	7	0.17	0.34				0.10		0.51	0.09
AT	8						0.00		0.00	0.00
AT	9						0.00		0.00	0.00
AT	10						0.00		0.00	0.00
AT	DO	0.20		0.17	1.29	14.73	3.28	29.54	45.93	7.66
AT	TOTALS	0.90	0.87	4.45	1.29	14.73	4.45	29.54	51.78	8.63
C	1						0.00		0.00	0.00
C	7						0.00		0.00	0.00
C	DO						0.00		0.00	0.00
C	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHM	1	256.24	23.22				55.89		279.46	46.58
CHM	2	17.57	9.91				5.50		27.48	4.58
CHM	3	1.08					0.22		1.08	0.18
CHM	4	0.17					0.03		0.17	0.03
CHM	5	0.57					0.11		0.57	0.10
CHM	DO						0.00		0.00	0.00
CHM	TOTALS	275.63	33.13	0.00	0.00	0.00	61.75	0.00	308.76	51.46
CLS	1		221.69	131.12	86.66	171.17	122.13	549.73	1160.37	193.40
CLS	2		1.64	53.00		40.30	18.99	77.88	172.82	28.80
CLS	3		1.36	1.70	4.11	8.58	3.15	1.83	17.58	2.93
CLS	4		9.58		8.36	6.94	4.98	73.88	98.76	16.46
CLS	5						0.00	0.85	0.85	0.14
CLS	6		1.36		5.38		1.35		6.74	1.12
CLS	7		0.83		0.42		0.25	22.09	23.34	3.89
CLS	8			0.42			0.08		0.42	0.07
CLS	9						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
CLS	DO		8.04	9.91	1.13	11.04	6.02		30.12	5.02
CLS	TOTALS	0.00	244.50	196.15	106.06	238.03	156.95	726.26	1511.00	251.83
CMS	TOTALS						0.00		0.00	0.00
CNSS	TOTALS						0.00		0.00	0.00
CRM	1						0.00		0.00	0.00
CRM	2						0.00		0.00	0.00
CRM	3						0.00		0.00	0.00
CRM	DO						0.00		0.00	0.00
CRM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTR	1						0.00		0.00	0.00
CTR	2	0.62	0.07				0.14		0.69	0.12
CTR	3	20.31	0.53				4.17		20.84	3.47
CTR	4					0.34	0.07		0.34	0.06
CTR	5	8.41	2.50				2.18		10.91	1.82
CTR	7						0.00		0.00	0.00
CTR	8						0.00		0.00	0.00
CTR	9	7.29					1.46		7.29	1.22
CTR	10						0.00		0.00	0.00
CTR	DO	293.11	0.21	1.39		2.83	59.51	0.98	298.52	49.75
CTR	TOTALS	329.74	3.31	1.39	0.00	3.17	67.52	0.98	338.59	56.43
EG&G	TOTALS				0.23		0.05		0.23	0.04
E	1	2.50	0.34				0.57		2.84	0.47
E	2						0.00		0.00	0.00
E	5						0.00		0.00	0.00
E	11	0.01					0.00		0.01	0.00
E	TOTALS	2.51	0.34	0.00	0.00	0.00	0.57	0.00	2.85	0.48
EES	1					0.02	0.00		0.02	0.00
EES	3						0.00		0.00	0.00
EES	4						0.00	0.50	0.50	0.08
EES	5						0.00		0.00	0.00
EES	14						0.00		0.00	0.00
EES	15						0.00		0.00	0.00
EES	DO						0.00	0.60	0.60	0.10
EES	TOTALS	0.00	0.00	0.00	0.00	0.02	0.00	1.10	1.12	0.19
EM	7						0.00	868.42	868.42	144.74
EM	8						0.00	0.28	0.28	0.05
EM	9						0.00	13.15	13.15	2.19
EM	13						0.00	3.96	3.96	0.66
EM	DO						0.00		0.00	0.00
EM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	885.81	885.81	147.64
ENG	1	49.44				1.58	10.20		51.02	8.50
ENG	2	11.33					2.27		11.33	1.89
ENG	3				7.08		1.42		7.08	1.18
ENG	4	367.61	46.25		21.24		87.02		435.10	72.51
ENG	5		94.25	50.83	144.84	65.83	71.15	45.31	401.06	66.84

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
ENG	6			11.61		49.76	12.27	1.42	62.79	10.47
ENG	8						0.00		0.00	0.00
ENG	DO	2.04			14.16		3.24		16.20	2.70
ENG	TOTALS	430.42	140.50	62.44	187.32	117.17	187.57	46.73	984.58	164.10
ERDC	TOTALS						0.00		0.00	0.00
ESS	1		3.00				0.60		3.00	0.50
ESS	3			0.17		0.27	0.09		0.44	0.07
ESS	4	5.21			0.45		1.13		5.66	0.94
ESS	6	0.20					0.04		0.20	0.03
ESS	9	4.25			0.02		0.85		4.27	0.71
ESS	11				0.08		0.02		0.08	0.01
ESS	14					0.62	0.12		0.62	0.10
ESS	15						0.00		0.00	0.00
ESS	DO						0.00		0.00	0.00
ESS	TOTALS	9.66	3.00	0.17	0.55	0.89	2.85	0.00	14.27	2.38
FIN	4						0.00		0.00	0.00
FIN	10						0.00		0.00	0.00
FIN	14						0.00		0.00	0.00
FIN	DO						0.00		0.00	0.00
FIN	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIRE-DEP	TOTALS						0.00		0.00	0.00
HRD	1					1.36	0.27		1.36	0.23
HRD	3						0.00		0.00	0.00
HRD	4						0.00		0.00	0.00
HRD	TOTALS	0.00	0.00	0.00	0.00	1.36	0.27	0.00	1.36	0.23
HS	1						0.00	1.85	1.85	0.31
HS	2						0.00		0.00	0.00
HS	3						0.00		0.00	0.00
HS	4						0.00	0.34	0.34	0.06
HS	5						0.00	17.56	17.56	2.93
HS	11						0.00		0.00	0.00
HS	DO						0.00		0.00	0.00
HS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	19.75	19.75	3.29
HSE	1	135.13	9.08	16.43	6.08	1.73	33.69		168.45	28.08
HSE	2	0.20	0.14	0.08	0.08		0.10		0.50	0.08
HSE	3						0.00		0.00	0.00
HSE	5	2.39	0.17		0.04	0.57	0.63		3.17	0.53
HSE	6						0.00		0.00	0.00
HSE	7	1957.38	435.26	708.12	1217.52	667.48	997.15		4985.76	830.96
HSE	8	9.57	4.10	21.89	1.95	17.22	10.95		54.73	9.12
HSE	9	2.13	3.47	18.78	1.23	8.62	6.85		34.23	5.71
HSE	10	0.03	4.29	5.66		11.33	4.26		21.31	3.55
HSE	11		13.71	0.40	4.38		3.70		18.49	3.08
HSE	12	46.48	8.55	0.10	5.00		12.03		60.13	10.02
HSE	DO						0.00		0.00	0.00
HSE	TOTALS	2153.31	478.77	771.46	1236.28	706.95	1069.35	0.00	5346.77	891.13

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
INC	4	52.59	34.05	57.53	61.20	64.52	53.98	32.95	302.84	50.47
INC	5	31.70	7.97	46.53	50.29	0.79	27.46	23.03	160.31	26.72
INC	7						0.00	0.01	0.01	0.00
INC	11	218.84	168.94	330.26	109.63	300.51	225.64	803.04	1931.22	321.87
INC	DO						0.00		0.00	0.00
INC	TOTALS	303.13	210.96	434.32	221.12	365.82	307.07	859.03	2394.38	399.06
IS	3						0.00		0.00	0.00
IS	4						0.00		0.00	0.00
IS	8						0.00		0.00	0.00
IS	9					0.68	0.14		0.68	0.11
IS	10						0.00		0.00	0.00
IS	11					0.59	0.12		0.59	0.10
IS	12					0.42	0.08		0.42	0.07
IS	DO						0.00		0.00	0.00
IS	TOTALS	0.00	0.00	0.00	0.00	1.69	0.34	0.00	1.69	0.28
IT	4						0.00		0.00	0.00
IT	6		8.50				1.70		8.50	1.42
IT	7				10.00	1.90	2.38		11.90	1.98
IT	DO						0.00		0.00	0.00
IT	TOTALS	0.00	8.50	0.00	10.00	1.90	4.08	0.00	20.40	3.40
J	6					0.28	0.06		0.28	0.05
J	7						0.00	0.85	0.85	0.14
J	8						0.00		0.00	0.00
J	DO					0.45	0.09		0.45	0.08
J	TOTALS	0.00	0.00	0.00	0.00	0.73	0.15	0.85	1.58	0.26
JCI	TOTALS	283.86	374.10	622.47	976.45	715.65	594.51	143.98	3116.51	519.4
LANSCE	TOTALS		13.59	0.57	1.70		3.17	2.39	18.25	3.04
LS	1	22.80	12.12	0.25	1.87		7.41	1.13	38.17	6.3
LS	2			9.14	13.24	6.93	5.86	6.25	35.56	5.9
LS	3	0.11	0.25	0.40			0.15		0.76	0.13
LS	4			0.23		2.27	0.50		2.50	0.42
LS	6	0.10					0.02		0.10	0.0
LS	DO	12.36	9.66	18.00	10.56	43.98	18.91	21.52	116.08	19.3
LS	TOTALS	35.37	22.03	28.02	25.67	53.18	32.35	28.90	193.17	32.19
M	1		1.77		0.04	10.51	2.46		12.32	2.0
M	4	137.31	385.66	162.35	113.47	96.31	179.02	84.43	979.53	163.26
M	6	4.69	40.70	0.03	8.13	22.94	15.30	7.60	84.09	14.02
M	7						0.00		0.00	0.0
M	8		7.00	212.47	106.52	365.74	138.35	160.92	852.65	142.1
M	9	0.21					0.04		0.21	0.0
M	DO						0.00		0.00	0.00
M	TOTALS	142.21	435.13	374.85	228.16	495.50	335.17	252.95	1928.80	321.4
M & H	TOTALS						0.00		0.00	0.00
MAT	1				0.31		0.06		0.31	0.
MAT	2						0.00		0.00	0.

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MAT	3						0.00		0.00	0.00
MAT	4				4.81		0.96		4.81	0.80
MAT	8	16.43	13.03	12.74	27.36	12.74	16.46	8.50	90.80	15.13
MAT	14			0.45			0.09		0.45	0.08
MAT	DO					0.07	0.01		0.07	0.01
MAT	TOTALS	16.43	13.03	13.19	32.48	12.81	17.59	8.50	96.44	16.07
MEC	1	74.15	140.79	127.95	57.29	119.24	103.88	127.70	647.12	107.85
MEC	2						0.00		0.00	0.00
MEC	3	10.08					2.02	8.50	18.58	3.10
MEC	4						0.00		0.00	0.00
MEC	5	0.34		4.08		0.06	0.90	1.02	5.50	0.92
MEC	6	2.55	0.28	0.31	0.85	0.85	0.97		4.84	0.81
MEC	8						0.00		0.00	0.00
MEC	9		4.76	12.23	11.33	2.04	6.07		30.36	5.06
MEC	10				1.70		0.34	3.62	5.32	0.89
MEC	DO	0.21		5.44		14.18	3.97		19.83	3.31
MEC	TOTALS	87.33	145.83	150.01	71.17	136.37	118.14	140.84	731.55	121.93
MEE	3			0.21			0.04		0.21	0.04
MEE	4						0.00		0.00	0.00
MEE	5						0.00		0.00	0.00
MEE	9		31.72		61.45		18.63	42.48	135.65	22.61
MEE	10						0.00		0.00	0.00
MEE	11					0.11	0.02		0.11	0.02
MEE	12						0.00		0.00	0.00
MEE	13		3.68	1.53	0.23	21.13	5.31	58.06	84.63	14.11
MEE	DO					0.03	0.01	3.12	3.15	0.53
MEE	TOTALS	0.00	35.40	1.74	61.68	21.27	24.02	103.66	223.75	37.29
MP	1	2.29				0.74	0.61	108.01	111.04	18.51
MP	2	10.00					2.00		10.00	1.67
MP	4						0.00		0.00	0.00
MP	5		22.69		10.87	22.44	11.20	7.08	63.08	10.51
MP	6						0.00		0.00	0.00
MP	7	147.25	436.85	140.94	98.93	1180.12	400.82	153.77	2157.86	359.64
MP	8			0.51		2.13	0.53		2.64	0.44
MP	10				0.11	1.81	0.38		1.92	0.32
MP	11	0.41	1.44	11.98			2.77		13.83	2.31
MP	13	1.70					0.34		1.70	0.28
MP	DO	97.92	42.06	134.55	62.64	354.51	138.34	0.06	691.74	115.29
MP	TOTALS	259.57	503.04	287.98	172.55	1561.75	556.98	268.92	3053.81	508.97
MST	1			7.93			1.59		7.93	1.32
MST	3	50.65	20.16	67.31	23.69	11.84	34.73	66.43	240.08	40.01
MST	4				6.80	19.66	5.29	3.57	30.03	5.01
MST	5	52.25	35.77	50.13	58.57	42.14	47.77	422.95	661.81	110.30
MST	6	333.50	354.76	437.65	422.31	335.63	376.77	379.78	2263.63	377.27
MST	7	8.34	11.33	15.09	54.04	12.53	20.27	8.88	110.21	18.37
MST	8			6.23	83.55		17.96		89.78	14.96
MST	9		25.49				5.10		25.49	4.25
MST	10	256.99	167.77	189.58	637.11	5.83	251.46		1257.28	209.55
MST	11	1.53		23.03	5.03		5.92		29.59	4.93
MST	12	382.18	439.42	546.27	267.24	5.75	328.17		1640.86	273.48
MST	13						0.00		0.00	0.00
MST	14	115.48	47.15	276.63	101.24	689.42	245.98	1.13	1231.05	205.18
MST	17				163.96	13.59	35.51		177.55	29.59
MST	DO				1.19		0.24	150.06	151.25	25.21

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MST	TOTALS	1200.92	1101.85	1619.85	1824.73	1136.39	1376.75	1032.80	7916.54	1319.42
N	1		0.62		5.35	8.09	2.81		14.06	2.34
N	2		139.84	55.56	11.55	89.60	59.31	150.59	447.14	74.52
N	4				0.42	0.33	0.15		0.75	0.13
N	10				0.21		0.04		0.21	0.04
N	00				0.40		0.08		0.40	0.07
N	TOTALS	0.00	140.46	55.56	17.93	98.02	62.39	150.59	462.56	77.09
NMT	1					24.69	4.94	15.06	39.75	6.63
NMT	2						0.00		0.00	0.00
NMT	3						0.00		0.00	0.00
NMT	4					507.42	101.48	502.00	1009.42	168.24
NMT	5						0.00		0.00	0.00
NMT	6						0.00	2.27	2.27	0.38
NMT	7					629.24	125.85	357.20	986.44	164.41
NMT	8					0.14	0.03		0.14	0.02
NMT	9						0.00		0.00	0.00
NMT	10					4.87	0.97		4.87	0.81
NMT	11					0.11	0.02		0.11	0.02
NMT	17					14.50	2.90		14.50	2.42
NMT	TOTALS	0.00	0.00	0.00	0.00	1180.97	236.19	876.53	2057.50	342.92
OM	TOTALS						0.00		0.00	0.00
OS	1						0.00		0.00	0.00
OS	2	21.69	18.33	2.27	9.86		10.43	38.74	90.89	15.15
OS	4					0.68	0.14		0.68	0.11
OS	5	0.11					0.02		0.11	0.02
OS	8		35.12				7.02		35.12	5.85
OS	10						0.00		0.00	0.00
OS	14				20.74		4.15	7.45	28.19	4.70
OS	00						0.00		0.00	0.00
OS	TOTALS	21.80	53.45	2.27	30.60	0.68	21.76	46.19	154.99	25.83
P	1			1.25			0.25	0.06	1.31	0.22
P	2					4.00	0.80		4.00	0.67
P	3	0.25		1.14	1.59	0.42	0.68	0.53	3.93	0.65
P	4						0.00		0.00	0.00
P	6						0.00		0.00	0.00
P	7						0.00		0.00	0.00
P	8	0.34				43.85	8.84		44.19	7.37
P	9	48.21	29.55	14.50	7.50	15.24	23.00	14.23	129.23	21.54
P	10	36.46	6.24	41.97	0.51	27.44	22.52	28.47	141.09	23.52
P	12					0.31	0.06		0.31	0.05
P	14	0.17					0.03		0.17	0.03
P	15	0.06				4.08	0.83		4.14	0.69
P	17					25.32	5.06		25.32	4.22
P	00	0.11				0.17	0.06		0.28	0.05
P	TOTALS	85.60	35.79	58.86	9.60	120.83	62.14	43.29	353.97	59.00
PA	1						0.00		0.00	0.00
PA	2						0.00		0.00	0.00
PA	15						0.00		0.00	0.00
PA	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

LOW-LEVEL RAD VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
PS	TOTALS						0.00		0.00	0.00
Q	1	1.70					0.34		1.70	0.28
Q	2	77.24	41.51				23.75		118.75	19.79
Q	6	0.09					0.02		0.09	0.02
Q	13	1.28					0.26		1.28	0.21
Q	DO						0.00		0.00	0.00
Q	TOTALS	80.31	41.51	0.00	0.00	0.00	24.36	0.00	121.82	20.30
SPRM	TOTALS					0.85	0.17		0.85	0.14
SST	7					0.04	0.01		0.04	0.01
SST	8						0.00		0.00	0.00
SST	9					0.04	0.01		0.04	0.01
SST	11					1.67	0.33		1.67	0.28
SST	DO						0.00		0.00	0.00
SST	TOTALS	0.00	0.00	0.00	0.00	1.75	0.35	0.00	1.75	0.29
T	2						0.00		0.00	0.00
T	7						0.00		0.00	0.00
T	11						0.00		0.00	0.00
T	DO					2.80	0.56		2.80	0.47
T	TOTALS	0.00	0.00	0.00	0.00	2.80	0.56	0.00	2.80	0.47
VWR	TOTALS						0.00		0.00	0.00
WX	1	10.98	0.42			13.72	5.02	6.28	31.40	5.23
WX	3	10.29	2.89	5.78	6.71	3.21	5.78	3.90	32.78	5.46
WX	4	5.38					1.08		5.38	0.90
WX	5	16.54	1.46	18.52	13.20	88.27	27.60	18.52	156.51	26.09
WX	6	5.10					1.02		5.10	0.85
WX	10						0.00		0.00	0.00
WX	11		1.42	3.00	2.05	8.46	2.99	9.97	24.90	4.15
WX	12						0.00		0.00	0.00
WX	DO						0.00		0.00	0.00
WX	TOTALS	48.29	6.19	27.30	21.96	113.66	43.48	38.67	256.07	42.68
X	1					3.40	0.68		3.40	0.57
X	DO					27.19	5.44		27.19	4.53
X	TOTALS	0.00	0.00	0.00	0.00	30.59	6.12	0.00	30.59	5.10
WASTE VOLUME TOTALS BY FY:		5767.07	4045.28	4713.05	5237.53	7137.23		5708.26		

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
A	1						0.00		0.00	0.00
A	3						0.00		0.00	0.00
A	4						0.00		0.00	0.00
A	5						0.00		0.00	0.00
A	DO						0.00		0.00	0.00
A	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ACT	TOTALS						0.00		0.00	0.00
ADCN	TOTALS						0.00		0.00	0.00
ADDRA	TOTALS						0.00		0.00	0.00
ADNWT	TOTALS						0.00		0.00	0.00
ADP	1						0.00		0.00	0.00
ADP	5						0.00		0.00	0.00
ADP	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADR	TOTALS						0.00		0.00	0.00
AT	1						0.00		0.00	0.00
AT	2						0.00		0.00	0.00
AT	3						0.00		0.00	0.00
AT	4						0.00		0.00	0.00
AT	5						0.00		0.00	0.00
AT	6						0.00		0.00	0.00
AT	7						0.00		0.00	0.00
AT	8						0.00		0.00	0.00
AT	9						0.00		0.00	0.00
AT	10						0.00		0.00	0.00
AT	DO						0.00		0.00	0.00
AT	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C	1						0.00		0.00	0.00
C	7						0.00		0.00	0.00
C	DO						0.00		0.00	0.00
C	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHM	1	31.65	17.38				9.81		49.03	8.17
CHM	2						0.00		0.00	0.00
CHM	3						0.00		0.00	0.00
CHM	4						0.00		0.00	0.00
CHM	5						0.00		0.00	0.00
CHM	DO						0.00		0.00	0.00
CHM	TOTALS	31.65	17.38	0.00	0.00	0.00	9.81	0.00	49.03	8.17
CLS	1		15.36	13.50	18.15	17.89	12.98	7.28	72.18	12.03
CLS	2						0.00		0.00	0.00
CLS	3						0.00		0.00	0.00
CLS	4						0.00		0.00	0.00
CLS	5						0.00		0.00	0.00
CLS	6						0.00		0.00	0.00
CLS	7						0.00		0.00	0.00
CLS	8						0.00		0.00	0.00
CLS	9						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
CLS	DO						0.00		0.00	0.00
CLS	TOTALS	0.00	15.36	13.50	18.15	17.89	12.98	7.28	72.18	12.03
CMS	TOTALS						0.00		0.00	0.00
CNSS	TOTALS						0.00		0.00	0.00
CRM	1						0.00		0.00	0.00
CRM	2						0.00		0.00	0.00
CRM	3						0.00		0.00	0.00
CRM	DO						0.00		0.00	0.00
CRM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTR	1						0.00		0.00	0.00
CTR	2						0.00		0.00	0.00
CTR	3						0.00		0.00	0.00
CTR	4						0.00		0.00	0.00
CTR	5						0.00		0.00	0.00
CTR	7						0.00		0.00	0.00
CTR	8						0.00		0.00	0.00
CTR	9						0.00		0.00	0.00
CTR	10						0.00		0.00	0.00
CTR	DO						0.00		0.00	0.00
CTR	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EG&G	TOTALS	0.00					0.00		0.00	0.00
E	1						0.00		0.00	0.00
E	2						0.00		0.00	0.00
E	5						0.00		0.00	0.00
E	11						0.00		0.00	0.00
E	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EES	1						0.00		0.00	0.00
EES	3						0.00		0.00	0.00
EES	4						0.00		0.00	0.00
EES	5						0.00		0.00	0.00
EES	14						0.00		0.00	0.00
EES	15						0.00		0.00	0.00
EES	DO						0.00		0.00	0.00
EES	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EM	7						0.00	1.90	1.90	0.32
EM	8						0.00		0.00	0.00
EM	9						0.00		0.00	0.00
EM	13						0.00		0.00	0.00
EM	DO						0.00		0.00	0.00
EM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	1.90	1.90	0.32
ENG	1						0.00		0.00	0.00
ENG	2						0.00		0.00	0.00
ENG	3						0.00		0.00	0.00
ENG	4						0.00		0.00	0.00
ENG	5						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
ENG	6						0.00		0.00	0.00
ENG	8						0.00		0.00	0.00
ENG	DO						0.00		0.00	0.00
ENG	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ERDC	TOTALS						0.00		0.00	0.00
ESS	1						0.00		0.00	0.00
ESS	3						0.00		0.00	0.00
ESS	4						0.00		0.00	0.00
ESS	6						0.00		0.00	0.00
ESS	9						0.00		0.00	0.00
ESS	11						0.00		0.00	0.00
ESS	14						0.00		0.00	0.00
ESS	15						0.00		0.00	0.00
ESS	DO						0.00		0.00	0.00
ESS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIN	4						0.00		0.00	0.00
FIN	10						0.00		0.00	0.00
FIN	14						0.00		0.00	0.00
FIN	DO						0.00		0.00	0.00
FIN	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIRE-DEP	TOTALS						0.00		0.00	0.00
HRD	1						0.00		0.00	0.00
HRD	3						0.00		0.00	0.00
HRD	4						0.00		0.00	0.00
HRD	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS	1						0.00		0.00	0.00
HS	2						0.00		0.00	0.00
HS	3						0.00		0.00	0.00
HS	4						0.00		0.00	0.00
HS	5						0.00		0.00	0.00
HS	11						0.00		0.00	0.00
HS	DO						0.00		0.00	0.00
HS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HSE	1	0.21	0.20				0.08		0.41	0.07
HSE	2						0.00		0.00	0.00
HSE	3						0.00		0.00	0.00
HSE	5						0.00		0.00	0.00
HSE	6						0.00		0.00	0.00
HSE	7	484.09	27.30	87.87	44.64	34.91	135.76		678.81	113.14
HSE	8						0.00		0.00	0.00
HSE	9						0.00		0.00	0.00
HSE	10						0.00		0.00	0.00
HSE	11						0.00		0.00	0.00
HSE	12						0.00		0.00	0.00
HSE	DO						0.00		0.00	0.00
HSE	TOTALS	484.30	27.50	87.87	44.64	34.91	135.84	0.00	679.22	113.20

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
INC	4	1.40				1.46	0.57		2.86	0.48
INC	5						0.00		0.00	0.00
INC	7						0.00		0.00	0.00
INC	11	0.20					0.04		0.20	0.03
INC	DO						0.00		0.00	0.00
INC	TOTALS	1.60	0.00	0.00	0.00	1.46	0.61	0.00	3.06	0.51
IS	3						0.00		0.00	0.00
IS	4						0.00		0.00	0.00
IS	8						0.00		0.00	0.00
IS	9						0.00		0.00	0.00
IS	10						0.00		0.00	0.00
IS	11						0.00		0.00	0.00
IS	12						0.00		0.00	0.00
IS	DO						0.00		0.00	0.00
IS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IT	4						0.00		0.00	0.00
IT	6						0.00		0.00	0.00
IT	7						0.00		0.00	0.00
IT	DO						0.00		0.00	0.00
IT	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J	6						0.00		0.00	0.00
J	7						0.00		0.00	0.00
J	8						0.00		0.00	0.00
J	DO						0.00		0.00	0.00
J	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JCI	TOTALS						0.00		0.00	0.00
LANSCE	TOTALS						0.00		0.00	0.00
LS	1						0.00		0.00	0.00
LS	2						0.00		0.00	0.00
LS	3						0.00		0.00	0.00
LS	4						0.00		0.00	0.00
LS	6						0.00		0.00	0.00
LS	DO						0.00		0.00	0.00
LS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M	1						0.00		0.00	0.00
M	4						0.00		0.00	0.00
M	6		16.99	8.72			5.14		25.71	4.29
M	7						0.00		0.00	0.00
M	8						0.00		0.00	0.00
M	9						0.00		0.00	0.00
M	DO						0.00		0.00	0.00
M	TOTALS	0.00	16.99	8.72	0.00	0.00	5.14	0.00	25.71	4.29
M & N	TOTALS						0.00		0.00	0.00
MAT	1						0.00		0.00	0.00
MAT	2						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MAT	3						0.00		0.00	0.00
MAT	4						0.00		0.00	0.00
MAT	8						0.00		0.00	0.00
MAT	14						0.00		0.00	0.00
MAT	DO						0.00		0.00	0.00
MAT	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEC	1						0.00		0.00	0.00
MEC	2						0.00		0.00	0.00
MEC	3						0.00		0.00	0.00
MEC	4						0.00		0.00	0.00
MEC	5						0.00		0.00	0.00
MEC	6						0.00		0.00	0.00
MEC	8						0.00		0.00	0.00
MEC	9						0.00		0.00	0.00
MEC	10						0.00		0.00	0.00
MEC	DO						0.00		0.00	0.00
MEC	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEE	3						0.00		0.00	0.00
MEE	4						0.00		0.00	0.00
MEE	5						0.00		0.00	0.00
MEE	9						0.00		0.00	0.00
MEE	10						0.00		0.00	0.00
MEE	11						0.00		0.00	0.00
MEE	12						0.00		0.00	0.00
MEE	13						0.00		0.00	0.00
MEE	DO						0.00		0.00	0.00
MEE	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MP	1						0.00		0.00	0.00
MP	2						0.00		0.00	0.00
MP	4						0.00		0.00	0.00
MP	5						0.00		0.00	0.00
MP	6						0.00		0.00	0.00
MP	7						0.00		0.00	0.00
MP	8						0.00		0.00	0.00
MP	10						0.00		0.00	0.00
MP	11						0.00		0.00	0.00
MP	13						0.00		0.00	0.00
MP	DO						0.00		0.00	0.00
MP	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MST	1						0.00		0.00	0.00
MST	3						0.00		0.00	0.00
MST	4						0.00		0.00	0.00
MST	5	5.26	5.37	3.95	4.78	3.33	4.54		22.69	3.78
MST	6						0.00		0.00	0.00
MST	7						0.00		0.00	0.00
MST	8						0.00		0.00	0.00
MST	9						0.00		0.00	0.00
MST	10	291.86	136.60	2.60	1.20	0.60	86.57		432.86	72.14
MST	11		3.17				0.63		3.17	0.53
MST	12	0.20	60.14	101.63	80.55	11.96	50.90		254.48	42.41
MST	13	0.40	0.40				0.16		0.80	0.13
MST	14	2.10	0.31	0.04			0.49		2.45	0.41
MST	17				2.29	25.75	5.61	0.42	28.46	4.74
MST	DO						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MST	TOTALS	299.82	205.99	108.22	38.82	41.64	148.90	0.42	744.91	124.15
N	1			0.42			0.08		0.42	0.07
N	2						0.00		0.00	0.00
N	4						0.00		0.00	0.00
N	10						0.00		0.00	0.00
N	00						0.00		0.00	0.00
N	TOTALS	0.00	0.00	0.42	0.00	0.00	0.08	0.00	0.42	0.07
NMT	1						0.00		0.00	0.00
NMT	2						0.00		0.00	0.00
NMT	3						0.00		0.00	0.00
NMT	4						0.00		0.00	0.00
NMT	5						0.00		0.00	0.00
NMT	6						0.00		0.00	0.00
NMT	7					76.71	15.34	78.39	155.10	25.85
NMT	8						0.00		0.00	0.00
NMT	9						0.00		0.00	0.00
NMT	10						0.00		0.00	0.00
NMT	11						0.00		0.00	0.00
NMT	17						0.00		0.00	0.00
NMT	TOTALS	0.00	0.00	0.00	0.00	76.71	15.34	78.39	155.10	25.85
OM	TOTALS						0.00		0.00	0.00
OS	1						0.00		0.00	0.00
OS	2						0.00		0.00	0.00
OS	4						0.00		0.00	0.00
OS	5						0.00		0.00	0.00
OS	8						0.00		0.00	0.00
OS	10						0.00		0.00	0.00
OS	14						0.00		0.00	0.00
OS	00						0.00		0.00	0.00
OS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P	1						0.00		0.00	0.00
P	2						0.00		0.00	0.00
P	3						0.00		0.00	0.00
P	4						0.00		0.00	0.00
P	6						0.00		0.00	0.00
P	7						0.00		0.00	0.00
P	8						0.00		0.00	0.00
P	9						0.00		0.00	0.00
P	10						0.00		0.00	0.00
P	12						0.00		0.00	0.00
P	14						0.00		0.00	0.00
P	15						0.00		0.00	0.00
P	17						0.00		0.00	0.00
P	00						0.00		0.00	0.00
P	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA	1						0.00		0.00	0.00
PA	2						0.00		0.00	0.00
PA	15						0.00		0.00	0.00
PA	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

TRANSURANIC VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	5-YEAR AVERAGES
PS	TOTALS						0.00		0.00	0.00
Q	1						0.00		0.00	0.00
Q	2						0.00		0.00	0.00
Q	6						0.00		0.00	0.00
Q	13						0.00		0.00	0.00
Q	DO						0.00		0.00	0.00
Q	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPRM	TOTALS						0.00		0.00	0.00
SST	7						0.00		0.00	0.00
SST	8						0.00		0.00	0.00
SST	9						0.00		0.00	0.00
SST	11						0.00		0.00	0.00
SST	DO						0.00		0.00	0.00
SST	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	2						0.00		0.00	0.00
T	7						0.00		0.00	0.00
T	11						0.00		0.00	0.00
T	DO						0.00		0.00	0.00
T	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VWR	TOTALS						0.00		0.00	0.00
WX	1						0.00		0.00	0.00
WX	3						0.00		0.00	0.00
WX	4						0.00		0.00	0.00
WX	5						0.00		0.00	0.00
WX	6						0.00		0.00	0.00
WX	10						0.00		0.00	0.00
WX	11						0.00		0.00	0.00
WX	12						0.00		0.00	0.00
WX	DO						0.00		0.00	0.00
WX	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
X	1						0.00		0.00	0.00
X	DO						0.00		0.00	0.00
X	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WASTE VOLUME TOTALS BY FY:		817.37	283.22	218.73	151.61	172.61		87.99		

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
A	1					0.34	0.07		0.34	0.06
A	3						0.00	3.40	3.40	0.57
A	4				0.02	0.24	0.12		0.26	0.04
A	5						0.00	1.70	1.70	0.28
A	DO					0.34	0.07	3.06	3.40	0.57
A	TOTALS	0.00	0.00	0.00	0.02	0.92	0.19	8.16	9.10	1.52
ACT	TOTALS						0.00		0.00	0.00
ADCM	TOTALS				0.21	4.00	0.84		4.21	0.70
ADDRA	TOTALS					3.06	0.61		3.06	0.51
ADMNT	TOTALS		0.21			0.53	0.15	0.68	1.42	0.24
ADP	1					0.02	0.00		0.02	0.00
ADP	5						0.00	0.68	0.68	0.11
ADP	TOTALS	0.00	0.00	0.00	0.00	0.02	0.00	0.68	0.70	0.12
ADR	TOTALS					0.34	0.07		0.34	0.06
AT	1		0.21			0.06	0.05	0.11	0.38	0.06
AT	2		0.42	0.03	0.05	0.07	0.11		0.57	0.10
AT	3	0.02	0.01	0.02		0.02	0.01	0.39	0.46	0.08
AT	4					0.43	0.09	0.12	0.55	0.09
AT	5					0.03	0.01	0.32	0.35	0.06
AT	6	5.83					1.17		5.83	0.97
AT	7	3.09				0.10	0.64	6.66	9.85	1.64
AT	8						0.00	2.24	2.24	0.37
AT	9					1.14	0.23	1.06	2.20	0.37
AT	10					0.63	0.13	0.62	1.25	0.21
AT	DO	9.79	2.08		1.27	2.85	3.20	3.72	19.71	3.29
AT	TOTALS	18.73	2.72	0.05	1.32	5.33	5.63	15.24	43.39	7.23
C	1		1.05	0.45	0.28	0.22	0.40	0.42	2.42	0.40
C	7						0.00	0.02	0.02	0.00
C	DO						0.00	0.12	0.12	0.02
C	TOTALS	0.00	1.05	0.45	0.28	0.22	0.40	0.56	2.56	0.43
CHM	1		0.21				0.04		0.21	0.04
CHM	2						0.00		0.00	0.00
CHM	3						0.00		0.00	0.00
CHM	4	0.53					0.11		0.53	0.09
CHM	5	0.21					0.04		0.21	0.04
CHM	DO	4.57					0.91		4.57	0.76
CHM	TOTALS	5.31	0.21	0.00	0.00	0.00	1.10	0.00	5.52	0.92
CLS	1		0.21	0.12	0.05	0.07	0.09	3.05	3.50	0.58
CLS	2				0.11	0.08	0.04	0.17	0.36	0.06
CLS	3				0.21	10.08	2.06	5.37	15.66	2.61
CLS	4		2.52	0.45	0.51	1.07	0.91	3.01	7.56	1.26
CLS	5		1.58	2.57	0.80	3.06	1.60	2.32	10.33	1.72
CLS	6			0.11	1.21	0.49	0.36	2.06	3.87	0.65
CLS	7		5.68	10.33	68.56	21.86	21.29	68.63	175.06	29.18
CLS	8				0.44	0.94	0.28		1.38	0.23
CLS	9		0.43				0.09		0.43	0.07

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
CLS	DO		20.20	10.43	33.03	7.69	14.27	12.50	83.85	13.98
CLS	TOTALS	0.00	30.62	24.01	104.92	45.34	40.98	97.11	302.00	50.33
CMS	TOTALS						0.00	0.65	0.65	0.11
CNSS	TOTALS						0.00	1.02	1.02	0.17
CRM	1		0.02	0.02		0.03	0.01	0.98	1.05	0.18
CRM	2			0.03		0.15	0.04	1.11	1.29	0.22
CRM	3					0.44	0.09	0.31	0.75	0.13
CRM	DO					0.34	0.07	2.38	2.72	0.45
CRM	TOTALS	0.00	0.02	0.05	0.00	0.96	0.21	4.78	5.81	0.97
CTR	1					4.53	0.91		4.53	0.76
CTR	2	0.62	0.01	0.42		0.14	0.24		1.19	0.20
CTR	3	12.92		0.42	0.38	2.59	3.26		16.31	2.72
CTR	4	0.11	0.04	0.11	0.21	5.11	1.12	0.21	5.79	0.97
CTR	5	8.41	2.50			0.02	2.19		10.93	1.82
CTR	7						0.00	0.42	0.42	0.07
CTR	8			0.21	0.53	2.27	0.60		3.01	0.50
CTR	9	7.29					1.46		7.29	1.22
CTR	10					0.01	0.00		0.01	0.00
CTR	DO	293.09				12.63	61.14	34.85	340.57	56.76
CTR	TOTALS	322.44	2.55	1.16	1.12	27.30	70.91	35.48	390.05	65.01
EG&G	TOTALS		1.30	0.11	0.23	2.05	0.74		3.69	0.62
E	1	2.08					0.42		2.08	0.35
E	2	10.09	0.42				2.10		10.51	1.75
E	5	8.06	3.33				2.28		11.39	1.90
E	11	0.01		0.11			0.02		0.12	0.02
E	TOTALS	20.24	3.75	0.11	0.00	0.00	4.82	0.00	24.10	4.02
EES	1				0.02	1.04	0.21	1.72	2.78	0.46
EES	3				0.05	0.44	0.10	0.60	1.09	0.18
EES	4				0.47	2.63	0.62	3.67	6.77	1.13
EES	5						0.00	0.90	0.90	0.15
EES	14				0.83		0.17		0.83	0.14
EES	15					0.92	0.18	16.62	17.54	2.92
EES	DO					0.21	0.04	0.06	0.27	0.05
EES	TOTALS	0.00	0.00	0.00	1.37	5.24	1.32	23.57	30.18	5.03
EM	7						0.00	916.76	916.76	152.79
EM	8						0.00	2.12	2.12	0.35
EM	9						0.00	3.11	3.11	0.52
EM	13						0.00	0.62	0.62	0.10
EM	DO						0.00	36.76	36.76	6.13
EM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	959.37	959.37	159.90
ENG	1	23.94					4.79	56.14	80.08	13.35
ENG	2	22.68					4.54	0.03	22.71	3.79
ENG	3					0.29	0.06	0.23	0.52	0.09
ENG	4	19.01	18.50		0.32		7.57		37.83	6.31
ENG	5		63.69	196.76		0.10	52.11	20.72	281.27	46.88

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
ENG	6		19.99	0.77	0.28	0.96	4.40	0.62	22.62	3.77
ENG	8					0.62	0.12	1.61	2.23	0.37
ENG	DO	2.04					0.41		2.04	0.34
ENG	TOTALS	67.67	102.18	197.53	0.60	1.97	73.99	79.35	449.30	74.88
ERDC	TOTALS					0.13	0.03	0.61	0.74	0.12
ESS	1	0.11	0.02	0.03	0.84	0.11	0.22		1.11	0.19
ESS	3				0.79	0.26	0.21		1.05	0.18
ESS	4	0.21	1.57	3.98	0.32		1.22		6.08	1.01
ESS	6	0.20					0.04		0.20	0.03
ESS	9			0.08	0.02		0.02		0.10	0.02
ESS	11	0.29	2.93	1.27	0.44	0.28	1.04		5.21	0.87
ESS	14				0.62		0.12		0.62	0.10
ESS	15						0.00		0.00	0.00
ESS	DO			0.21			0.04		0.21	0.04
ESS	TOTALS	0.81	4.52	5.57	3.03	0.65	2.92	0.00	14.58	2.43
FIN	4						0.00	0.68	0.68	0.11
FIN	10					0.01	0.00		0.01	0.00
FIN	14						0.00	0.34	0.34	0.06
FIN	DO						0.00	0.68	0.68	0.11
FIN	TOTALS	0.00	0.00	0.00	0.00	0.01	0.00	1.70	1.71	0.29
FIRE-DEP	TOTALS						0.00	0.03	0.03	0.01
HRD	1					1.36	0.27		1.36	0.23
HRD	3					0.40	0.08		0.40	0.07
HRD	4						0.00	0.01	0.01	0.00
HRD	TOTALS	0.00	0.00	0.00	0.00	1.76	0.35	0.01	1.77	0.30
HS	1						0.00	0.91	0.91	0.15
HS	2						0.00	1.14	1.14	0.19
HS	3						0.00	0.02	0.02	0.00
HS	4						0.00	0.14	0.14	0.02
HS	5						0.00	0.73	0.73	0.12
HS	11						0.00	0.07	0.07	0.01
HS	DO						0.00	6.53	6.53	1.09
HS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	9.54	9.54	1.59
HSE	1	0.11	0.41	0.32	0.34	1.82	0.60		3.00	0.50
HSE	2	0.20	0.14	0.08	0.08	0.09	0.12		0.59	0.10
HSE	3						0.00		0.00	0.00
HSE	5	0.03	0.55	0.08		0.04	0.14		0.70	0.12
HSE	6				0.05		0.01		0.05	0.01
HSE	7	70.23	359.87	329.37	682.70	610.64	410.56		2052.81	342.14
HSE	8	0.28		19.62	53.49	54.86	25.65		128.25	21.38
HSE	9	0.97	0.19	3.34	1.81	1.11	1.48		7.42	1.24
HSE	10						0.00		0.00	0.00
HSE	11		0.24	2.46	0.61	0.03	0.67		3.34	0.56
HSE	12		0.12				0.02		0.12	0.02
HSE	DO			0.72		0.11	0.17		0.83	0.14
HSE	TOTALS	71.82	361.52	355.99	739.08	668.70	439.42	0.00	2197.11	366.19

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
INC	4	46.03	23.30	71.32	63.61	9.49	42.75	1.10	214.85	35.81
INC	5	0.53		0.02			0.11	0.22	0.77	0.13
INC	7	0.13	0.42	3.27	18.63	0.36	4.56	0.22	23.03	3.84
INC	11	0.24	1.59	1.86	0.44	10.71	2.97	2.54	17.38	2.90
INC	DO				4.14	0.08	0.86	9.72	13.94	2.32
INC	TOTALS	46.93	25.31	76.47	86.82	20.64	51.23	13.80	269.97	45.00
IS	3				0.16		0.03		0.16	0.03
IS	4						0.00	0.01	0.01	0.00
IS	8						0.00	0.02	0.02	0.00
IS	9	0.01	0.11	1.13		1.82	0.61	19.99	23.06	3.84
IS	10			0.09			0.02		0.09	0.02
IS	11					0.53	0.11		0.53	0.09
IS	12				0.21	0.52	0.15	0.06	0.79	0.13
IS	DO						0.00	0.03	0.03	0.01
IS	TOTALS	0.01	0.11	1.22	0.37	2.87	0.92	20.11	24.69	4.12
IT	4						0.00	0.02	0.02	0.00
IT	6					0.10	0.02	0.25	0.35	0.06
IT	7			0.17		2.01	0.44	0.19	2.37	0.40
IT	DO		0.11	0.11		0.15	0.07	0.25	0.62	0.10
IT	TOTALS	0.00	0.11	0.28	0.00	2.26	0.53	0.71	3.36	0.56
J	6		0.05				0.01		0.05	0.01
J	7					0.01	0.00		0.01	0.00
J	8				0.31		0.06	4.49	4.80	0.80
J	DO					2.00	0.40	1.18	3.18	0.53
J	TOTALS	0.00	0.05	0.00	0.31	2.01	0.47	5.67	8.04	1.34
JCI	TOTALS	262.53	456.97	486.96	901.14	637.64	549.05	543.92	3289.16	548.19
LANSCE	TOTALS		1.87	0.11	0.75	4.47	1.44	1.13	8.33	1.39
LS	1	4.47	0.27	0.06	0.28		1.02	0.53	5.61	0.94
LS	2			0.02	0.55	0.48	0.21	1.09	2.14	0.36
LS	3	0.11	0.12	0.34	0.80	0.50	0.37	0.45	2.32	0.39
LS	4					3.36	0.67	1.42	4.78	0.80
LS	6						0.00		0.00	0.00
LS	DO	1.67		3.64	18.18	10.46	6.79	0.12	34.07	5.68
LS	TOTALS	6.25	0.39	4.06	19.81	14.80	9.06	3.61	48.92	8.15
M	1	4.34	1.06	2.08	3.86	1.67	2.60	40.51	53.52	8.92
M	4	7.57	3.22	0.20	6.65	5.03	4.53	6.48	29.15	4.86
M	6	1.86	1.46	0.45	80.91	47.37	26.41	71.12	203.17	33.86
M	7	1.02	3.75	4.79	14.99	12.25	7.36	22.65	59.45	9.91
M	8		0.42	0.42	26.66	25.78	10.66	1.70	54.98	9.16
M	9	8.76			0.11	2.17	2.21	2.63	13.67	2.28
M	DO		0.14			0.37	0.10	2.84	3.35	0.56
M	TOTALS	23.55	10.05	7.94	133.18	94.64	53.87	147.93	417.29	69.55
M & H	TOTALS				0.66	2.44	0.62	0.57	3.67	0.61
MAT	1	7.70	1.59	0.21	0.07	0.06	1.93		9.63	1.61
MAT	2				0.64	0.03	0.13	2.11	2.78	0.46

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MAT	3						0.00	0.02	0.02	0.00
MAT	4						0.00		0.00	0.00
MAT	8						0.00		0.00	0.00
MAT	14	0.42	0.43	1.04	1.17	1.13	0.84	0.77	4.96	0.83
MAT	DO					0.21	0.04		0.21	0.04
MAT	TOTALS	8.12	2.02	1.25	1.88	1.43	2.94	2.90	17.60	2.93
MEC	1	15.25	4.41	5.00	4.30	7.86	7.36	8.70	45.52	7.59
MEC	2	0.01					0.00		0.01	0.00
MEC	3	10.08	4.80	25.91	68.95	66.12	35.17	124.81	300.67	50.11
MEC	4						0.00	0.68	0.68	0.11
MEC	5	0.22	14.65	6.17	12.47	3.04	7.31	1.50	38.05	6.34
MEC	6		1.14	1.26	0.85	1.01	0.85	0.44	4.70	0.78
MEC	8		0.42		0.05	0.23	0.14	0.23	0.93	0.16
MEC	9		1.74	0.16	1.19	1.77	0.97	0.87	5.73	0.96
MEC	10		11.62	16.02	11.63	10.97	10.05	7.53	57.77	9.63
MEC	DO	0.21	1.66	0.62	0.42	0.02	0.59	0.70	3.63	0.61
MEC	TOTALS	25.77	40.44	55.14	99.86	91.02	62.45	145.46	457.69	76.28
MEE	3		0.01				0.00	1.25	1.26	0.21
MEE	4					2.01	0.40	4.42	6.43	1.07
MEE	5					0.01	0.00		0.01	0.00
MEE	9						0.00	0.03	0.03	0.01
MEE	10						0.00	0.68	0.68	0.11
MEE	11		0.08	0.26	0.58	0.45	0.27	0.65	2.02	0.34
MEE	12		0.02	0.13			0.03	0.01	0.16	0.03
MEE	13		0.81			2.79	0.72	0.66	4.26	0.71
MEE	DO					0.01	0.00	3.13	3.14	0.52
MEE	TOTALS	0.00	0.92	0.39	0.58	5.27	1.43	10.83	17.99	3.00
MP	1	2.29					0.46		2.29	0.38
MP	2						0.00		0.00	0.00
MP	4					0.04	0.01	0.05	0.09	0.02
MP	5		0.08		0.17	2.08	0.47	1.58	3.91	0.65
MP	6				0.26	0.02	0.06	0.01	0.29	0.05
MP	7		12.37	0.83	0.76	29.78	8.75	0.57	44.31	7.39
MP	8	0.61	1.56	2.52	2.94	6.72	2.87	3.31	17.66	2.94
MP	10						0.00	0.02	0.02	0.00
MP	11	0.41					0.08		0.41	0.07
MP	13						0.00		0.00	0.00
MP	DO	10.92	1.70	1.39	1.34	3.92	3.85	2.06	21.33	3.56
MP	TOTALS	14.23	15.71	4.74	5.47	42.56	16.54	7.60	90.31	15.05
MST	1						0.00		0.00	0.00
MST	3	0.97		8.00	0.09	0.33	1.88	1.40	10.79	1.80
MST	4					7.09	1.42	1.58	8.67	1.45
MST	5	0.02	0.02			0.50	0.11	0.72	1.26	0.21
MST	6	13.77	3.66	10.04	6.65	29.29	12.68	10.06	73.47	12.25
MST	7	7.16	6.18	1.97	13.92	1.97	6.24	10.31	41.51	6.92
MST	8	0.23	0.32	5.05	8.43		2.81		14.03	2.34
MST	9						0.00		0.00	0.00
MST	10						0.00		0.00	0.00
MST	11	1.12	0.23		0.74		0.42		2.09	0.35
MST	12	4.87	12.25	3.95	1.53		4.52		22.60	3.77
MST	13	1.43	0.34	1.25	0.06	0.02	0.62		3.10	0.52
MST	14			1.32		0.75	0.41		2.07	0.35
MST	17				0.02		0.00		0.02	0.00
MST	DO	0.09					0.02	29.24	29.33	4.89

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MST	TOTALS	29.66	23.00	31.58	31.44	39.95	31.13	53.31	208.94	34.82
N	1					2.83	0.57	0.88	3.71	0.62
N	2			7.34	0.62	5.77	2.75	1.41	15.14	2.52
N	4				0.43	0.04	0.09		0.47	0.08
N	10				0.21		0.04		0.21	0.04
N	DO				0.13		0.03	1.08	1.21	0.20
N	TOTALS	0.00	0.00	7.34	1.39	8.64	3.47	3.37	20.74	3.46
NMT	1					0.34	0.07	1.75	2.09	0.35
NMT	2					0.31	0.06	0.63	0.94	0.16
NMT	3					1.20	0.24	1.08	2.28	0.38
NMT	4						0.00		0.00	0.00
NMT	5					0.03	0.01	0.11	0.14	0.02
NMT	6						0.00	0.04	0.04	0.01
NMT	7					2.68	0.54	3.66	6.34	1.06
NMT	8					1.36	0.27	5.28	6.64	1.11
NMT	9						0.00	0.01	0.01	0.00
NMT	10						0.00		0.00	0.00
NMT	11						0.00		0.00	0.00
NMT	17						0.00		0.00	0.00
NMT	TOTALS	0.00	0.00	0.00	0.00	5.92	1.18	12.56	18.48	3.08
OM	TOTALS						0.00	0.08	0.08	0.01
OS	1						0.00		0.00	0.00
OS	2					1.87	0.37	1.36	3.23	0.54
OS	4					0.61	0.12	0.03	0.64	0.11
OS	5						0.00		0.00	0.00
OS	8				0.05	3.54	0.72	9.20	12.79	2.13
OS	10						0.00	0.51	0.51	0.09
OS	14				0.11	0.04	0.03		0.15	0.03
OS	DO					0.26	0.05	3.02	3.28	0.55
OS	TOTALS	0.00	0.00	0.00	0.16	6.32	1.30	14.12	20.60	3.43
P	1			2.08		1.28	0.67	1.71	5.07	0.85
P	2					0.01	0.00		0.01	0.00
P	3	0.32	12.42			0.22	2.59	0.01	12.97	2.16
P	4	0.21				0.88	0.22	1.52	2.61	0.44
P	6					0.24	0.05		0.24	0.04
P	7	2.02					0.40		2.02	0.34
P	8	2.08					0.42		2.08	0.35
P	9	0.01	4.64			0.28	0.99	0.84	5.77	0.96
P	10	0.01	0.03		0.83	1.66	0.51	2.54	5.07	0.85
P	12	0.01					0.00		0.01	0.00
P	14	0.30	0.01		0.21	0.64	0.23	1.76	2.92	0.49
P	15		0.21		0.27	4.20	0.94	2.50	7.18	1.20
P	17					0.03	0.01		0.03	0.01
P	DO						0.00	0.68	0.68	0.11
P	TOTALS	4.96	17.31	2.08	1.31	9.44	7.02	11.56	46.66	7.78
PA	1			0.08			0.02		0.08	0.01
PA	2						0.00	0.01	0.01	0.00
PA	15	0.01					0.00		0.01	0.00
PA	TOTALS	0.01	0.00	0.08	0.00	0.00	0.02	0.01	0.10	0.02

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS CHEMICAL VOLUMES - m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
PS	TOTALS						0.00	0.02	0.02	0.00
Q	1	0.38					0.08		0.38	0.06
Q	2	0.14	0.42				0.11		0.56	0.09
Q	6	0.10					0.02		0.10	0.02
Q	13	0.05					0.01		0.05	0.01
Q	DO	0.90					0.18		0.90	0.15
Q	TOTALS	1.57	0.42	0.00	0.00	0.00	0.40	0.00	1.99	0.33
SPRM	TOTALS						0.00		0.00	0.00
SST	7					0.13	0.03	0.06	0.19	0.03
SST	8					0.03	0.01	0.05	0.08	0.01
SST	9					0.01	0.00	0.03	0.04	0.01
SST	11				0.65	1.92	0.51	1.56	4.13	0.69
SST	DO						0.00	0.02	0.02	0.00
SST	TOTALS	0.00	0.00	0.00	0.65	2.09	0.55	1.72	4.46	0.74
T	2						0.00	1.36	1.36	0.23
T	7						0.00		0.00	0.00
T	11						0.00		0.00	0.00
T	DO					11.45	2.29	6.12	17.57	2.93
T	TOTALS	0.00	0.00	0.00	0.00	11.45	2.29	7.48	18.93	3.16
VWR	TOTALS		0.62	0.02		0.47	0.22	0.09	1.20	0.20
WX	1				0.21	1.41	0.32	7.61	9.23	1.54
WX	3	58.86	102.26	63.53	106.37	150.10	96.22	170.16	651.28	108.55
WX	4	5.38	0.21				1.12		5.59	0.93
WX	5		0.68	0.21		10.50	2.28	7.96	19.35	3.23
WX	6						0.00		0.00	0.00
WX	10	0.10					0.02		0.10	0.02
WX	11				0.05	0.10	0.03	0.85	1.00	0.17
WX	12	0.35	47.91	83.16	51.41	39.71	44.51	4.67	227.21	37.87
WX	DO					0.01	0.00		0.01	0.00
WX	TOTALS	64.69	151.06	146.90	158.04	201.83	144.50	191.25	913.77	152.30
X	1				3.48		0.70		3.48	0.58
X	DO				0.24	30.64	6.18	11.62	42.50	7.08
X	TOTALS	0.00	0.00	0.00	3.72	30.64	6.87	11.62	45.98	7.66
WASTE VOLUME TOTALS BY FY:		995.30	1257.01	1411.59	2299.72	2007.33		2449.97		

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
A	1						0.00		0.00	0.00
A	3						0.00		0.00	0.00
A	4						0.00		0.00	0.00
A	5						0.00		0.00	0.00
A	DO						0.00		0.00	0.00
A	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ACT	TOTALS						0.00		0.00	0.00
ADCM	TOTALS						0.00		0.00	0.00
ADDRA	TOTALS						0.00		0.00	0.00
ADNWT	TOTALS						0.00		0.00	0.00
ADP	1						0.00		0.00	0.00
ADP	5						0.00		0.00	0.00
ADP	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADR	TOTALS						0.00		0.00	0.00
AT	1						0.00		0.00	0.00
AT	2						0.00		0.00	0.00
AT	3						0.00		0.00	0.00
AT	4						0.00		0.00	0.00
AT	5						0.00		0.00	0.00
AT	6						0.00		0.00	0.00
AT	7						0.00		0.00	0.00
AT	8						0.00		0.00	0.00
AT	9						0.00		0.00	0.00
AT	10						0.00		0.00	0.00
AT	DO	0.93				0.21	0.23		1.14	0.19
AT	TOTALS	0.93	0.00	0.00	0.00	0.21	0.23	0.00	1.14	0.19
C	1						0.00		0.00	0.00
C	7						0.00		0.00	0.00
C	DO						0.00		0.00	0.00
C	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHM	1						0.00		0.00	0.00
CHM	2						0.00		0.00	0.00
CHM	3						0.00		0.00	0.00
CHM	4						0.00		0.00	0.00
CHM	5						0.00		0.00	0.00
CHM	DO						0.00		0.00	0.00
CHM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CLS	1		0.66	0.23	0.46	0.77	0.42	0.02	2.14	0.36
CLS	2						0.00		0.00	0.00
CLS	3					0.62	0.12		0.62	0.10
CLS	4					0.22	0.04	0.08	0.30	0.05
CLS	5						0.00		0.00	0.00
CLS	6		0.11				0.02		0.11	0.02
CLS	7		0.42	0.62			0.21	1.51	2.55	0.43
CLS	8				0.21		0.04		0.21	0.04
CLS	9						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
CLS	DO					0.24	0.05		0.24	0.04
CLS	TOTALS	0.00	1.19	0.85	0.67	1.85	0.91	1.61	6.17	1.03
CMS	TOTALS						0.00		0.00	0.00
CNSS	TOTALS						0.00		0.00	0.00
CRM	1						0.00		0.00	0.00
CRM	2						0.00		0.00	0.00
CRM	3						0.00		0.00	0.00
CRM	DO						0.00		0.00	0.00
CRM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTR	1						0.00		0.00	0.00
CTR	2		0.07				0.01		0.07	0.01
CTR	3		0.53				0.11		0.53	0.09
CTR	4						0.00		0.00	0.00
CTR	5						0.00		0.00	0.00
CTR	7						0.00		0.00	0.00
CTR	8						0.00		0.00	0.00
CTR	9						0.00		0.00	0.00
CTR	10						0.00		0.00	0.00
CTR	DO		0.21	1.39			0.32	0.97	2.57	0.43
CTR	TOTALS	0.00	0.81	1.39	0.00	0.00	0.44	0.97	3.17	0.53
EG&G	TOTALS		0.42				0.08		0.42	0.07
E	1						0.00		0.00	0.00
E	2						0.00		0.00	0.00
E	5						0.00		0.00	0.00
E	11						0.00		0.00	0.00
E	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EES	1						0.00		0.00	0.00
EES	3					0.11	0.02		0.11	0.02
EES	4						0.00	0.50	0.50	0.08
EES	5						0.00		0.00	0.00
EES	14					1.74	0.35		1.74	0.29
EES	15						0.00		0.00	0.00
EES	DO						0.00		0.00	0.00
EES	TOTALS	0.00	0.00	0.00	0.00	1.85	0.37	0.50	2.35	0.39
EM	7						0.00	73.26	73.26	12.21
EM	8						0.00		0.00	0.00
EM	9						0.00	1.21	1.21	0.20
EM	13						0.00		0.00	0.00
EM	DO						0.00	2.69	2.69	0.45
EM	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	77.16	77.16	12.86
ENG	1					1.46	0.29		1.46	0.24
ENG	2						0.00		0.00	0.00
ENG	3						0.00		0.00	0.00
ENG	4						0.00		0.00	0.00
ENG	5					4.25	0.85		4.25	0.71

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
ENG	6						0.00		0.00	0.00
ENG	8						0.00		0.00	0.00
ENG	DO						0.00		0.00	0.00
ENG	TOTALS	0.00	0.00	0.00	0.00	5.71	1.14	0.00	5.71	0.95
ERDC	TOTALS						0.00		0.00	0.00
ESS	1						0.00		0.00	0.00
ESS	3						0.00		0.00	0.00
ESS	4						0.00		0.00	0.00
ESS	6						0.00		0.00	0.00
ESS	9						0.00		0.00	0.00
ESS	11				0.09		0.02		0.09	0.02
ESS	14						0.00		0.00	0.00
ESS	15						0.00		0.00	0.00
ESS	DO						0.00		0.00	0.00
ESS	TOTALS	0.00	0.00	0.00	0.09	0.00	0.02	0.00	0.09	0.02
FIN	4						0.00		0.00	0.00
FIN	10						0.00		0.00	0.00
FIN	14						0.00		0.00	0.00
FIN	DO						0.00		0.00	0.00
FIN	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIRE-DEP	TOTALS						0.00		0.00	0.00
HRD	1						0.00		0.00	0.00
HRD	3						0.00		0.00	0.00
HRD	4						0.00		0.00	0.00
HRD	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS	1						0.00	3.88	3.88	0.65
HS	2						0.00		0.00	0.00
HS	3						0.00		0.00	0.00
HS	4						0.00	1.14	1.14	0.19
HS	5						0.00		0.00	0.00
HS	11						0.00		0.00	0.00
HS	DO						0.00		0.00	0.00
HS	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	5.02	5.02	0.84
HSE	1	2.27	2.81	5.70	5.98	8.44	5.04		25.20	4.20
HSE	2			0.65			0.13		0.65	0.11
HSE	3					0.42	0.08		0.42	0.07
HSE	5						0.00		0.00	0.00
HSE	6						0.00		0.00	0.00
HSE	7	0.95	206.91	66.77	83.76	124.70	96.62		483.09	80.52
HSE	8		0.32	0.23			0.11		0.55	0.09
HSE	9	0.30	0.08	1.03	0.80	0.93	0.63		3.14	0.52
HSE	10			0.12			0.02		0.12	0.02
HSE	11				1.06	0.38	0.29		1.44	0.24
HSE	12						0.00		0.00	0.00
HSE	DO						0.00		0.00	0.00
HSE	TOTALS	3.52	210.12	74.50	91.60	134.87	102.92	0.00	514.61	85.77

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
INC	4	0.23	0.83	0.42	0.21	0.47	0.43	0.95	3.11	0.52
INC	5				1.48	0.62	0.42	0.83	2.93	0.49
INC	7						0.00	0.01	0.01	0.00
INC	11	0.23	0.65	1.93		7.10	1.98	3.96	13.87	2.31
INC	DO						0.00		0.00	0.00
INC	TOTALS	0.46	1.48	2.35	1.69	8.19	2.83	5.75	19.92	3.32
IS	3						0.00		0.00	0.00
IS	4					0.57	0.11		0.57	0.10
IS	8						0.00		0.00	0.00
IS	9						0.00		0.00	0.00
IS	10						0.00		0.00	0.00
IS	11						0.00		0.00	0.00
IS	12						0.00		0.00	0.00
IS	DO						0.00		0.00	0.00
IS	TOTALS	0.00	0.00	0.00	0.00	0.57	0.11	0.00	0.57	0.10
IT	4						0.00		0.00	0.00
IT	6						0.00		0.00	0.00
IT	7						0.00		0.00	0.00
IT	DO						0.00		0.00	0.00
IT	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J	6						0.00		0.00	0.00
J	7						0.00		0.00	0.00
J	8						0.00		0.00	0.00
J	DO						0.00		0.00	0.00
J	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JCI	TOTALS	0.21	10.72	263.97	741.39	68.01	216.86	2.52	1086.82	181.14
LANSCE	TOTALS						0.00		0.00	0.00
LS	1						0.00	0.23	0.23	0.04
LS	2						0.00	0.24	0.24	0.04
LS	3	0.66	0.11	4.35	5.69	1.15	2.39	0.59	12.55	2.09
LS	4					0.61	0.12	0.71	1.32	0.22
LS	6						0.00		0.00	0.00
LS	DO		1.37	0.23			0.32		1.60	0.27
LS	TOTALS	0.66	1.48	4.58	5.69	1.76	2.83	1.77	15.94	2.66
M	1					5.70	1.14		5.70	0.95
M	4		0.11	0.08		0.11	0.06	0.42	0.72	0.12
M	6		0.21		0.20		0.08	0.11	0.52	0.09
M	7		0.21	0.21			0.08		0.42	0.07
M	8		0.83		0.95	1.70	0.70	2.54	6.02	1.00
M	9						0.00		0.00	0.00
M	DO						0.00		0.00	0.00
M	TOTALS	0.00	1.36	0.29	1.15	7.51	2.06	3.07	13.38	2.23
M & H	TOTALS					0.68	0.14		0.68	0.11
MAT	1					0.03	0.01		0.03	0.01
MAT	2						0.00		0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MAT	3						0.00		0.00	0.00
MAT	4						0.00		0.00	0.00
MAT	8						0.00		0.00	0.00
MAT	14						0.00		0.00	0.00
MAT	DO						0.00		0.00	0.00
MAT	TOTALS	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.03	0.01
MEC	1		5.82	11.69	8.23	9.71	7.09	10.96	46.41	7.74
MEC	2						0.00		0.00	0.00
MEC	3						0.00		0.00	0.00
MEC	4						0.00	0.01	0.01	0.00
MEC	5		0.62				0.12		0.62	0.10
MEC	6						0.00	0.06	0.06	0.01
MEC	8						0.00		0.00	0.00
MEC	9		2.08	2.82	2.91	7.71	3.10	2.83	18.35	3.06
MEC	10		0.42				0.08	1.33	1.75	0.29
MEC	DO						0.00		0.00	0.00
MEC	TOTALS	0.00	8.94	14.51	11.14	17.42	10.40	15.19	67.20	11.20
MEE	3						0.00	0.13	0.13	0.02
MEE	4						0.00		0.00	0.00
MEE	5						0.00		0.00	0.00
MEE	9						0.00	0.26	0.26	0.04
MEE	10						0.00		0.00	0.00
MEE	11				0.02		0.00		0.02	0.00
MEE	12						0.00		0.00	0.00
MEE	13						0.00	0.57	0.57	0.10
MEE	DO						0.00		0.00	0.00
MEE	TOTALS	0.00	0.00	0.00	0.02	0.00	0.00	0.96	0.98	0.16
MP	1						0.00		0.00	0.00
MP	2			0.21			0.04		0.21	0.04
MP	4				0.02		0.00		0.02	0.00
MP	5					0.21	0.04		0.21	0.04
MP	6						0.00		0.00	0.00
MP	7				0.62	33.62	6.85		34.24	5.71
MP	8						0.00	0.11	0.11	0.02
MP	10						0.00		0.00	0.00
MP	11		1.04	11.98			2.60		13.02	2.17
MP	13						0.00		0.00	0.00
MP	DO				0.06		0.01		0.06	0.01
MP	TOTALS	0.00	1.04	12.19	0.70	33.83	9.55	0.11	47.87	7.98
MST	1						0.00		0.00	0.00
MST	3		0.02	0.34	0.53	0.46	0.27	0.69	2.04	0.34
MST	4						0.00		0.00	0.00
MST	5						0.00	14.05	14.05	2.34
MST	6			0.42	0.64	15.95	3.40	0.47	17.48	2.91
MST	7			1.38	2.29	0.21	0.78	0.05	3.93	0.66
MST	8						0.00		0.00	0.00
MST	9						0.00		0.00	0.00
MST	10						0.00		0.00	0.00
MST	11			0.11			0.02		0.11	0.02
MST	12	0.23	2.21	4.90	7.25		2.92		14.59	2.43
MST	13						0.00		0.00	0.00
MST	14			0.21	1.00	0.62	0.37		1.83	0.31
MST	17				4.52	0.62	1.03		5.14	0.86
MST	DO						0.00	0.04	0.04	0.01

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
MST	TOTALS	0.23	2.23	7.36	16.23	17.86	8.78	15.30	59.21	9.87
N	1					8.50	1.70		8.50	1.42
N	2			0.11			0.02	0.11	0.22	0.04
N	4						0.00		0.00	0.00
N	10						0.00		0.00	0.00
N	00						0.00		0.00	0.00
N	TOTALS	0.00	0.00	0.11	0.00	8.50	1.72	0.11	8.72	1.45
NMT	1					0.11	0.02	0.11	0.22	0.04
NMT	2					0.57	0.11	0.01	0.58	0.10
NMT	3						0.00		0.00	0.00
NMT	4						0.00		0.00	0.00
NMT	5						0.00		0.00	0.00
NMT	6						0.00		0.00	0.00
NMT	7					2.88	0.58	5.06	7.94	1.32
NMT	8						0.00		0.00	0.00
NMT	9					0.05	0.01		0.05	0.01
NMT	10						0.00		0.00	0.00
NMT	11						0.00		0.00	0.00
NMT	17						0.00		0.00	0.00
NMT	TOTALS	0.00	0.00	0.00	0.00	3.61	0.72	5.18	8.79	1.47
OM	TOTALS						0.00		0.00	0.00
OS	1						0.00		0.00	0.00
OS	2						0.00	13.31	13.31	2.22
OS	4						0.00		0.00	0.00
OS	5						0.00		0.00	0.00
OS	8						0.00		0.00	0.00
OS	10						0.00		0.00	0.00
OS	14				0.02	0.11	0.03		0.13	0.02
OS	00						0.00		0.00	0.00
OS	TOTALS	0.00	0.00	0.00	0.02	0.11	0.03	13.31	13.44	2.24
P	1						0.00		0.00	0.00
P	2						0.00		0.00	0.00
P	3						0.00	0.62	0.62	0.10
P	4				0.21		0.04		0.21	0.04
P	6				0.91	1.37	0.46		2.28	0.38
P	7						0.00		0.00	0.00
P	8					0.17	0.03		0.17	0.03
P	9		0.21	0.62	0.42	0.42	0.33	0.21	1.88	0.31
P	10						0.00	0.01	0.01	0.00
P	12						0.00		0.00	0.00
P	14						0.00		0.00	0.00
P	15						0.00		0.00	0.00
P	17						0.00		0.00	0.00
P	00					0.02	0.00		0.02	0.00
P	TOTALS	0.00	0.21	0.62	1.54	1.98	0.87	0.84	5.19	0.87
PA	1						0.00		0.00	0.00
PA	2						0.00		0.00	0.00
PA	15						0.00		0.00	0.00
PA	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Waste Minimization Baseline Data
FY 1986 - FY 1991 Waste Volumes Managed by EM-7

HAZARDOUS/RADIOACTIVE MIXED VOLUMES -m3

DIVISION NAME	GROUP NUMBER	FY86	FY87	FY88	FY89	FY90	5-YEAR AVERAGES	FY91	6-YEAR TOTALS	6-YEAR AVERAGES
PS	TOTALS						0.00		0.00	0.00
Q	1						0.00		0.00	0.00
Q	2						0.00		0.00	0.00
Q	6						0.00		0.00	0.00
Q	13						0.00		0.00	0.00
Q	DO						0.00		0.00	0.00
Q	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPRM	TOTALS						0.00		0.00	0.00
SST	7						0.00		0.00	0.00
SST	8						0.00		0.00	0.00
SST	9						0.00		0.00	0.00
SST	11						0.00		0.00	0.00
SST	DO						0.00		0.00	0.00
SST	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	2						0.00		0.00	0.00
T	7						0.00		0.00	0.00
T	11						0.00		0.00	0.00
T	DO						0.00		0.00	0.00
T	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VWR	TOTALS						0.00		0.00	0.00
WX	1	2.08		0.11		5.41	1.52	1.47	9.07	1.51
WX	3					1.03	0.21		1.03	0.17
WX	4						0.00		0.00	0.00
WX	5	0.34			0.74		0.22	0.34	1.42	0.24
WX	6						0.00		0.00	0.00
WX	10						0.00		0.00	0.00
WX	11	0.11				2.50	0.52		2.61	0.44
WX	12						0.00		0.00	0.00
WX	DO						0.00		0.00	0.00
WX	TOTALS	2.53	0.00	0.11	0.74	8.94	2.46	1.81	14.13	2.36
X	1						0.00		0.00	0.00
X	DO						0.00		0.00	0.00
X	TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WASTE VOLUME TOTALS BY FY:		8.54	240.00	382.83	872.67	323.49		151.18		

APPENDIX B

BASELINE AND DATA GRAPHS

LOS ALAMOS WASTES MANAGED

FY86-90 Averages vs 1991 Actual Volume

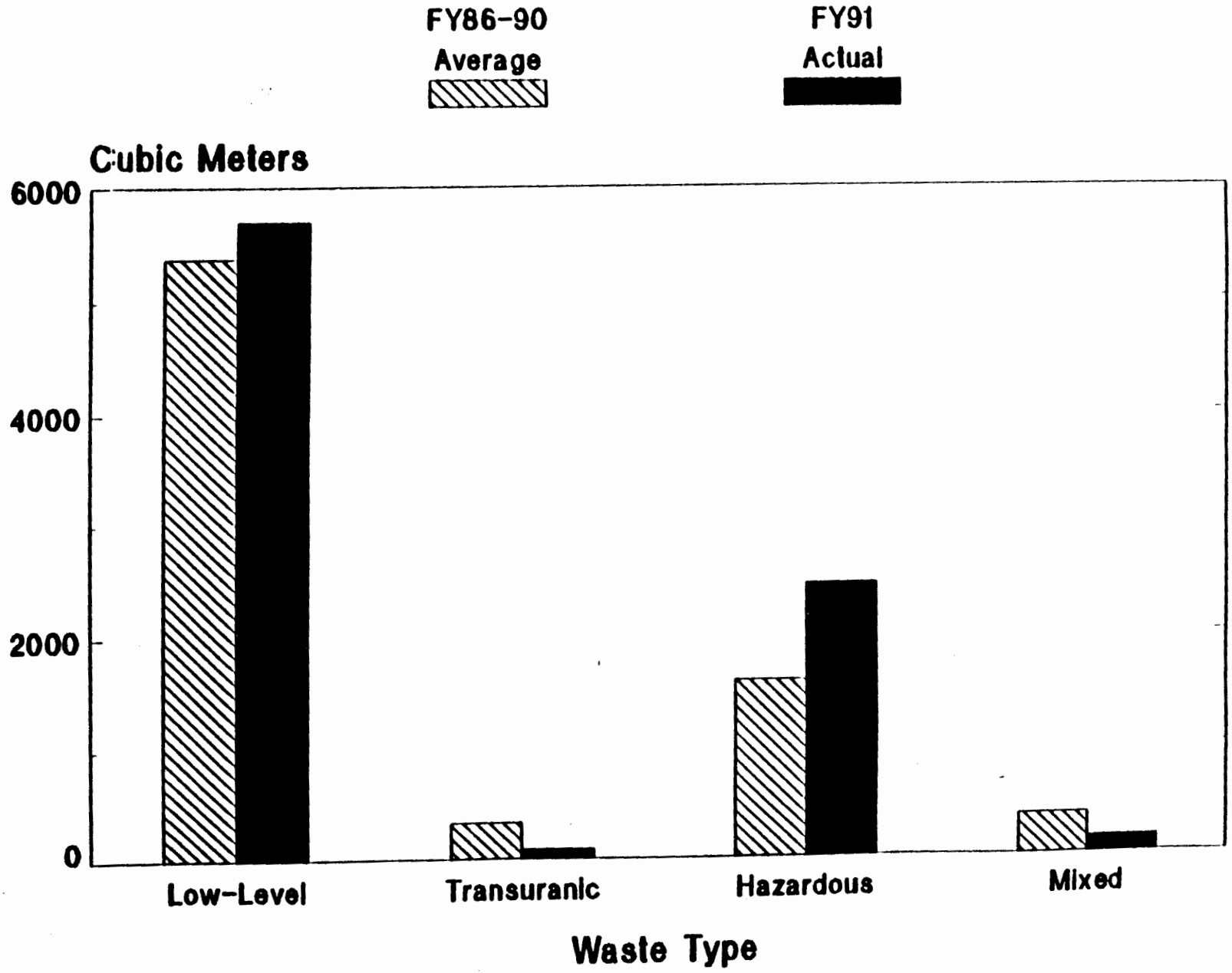
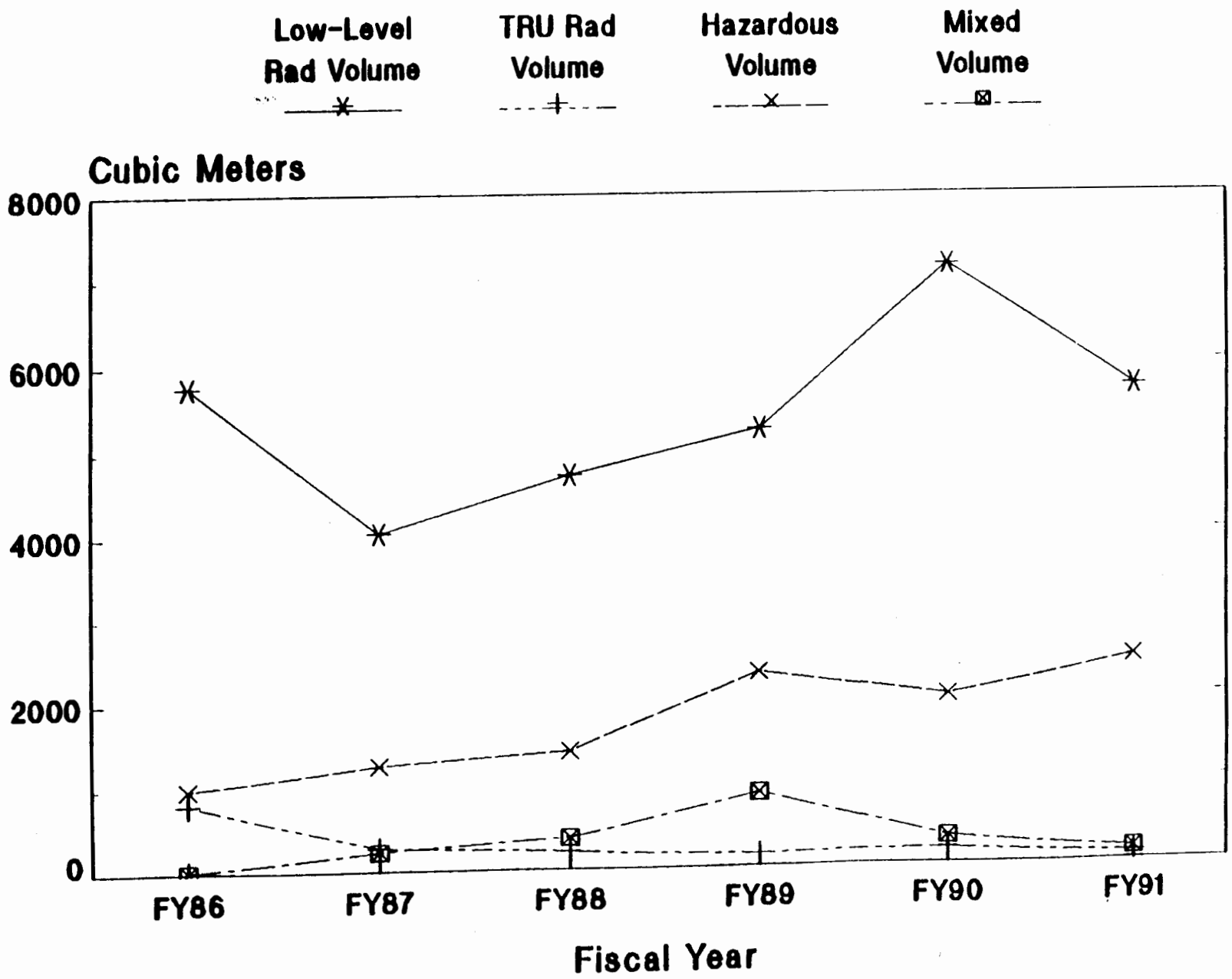


Figure 6

LOS ALAMOS WASTES MANAGED

Fiscal Years 1986 - 1991



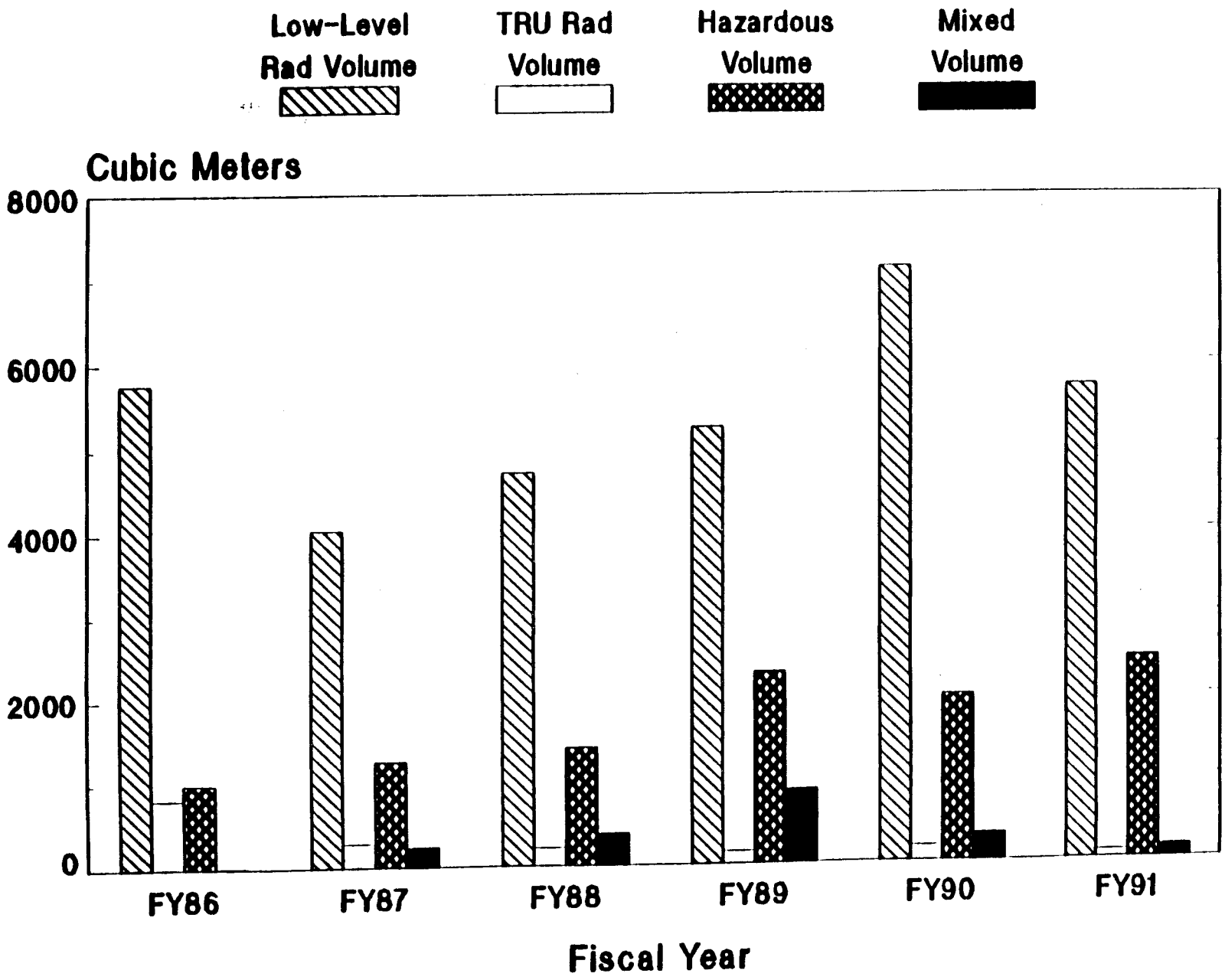
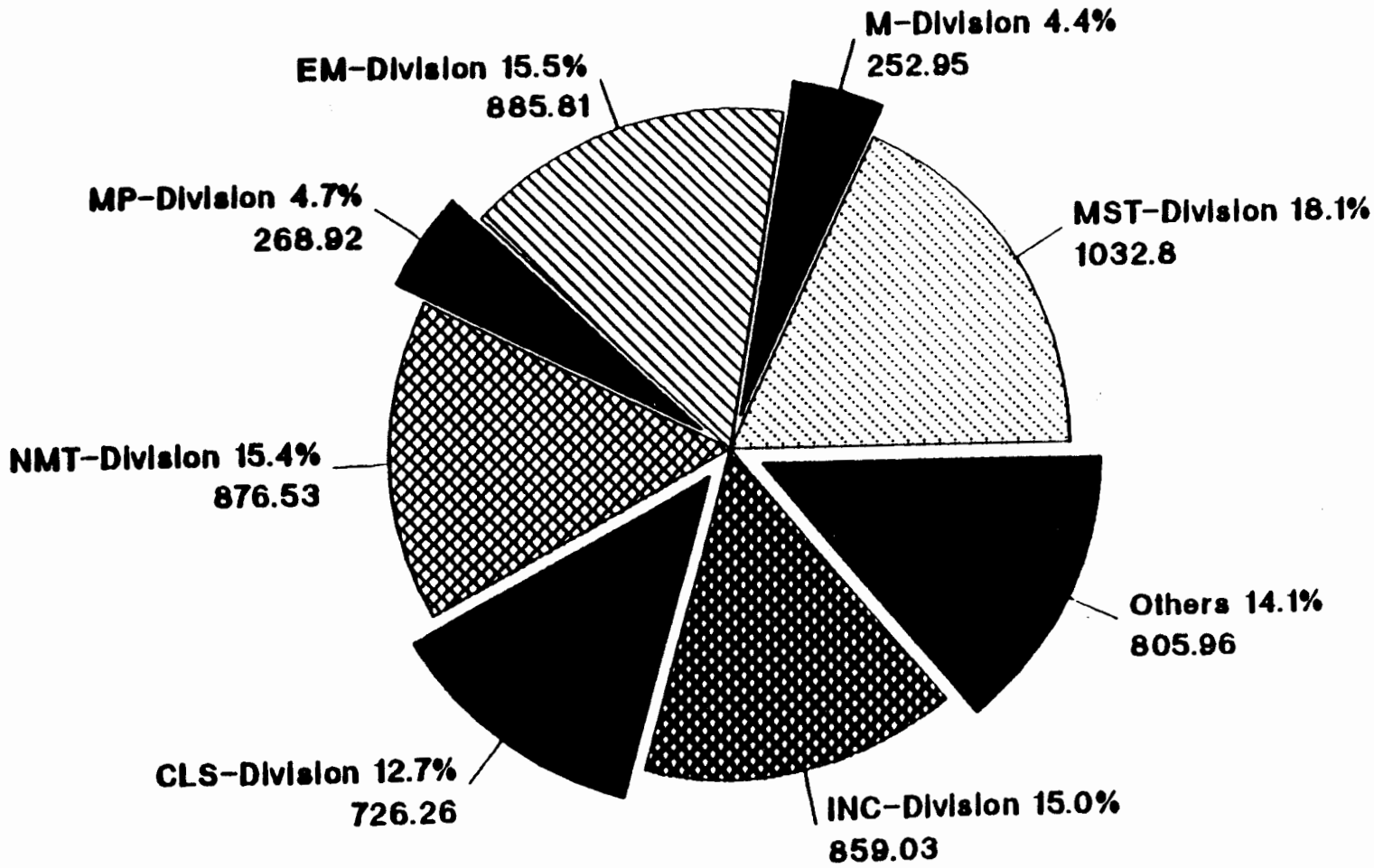

LOS ALAMOS WASTES MANAGED
Fiscal Years 1986 - 1991
Low-Level Rad Volume
TRU Rad Volume
Hazardous Volume
Mixed Volume
Cubic Meters
8000
6000
4000
2000
0
FY86
FY87
FY88
FY89
FY90
FY91
Fiscal Year

Figure 8

LANL LOW-LEVEL WASTES MANAGED

During FY91 - Volume by Organization

(Cubic Meters)

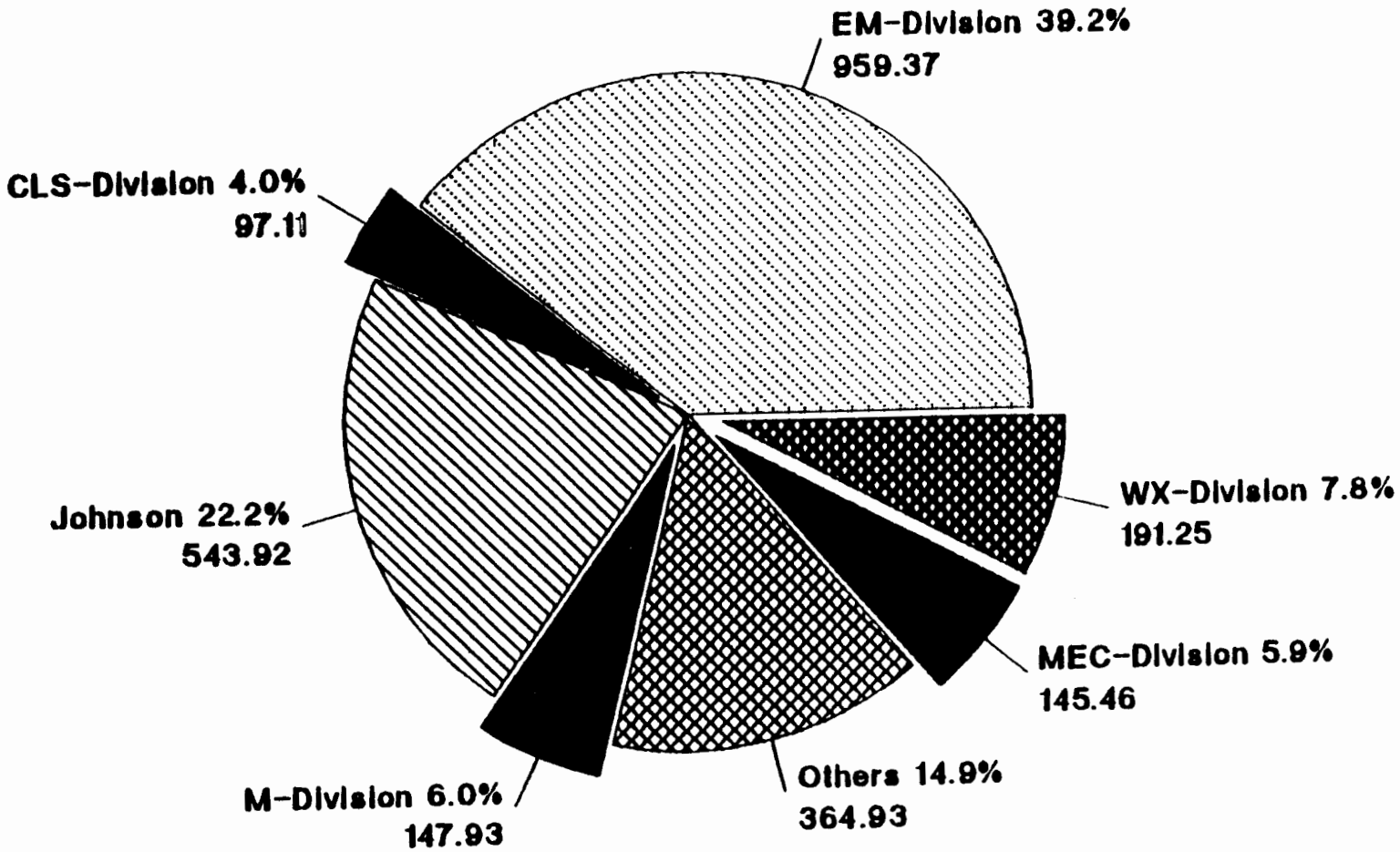


Total Volume = 5708.26 cubic meters

LANL HAZARDOUS WASTES MANAGED

During FY91 – Volume by Organization

(Cubic Meters)



Total Volume = 2449.97 cubic meters

LOS ALAMOS WASTES MANAGED

During FY91 – Volume by Waste Type

(Cubic Meters)

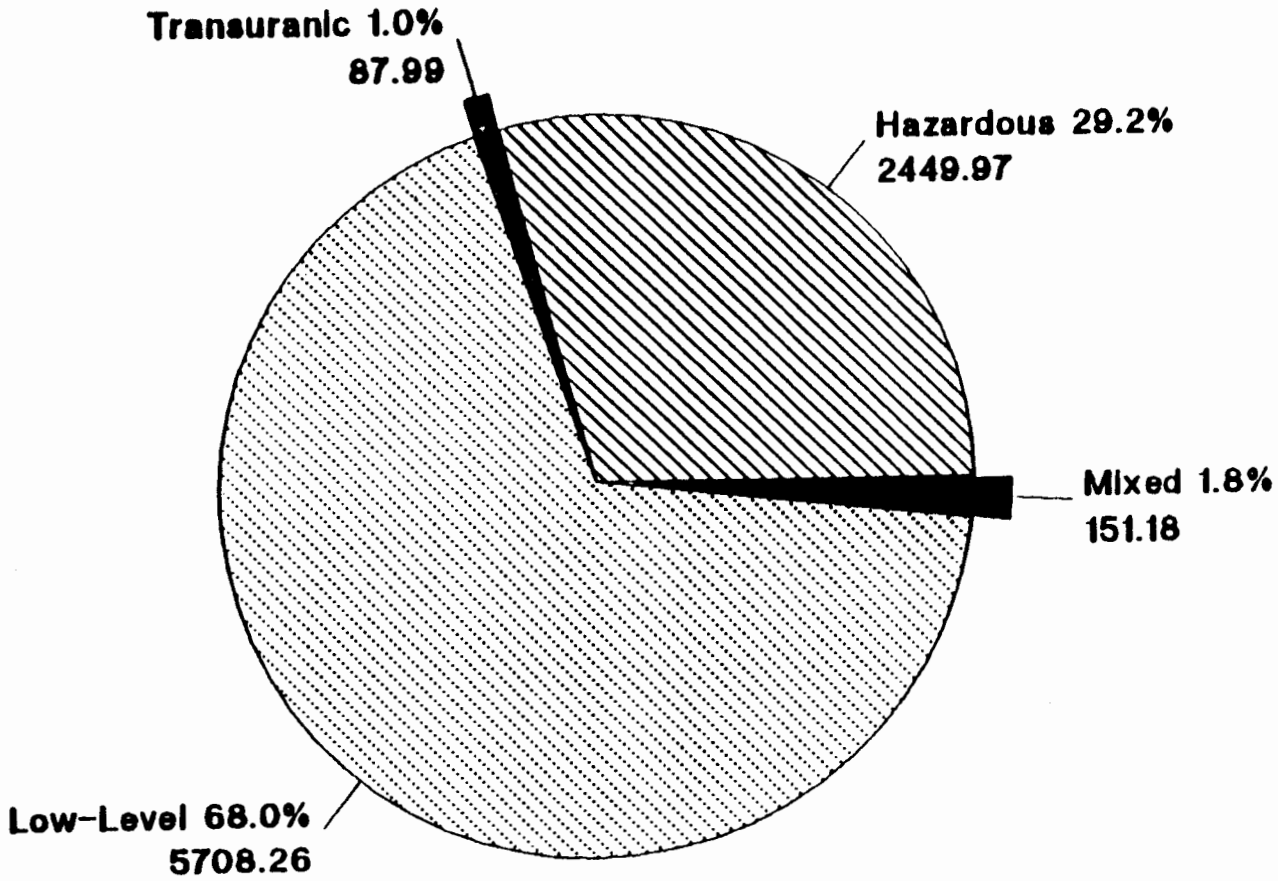
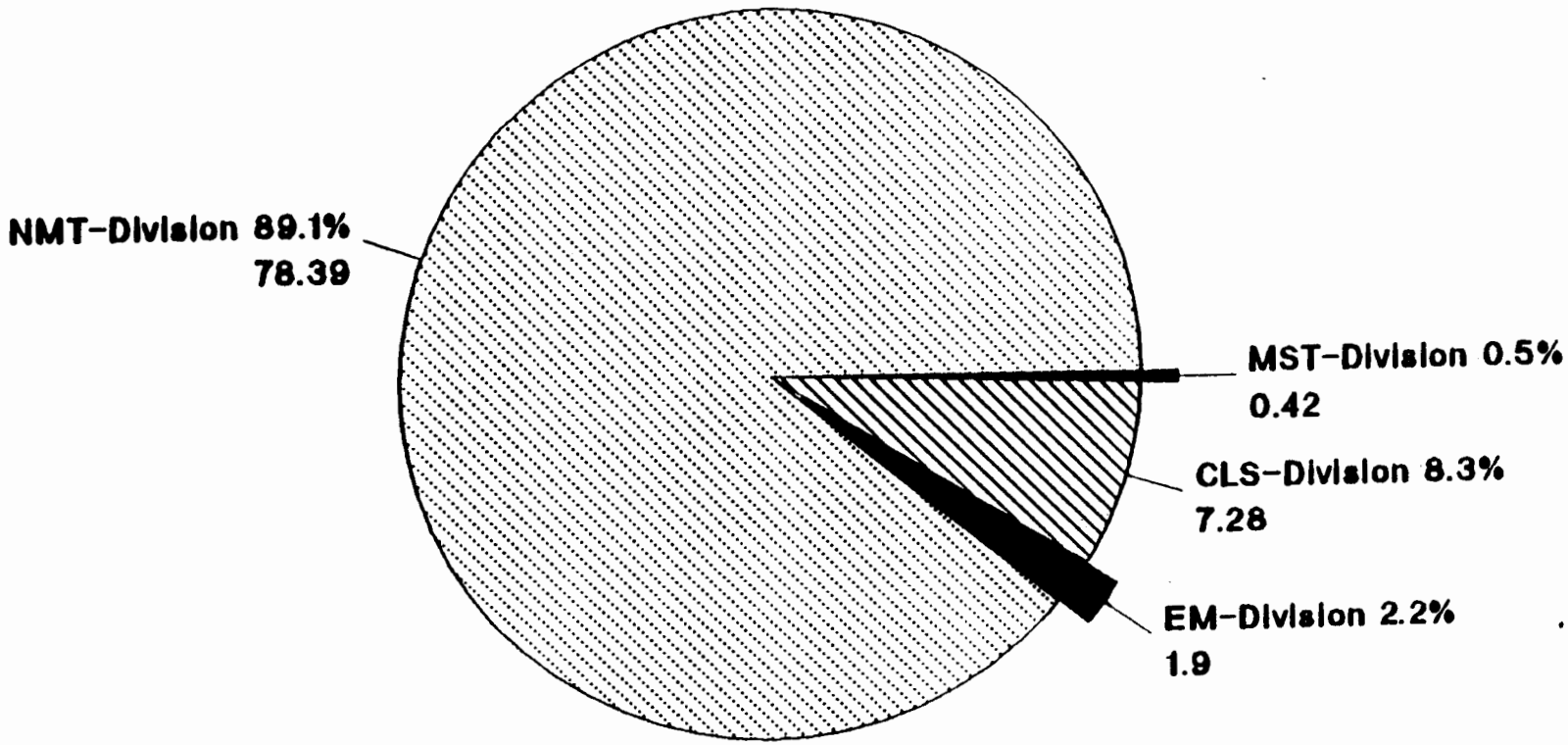


Figure 9

LANL TRANSURANIC WASTES MANAGED

During FY91 – Volume by Organization

(Cubic Meters)

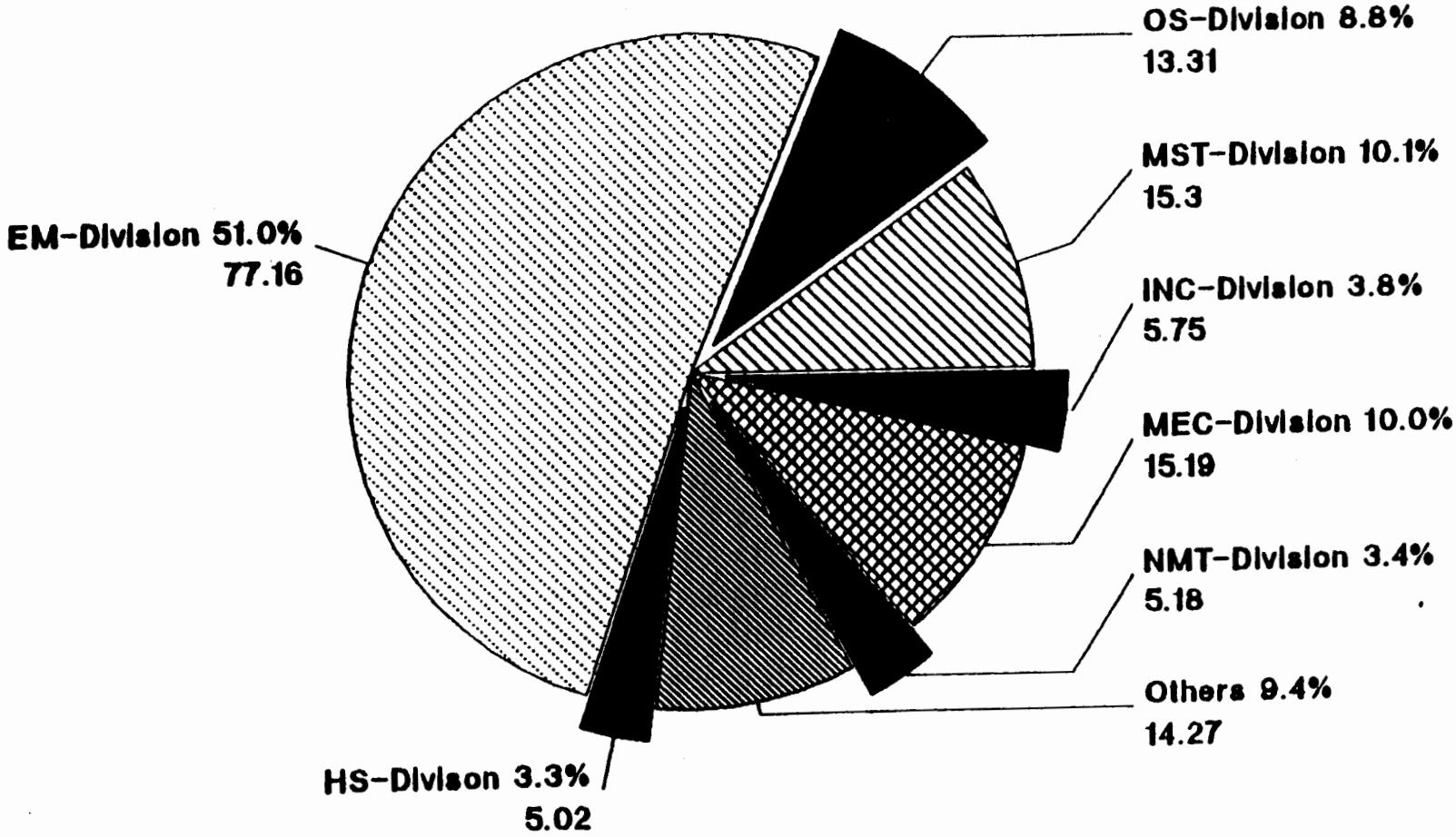


Total Volume = 87.99 cubic meters

LANL MIXED WASTES MANAGED

During FY91 – Volume by Organization

(Cubic Meters)



Total Volume = 151.18 cubic meters

APPENDIX C

PROCESS WASTE ASSESSEMENT PLAN

PROCESS WASTE ASSESSMENT PLAN

Jeffrey B. Weinrach
Waste Minimization Program Office
Los Alamos National Laboratory

March 1992

OVERVIEW

In order to implement a cohesive waste minimization plan, it is important to have an initial assessment of the various waste streams at the facility. At a facility such as Los Alamos National Laboratory (LANL) where the waste streams typically are small but diverse, the best assessments would be done by the generators of the waste streams since they are, in most instances, the only people who have the process knowledge necessary to make a thorough assessment. Software developed at LANL will help waste generators make waste assessments and evaluate potential waste minimization technologies. Included in the assessments are a complete mass balance to ensure that the process is being modeled completely; a trackable history of selected wastes (graphically displayed); cost, energy, and manpower considerations such as hours worked or hazardous exposures. The system also provides the opportunity to evaluate potential waste minimization solutions (either through a Best Available Technologies database or through graphical input) and determine any downstream ramifications of implementing these solutions.

INTRODUCTION

The approach taken to perform process waste assessments at Los Alamos National Laboratory involves the development and implementation of a user-friendly software package designed to provide waste management coordinators and waste generators with tools and information to be used as resources for modeling processes and carrying out self-assessments. This approach has distinct advantages over the alternate approach of assembling a team with process-knowledge expertise who would have the major responsibility of

performing the process waste assessments. This is because the waste streams at a laboratory such as Los Alamos are quite diverse in terms of both volume and toxicity. Also, the nature of the work that goes on at Los Alamos dictates that the waste streams will change quite frequently and therefore will require numerous modifications and updates to any waste tracking or process tracking mechanism. The experience at Los Alamos with similar audit teams have shown that these teams do not provide suitable support to the waste generators. In order to provide the most practical program to the Laboratory while still performing the necessary function of process waste assessments, the development and utilization of user-friendly software for self-assessments will be carried out.

The software was originally developed under funding from DOE-Albuquerque initially to model the Rocky Flats Plant production processes. Since the initial effort, the model has been extended to DOE's Pantex facility to study material flows and processing. In both situations, the program was not designed to be used by waste generators and therefore was not user-friendly. The major modifications that are being made to make the program operational for Los Alamos are the development of the graphical interface and a database for storing important information. These aspects to the overall program will be discussed in more detail below.

The program defines locations, process steps, equipment, and the relationships between them. Mass balance is one of the requirements for the equipment definitions. This ensures that the complete waste stream (comprised of the defined equipment as well as locations and process steps) also maintains mass balance. The generation of the model waste stream with these features dramatically helps the waste management coordinator and the waste generator (who ultimately is responsible for waste minimization) to gain the knowledge-of-process needed to make the waste minimization decisions. Once the model has been generated, the program user can then modify the process with newly defined equipment and/or process steps and monitor the degree of waste minimization that would be attained if the new process were to be implemented. The program will also track other important variables such as cost, energy consumption, and radiation exposure which should also be included in waste minimization assessments since it is the overall efficiency of the process that needs to be addressed.

Since laboratory-type waste streams are often quite diverse in terms of volume as well as constituents, the level of detail needed to properly model these waste streams should be flexible as long as the integrity of the self-assessment program is maintained. The program being developed at Los Alamos allows the waste management coordinator or waste generator to control the level of detail and the manner in which the waste stream is modeled. This greatly helps waste generators make some of the initial decisions regarding waste minimization opportunities. For example, if a certain procedure for cleaning equipment is always being used, it probably would not be necessary to model every step in that cleaning process for all applications. Therefore, the entire cleaning operation (perhaps comprising many individual steps) could be modeled as one large process. The program also allows for the program user to change the level of detail from specific to general or vice versa as needs warrant. This feature would be helpful if environmental reports that require a certain degree of consistency (such as air emissions or liquid discharge) are requested of the waste management coordinators.

PROJECT STATUS

The project has been divided into eight major steps:

1) Development of code,

2) Testing of code at selected sites,

3) Evaluation of test results,

   a) Success of code,

   b) Comparison with other pertinent data,

4) Modification of code base on test results,

5) Training of waste management coordinators,

6) Maintaining program (consulting, etc.),

7) Compiling information from waste management coordinators,

8) Generating Laboratory-wide waste assessment reports.

Development of code

The software is primarily comprised of three components: the program, the interface, and the database. The program being used is written in common LISP language. A graphical interface package, INFOCAD, will be implemented to allow the program to be more user-friendly. Other interface packages will be developed as needed. Databases such as ORACLE will be used to compile data from the program and generate standard reports for waste minimization activity or other environmental reporting requirements. Prioritization algorithms are being developed to weight various waste minimization options if more than one scenario is being considered. The program runs on SUN workstations, McIntosh's, and PC's.

Testing of code at selected sites

Selected sites have been chosen at the Laboratory to test the program. These sites contain a variety of waste streams with many processes involved in the generation of hazardous, radioactive, and mixed wastes. Waste management coordinators at these sites are being trained on the purpose and scope of the waste assessments as well as the utilization of the program to perform the assessments and the eventual evaluations of waste minimization technologies. The test sites include electroplating and metal finishing facilities.

Evaluation of test results

The testing phase consists of several components: 1) success of the code in properly modeling laboratory-type waste streams, and 2) comparison with other pertinent data. The success of the code will be based on both the accuracy in modeling the various waste streams and the user-friendliness of the program by waste management coordinators and waste generators. Comparisons with other data will concentrate on waste tracking information that is currently maintained by the waste management facility at Los Alamos and chemical tracking information which will be primarily used for inventory control. These tracking systems only monitor either waste volumes or types or chemical storage information (as opposed to process flow

information) and therefore are not sufficient for waste assessments and evaluations for waste minimization.

Modification of code based on test results

Based on the testing data, modifications to the program and interface will be made. These modifications will include generation of ad hoc reports from graphical displays, improved connectivity between various equipment in a particular waste-generating process, and graphical tracking of particular components of a waste stream.

Training of waste management coordinators

During the testing and modification phases, waste management coordinators at the Laboratory will be notified as to the progress in program development. Once the testing and modification phases are complete, waste management coordinators will be trained as to the use of the program and the type of assessments that would result in waste minimization opportunity. Documentation of assessments and evaluations will also be discussed as well as future environmental reporting requirements that could be handled by the application of this program.

Maintaining program

The program and database will be maintained by Laboratory personnel both in terms of software and hardware maintenance and consultation with Laboratory waste management coordinators. A BAT (Best Available Technology) database will be developed to allow program users to access new waste minimization technology information and assess these new technologies as part of their waste-generating processes. The implementation of the BAT database might be delayed due to financial constraints. Ratings of these new technologies will be determined and evaluated for waste minimization potential. Factors such as cost and potential risk to human health or the environment will be weighted as part of the waste assessment process. Periodic reviews of the utilization of the program will be performed to ensure that the program is being used to its maximum efficiency.

Compiling information from waste management coordinators

At regular intervals (monthly, quarterly, etc.) data will be compiled by the Los Alamos National

Laboratory Waste Minimization Program Office. This data will include a graphical representation of the waste streams being modeled as well as evaluations of potential waste minimization solutions. Recommendations from the Waste Minimization Program Office will be made to waste management coordinators when appropriate. Comparisons will be made between various Laboratory waste stream models as well as between the data collected through these assessments and waste tracking data. Potential improvements in the use of the program as determined by evaluating the general success in waste assessments will be presented to waste management coordinators.

Generating Laboratory-wide waste assessment reports

Once the data have been compiled and evaluated, Laboratory-wide waste assessment reports will be available to internal and external readers. Periodic reports will be submitted to DOE for review.

PROJECT TEAM

The project team consists of members from six organizations:

1) Los Alamos National Laboratory Waste Minimization Program Office (EM-DO) - primary responsibility for managment and oversight of development and implementation of PWA program,

2) Energy and Environmental Analysis (A-4) - cost/risk analysis and prioritization of waste streams and waste minimization scenarios,

3) Technology Modeling and Analysis (A-7) - development of software and graphical interface,

4) Process Engineering (MEE-9) - technical support for assessments and evaluations of waste minimization technology,

5) Planning (ENG-2) - location information for waste-generating processes and outfalls,

6) Benchmark Environmental Corporation (sub-contractor for LANL) - development of database requirements and Best Available Technologies (BAT) database. Implementation of BAT database could be delayed due to financial constraints.

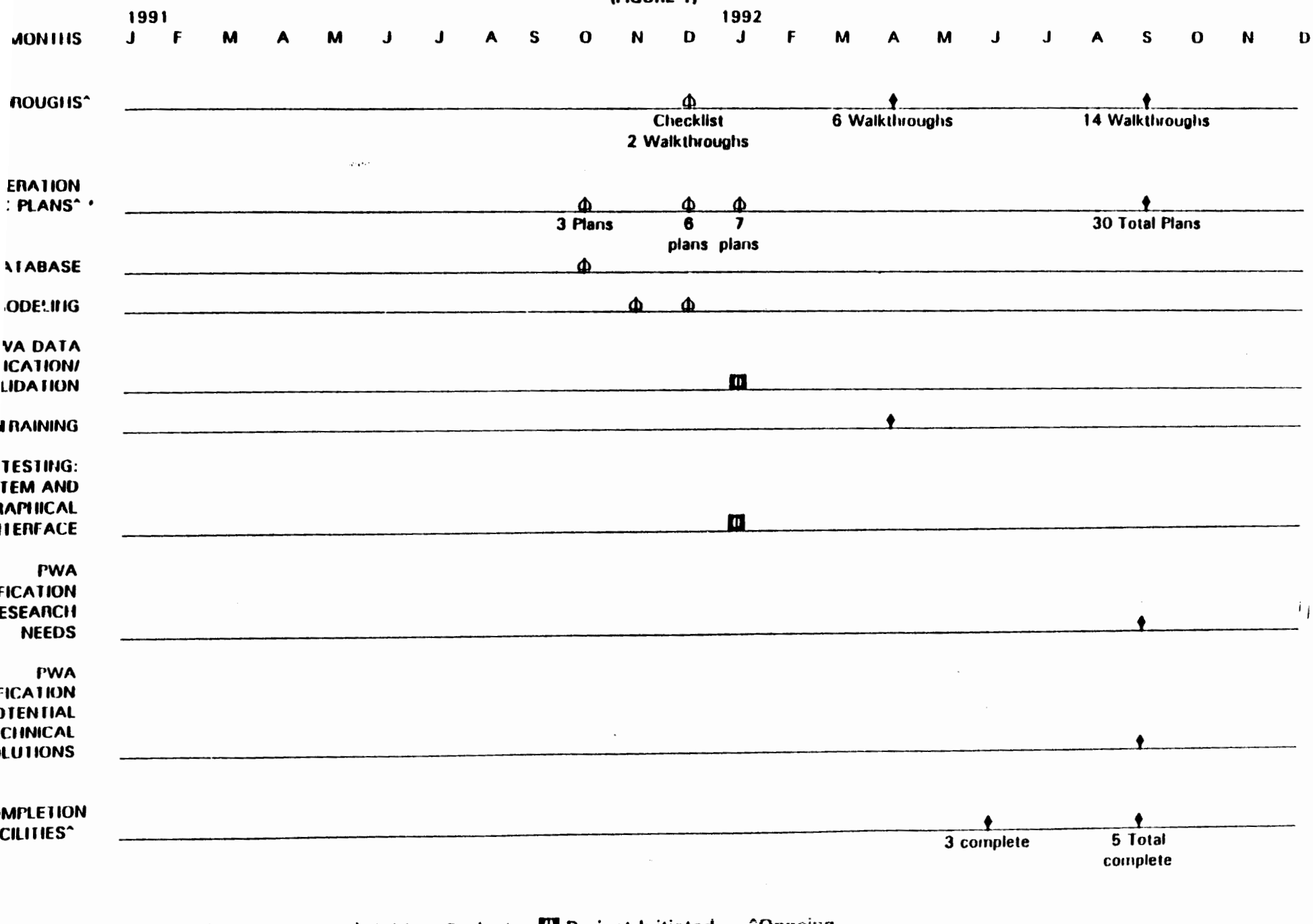
PROJECT MILESTONES AND GOALS

Project Milestones and goals are represented in Figure 1. These goals are subject to change depending upon financial constraints.

CONCLUSION

The approach being taken at Los Alamos National Laboratory to comply with the Department of Energy regarding Process Waste Assessments involves the use of a user-friendly program and database that will allow waste management coordinators and waste generators to perform self-assessments of their particular waste streams. This program will help waste generators acquire knowledge-of-process which is becoming increasingly important in environmental awareness programs. The database will allow a greater degree of flexibility both in terms of level of detail needed for a successful model and also in terms of modifying the model to account for major changes in waste streams that typically occur at the Laboratory. It will also be used to evaluate potential waste minimization opportunities before major investments would usually be made. This program can also be used to comply with new environmental reporting requirements dealing with various aspects of waste characterization. Overall, this user-friendly approach to waste assessments should provide more benefit than other standard approaches for individuals who have the task of modifying their processes in order to address waste minimization concerns.

PROCESS WASTE ASSESSMENT MILESTONES
1991 - 1992
(FIGURE 1)



APPENDIX D

DIRECTOR'S POLICY

LOS ALAMOS NATIONAL LABORATORY

DIRECTOR'S POLICY

DP No. 105 September 1991

SUBJECT: Hazardous and Radioactive Waste Management

1.0 PURPOSE

This policy defines the basic requirements for management to be aware of, oversee, and control the gaseous, liquid, and solid wastes at the Laboratory so as to minimize the release of radioactive, hazardous and/or mixed wastes to the environment. This policy is in accordance with Department of Energy requirements to comply with applicable federal, state, local laws and regulations, DOE orders, memoranda of understanding, other agreements, and consent decrees relating to hazardous and radioactive waste management.

Discussion. This policy addresses issues of waste management. It does not address mitigating measures required for distributing, handling, and controlling radioactive and hazardous materials in the workplace. Nor does this policy establish the procedural controls necessary to manage radioactive and hazardous materials in compliance with appropriate regulatory rules and regulations. Employee, subcontractor, and public health protection concerns associated with radioactive and hazardous materials are covered in other Director's Policies.

2.0 POLICY

Operations involving Laboratory-generated radioactive, hazardous and/or mixed wastes shall be performed so as to

- protect the public, employees, and the environment;
- minimize generation of radioactive, hazardous and/or mixed wastes;
- comply with applicable federal, state, and local regulations for environmental protection and waste disposal; and
- continually search for effective means to improve Laboratory performance.

The Laboratory shall have programs for

- minimizing radioactive, hazardous, and/or mixed wastes including annual goals for improvement and incentives for exemplary performance;
- training personnel involved in operations that generate radioactive, hazardous and/or mixed wastes;
- collecting liquid and solid hazardous wastes and managing them in a manner which reduces toxicity and prevents the contamination of the environment;
- collecting solid and liquid radioactive wastes, applying volume-reduction techniques, and burying or storing in controlled facilities or using other compliant disposal methods;
- collecting, managing, controlling, handling, and disposing of mixed wastes;
- monitoring waste (gaseous, liquid, or solid) for the amount generated, stored, released, and disposed;
- generating and controlling complete records to document hazardous, radioactive, and mixed wastes from generation to disposal;
- providing decontamination services that promote recycling;

- providing decommissioning services for safe, efficient physical removal of facilities or equipment that have outlived their usefulness; and
- conducting applied development and application studies to more effectively manage, treat, and reduce the volume of solid and liquid radioactive, hazardous and/or mixed wastes so that storage and disposal operations are minimized.

3.0 RESPONSIBILITIES

The Director and the ES&H Council shall annually review goals for the hazardous and radioactive waste management programs and assess performance.

The Office of Primary Responsibility (OPR) shall be the Environmental Management Division (EM). The EM Division shall

- work with the Applied Environmental Technology Program Director to develop and provide the overall direction for the programs indicated above;
- collect, manage, handle, and dispose of all radioactive, hazardous, and mixed waste following receipt from the generators;
- monitor, evaluate, and report all waste streams including amounts generated;
- assist in the investigation and reporting of all compliance violations including determination of root causes;
- develop training to support this policy and the referenced programs;
- advise and assist Laboratory organizations in implementation of all programs and procedures derived under this policy; and
- work with the Applied Environmental Technology Program Director to develop goals and performance indicators for the hazardous and radioactive waste management programs.

Laboratory managers shall

- implement this policy, associated programs, and procedures and
- involve the EM Division prior to new or modified activities generating hazardous wastes.

Employees who work with hazardous and radioactive materials shall be trained and shall adhere to this policy in work activities.

The Laboratory Assessment Office shall conduct assessments of all Laboratory organizations to evaluate performance under this policy.

Director 9/16/91 Date

1.0 PURPOSE

This policy defines the basic requirements for management to be aware of, oversee, and control the gaseous, liquid, and solid wastes at the Laboratory so as to minimize the release of radioactive, hazardous and/or mixed wastes to the environment. This policy is in accordance with Department of Energy requirements to comply with applicable federal, state, local laws and regulations, DOE orders, memoranda of understanding, other agreements, and consent decrees relating to hazardous and radioactive waste management.

Discussion. This policy addresses issues of waste management and minimization. It does not address mitigating measures required for distributing, handling, and controlling radioactive and hazardous materials in the workplace. Nor does this policy establish the procedural controls necessary to manage radioactive and hazardous materials in compliance with appropriate regulatory rules and regulations. Employee, subcontractor, and public health protection concerns associated with radioactive and hazardous materials are covered in other Director's Policies.

2.0 POLICY

Operations involving Laboratory-generated radioactive, hazardous and/or mixed wastes shall be performed so as to

- protect the public, employees, and the environment;
- minimize generation of radioactive, hazardous and/or mixed wastes;
- comply with applicable federal, state, and local regulations for environmental protection and waste disposal;
- prevent generation of waste wherever and whenever possible;
- recycle waste that cannot be eliminated at the source wherever technically and economically feasible;
- give prime consideration to reducing or eliminating waste in all Laboratory programs; and
- continually search for effective means to improve Laboratory performance.

The Laboratory shall have programs for

- ~~minimizing radioactive, hazardous, and/or mixed wastes including annual goals for improvement and incentives for exemplary performance;~~
- minimizing waste by systematically eliminating or reducing generation of waste from site operations through periodic Process Waste Minimization Assessments, setting minimization goals, implementation of Site Specific Waste Minimization Plans, employee awareness and training, tracking and reporting of waste generation rates, and program effectiveness evaluation;
- making source reduction and environmentally sound recycling integral parts of the philosophy and operation of the Laboratory;
- training personnel involved in operations that generate radioactive, hazardous and/or mixed wastes;
- collecting liquid and solid hazardous wastes and managing them in a manner which reduces toxicity and prevents the contamination of the environment;
- collecting solid and liquid radioactive wastes, applying volume-reduction techniques, and burying or storing in controlled facilities or using other compliant disposal methods;
- collecting, managing, controlling, handling, and disposing of mixed wastes;
- monitoring waste (gaseous, liquid, or solid) for the amount generated, stored, released, and disposed;

- generating and controlling complete records to document hazardous, radioactive, and mixed wastes from generation to disposal;
- providing decontamination services that promote recycling;
- providing decommissioning services for safe, efficient physical removal of facilities or equipment that have outlived their usefulness; and
- conducting applied development and application studies to more effectively manage, treat, and reduce the volume of solid and liquid radioactive, hazardous and/or mixed wastes so that storage and disposal operations are minimized.

3.0 RESPONSIBILITIES

The Director and the ES&H Council shall annually review goals for the hazardous and radioactive waste management and minimization programs and assess performance.

The Office of Primary Responsibility (OPR) shall be the Environmental Management Division (EM). The EM Division shall

- work with the Applied Environmental Technology Program Director to develop and provide the overall direction for the programs indicated above;
- collect, manage, handle, and dispose of all radioactive, hazardous, and mixed waste following receipt from the generators;
- monitor, evaluate, and report all waste streams including amounts generated;
- assist in the investigation and reporting of all compliance violations including determination of root causes;
- develop training to support this policy and the referenced programs;
- advise and assist Laboratory organizations in implementation of all programs and procedures derived under this policy; and
- work with the Applied Environmental Technology Program Director to develop goals and performance indicators for the hazardous and radioactive waste management programs.

The Waste Minimization Program Office within EM-DO shall

- chair a management level committee made up of representatives of generating functions;
- provide oversight and guidance for implementation of waste minimization efforts;
- help generators to identify potential technical and administrative solutions for waste generating problems and assist in preparation of Site Specific Plans;
- set waste minimization goals and track and report waste minimization data
- provide data for inclusion in required federal and state reports.

Laboratory managers shall

- implement this policy, associated programs, and procedures,
- involve the EM Division prior to new or modified activities generating hazardous wastes,
- be responsible for funding and implementing their Site Specific Waste Minimizatin Plan,
- identify technical and administrative solutions for waste generating problems,
- provide a waste coordinator for waste minimization activities in that activity, and

REVISED DRAFT

The Waste Minimization Committee shall secure and coordinate management support for oversight, guidance, and implementation of waste minimization.

Employees who work with hazardous and radioactive materials shall be trained and shall adhere to this policy in work activities.

The Laboratory Assessment Office shall conduct assessments of all Laboratory organizations to evaluate performance under this policy.

ROUGH DRAFT

Director Date

APPENDIX B

FEDERAL FACILITY POLLUTION PREVENTION SUMMARY

FEDERAL FACILITY POLLUTION PREVENTION SUMMARY

I. **Facility Name:** Los Alamos National Laboratory

II. **FACILITY ADDRESS:** Los Alamos, New Mexico

III. **EPA ID No.:** NM 890010515

IV. **Mission Description:** Major programs at LANL include applied research in nuclear and conventional weapons development, nuclear fission and fusion, nuclear safeguards and security, and waste management. Approximately 1,900 potential release sites, aggregated into 24 operable units, are currently scheduled for investigation in the Environmental Restoration program under the Hazardous and Solid Waste Amendments (HSWA) permit. Three surplus facilities are identified for decontamination and decommissioning in the Department of Energy Five-Year Plan.

V. **Wastes with P2 Potential (observed):**

A. **Waste Description:** See Executive Summary of report, Table 1 titled "Waste Streams/Sources from Los Alamos National Laboratory Activities." Also, selected chemical inventory files from Los Alamos National Laboratory are part of project files.

VI. **Current Pollution Prevention Activities:**

A. Activity	B. P2 Initiative
Testing the use of water based paint, instead of solvent based paint, for road painting operations.	If successful, this will reduce major source of fugitive volatile organic compound (toluene and MEK) emissions.
Anti-freeze recycling	Reduces amount of used and amount of waste generated
When working with refrigeration systems, CFCs are captured for reuse or disposal.	Reduces amount of refrigerant used and amount of CFCs emitted
Solvent distillation	Reduces amount of solvent used and amount of waste generated
Initiating a computerized inventory control system for purchasing chemicals	Reduces disposal of excess chemicals.
In 1991, spray guns were added above electroplating rinsewater tanks.	Reduces dragout, minimizes ion concentrations in rinsewater.
Some electroplating operations have either been discontinued or non-cyanide plating baths have been substituted.	Reduces pollutant levels in wastewater.
As mandated, LANL has attempted to change operations to eliminate or minimize the generation of mixed hazardous wastes since the moratorium was declared.	Reduced generation and storage of mixed wastes.
Substitution of citrus based detergent, household cleaners (such as Fantastic™ or 409™), acetone, and ethanol for chlorinated solvents for cleaning and degreasing.	Reduces toxicity of waste and VOC emissions.

Discontinued use of five chemicals listed in New Mexico as Toxic Air Pollutants. Chemicals discontinued include: osmium tetroxide, phosgene, ammonia, mineral oil mist, and sulfuric acid.	Reduces toxic air emissions.
Blueprint machine replaced with printer.	Eliminated waste stream of ink and solvent waste stream, acetone, and 1,1,1-trichloroethane, and contaminated rags.
Replaced 1,1,1-trichloroethane with soap for vibrasonic removal of flux from microelectronics.	Reduces toxicity of hazardous waste generated.

VIII. Possible Modifications to Current Programs:

A. Activity	B. Modification
Painting	Use water-based or lower VOC paints.
Paint stripping	Eliminate all nonessential paint stripping operations. Increase use of mechanical paint strippers in contained areas.
Solvent degreasing	Recycle halogenated solvents on-site. Reduce the number of different solvents in use. Reduce the number of experiments or the amounts of solvents. Change to citrus-based or less toxic solvents or detergent based degreasing.
Photo development	Consolidate photo development areas, increase number of silver recovery units where appropriate. Eliminate outfalls where spills of photographic processing chemicals could be discharged directly to the environment.
Oil/water separation	Implement a formal inspection and maintenance program for all oil/water separators.
Soldering	Where feasible, replace lead solder flux with silver flux, which can be reclaimed.
Cleaning with solvents using paper wipes	Segregate wipes contaminated with solvent from oily wipes. Use less toxic solvents or soap.
Discharge of industrial and sanitary wastewater	Quantify and reduce environmental impact from direct discharges of industrial and sanitary effluent through pretreatment.

APPENDIX C

POLLUTION PREVENTION OPPORTUNITIES PROFILE FOR LOS ALAMOS NATIONAL LABORATORY

ATTACHMENT B: FEDERAL FACILITIES

POLLUTION PREVENTION (P2) OPPORTUNITIES PROFILE FOR LOS ALAMOS LABS

Waste Description	EPA 33/50 Program Target? (Y/N)	Annual Waste Quantity (Tons)	Assumptions on Waste Origin and/or Composition?	Potential Pollution Prevention Opportunities	Data Source
Paint stripper (D001)	N	0.32 tons (1989)	Nonhalogenated paint stripper	• Eliminate all nonessential paint stripping operations • Increase use of mechanical paint strippers	BRS
Paint thinner (D001)	N	0.27 tons (1989)	Nonhalogenated paint thinner	• Increase life of paint thinners through filtering, settling or distilling • Change to water-based paints	BRS
Photographic wastes containing silver	N	0.8 tons	One or more photographic laboratories are located on site	• Recover silver onsite • Reuse fixers • Regenerate developers and bleach • Use countercurrent rinsing	BRS
Miscellaneous degreasing agents and spent solvents from other operations (F001 and F002)	I	>20 tons (1989)	Various cleaning agents and solvents used in laboratory analyses and production processes	• Institute onsite recycling of halogenated solvent • Replace halogenated with nonhalogenated solvents wherever possible • Reduce the number of different solvents in use • Reduce the number of experiments or the amounts of solvents used in each experiment	BRS
Miscellaneous nonhalogenated solvents (F003 and F005)	I	>10 tons (1989)	Various cleaning agents and solvents used in laboratory analyses and production processes	• Replace currently used solvents with less toxic solvents • Eliminate all nonessential operations that use solvents • Reduce the number of solvents in use	BRS
Oil or coolant contaminated with solvents (F003)	N	>25 tons (1989)	Spent coolant mixed with spent degreasers	• Keep coolants and oils and degreasers separated	BRS

ATTACHMENT B: FEDERAL FACILITIES

POLLUTION PREVENTION (P2) OPPORTUNITIES PROFILE FOR LOS ALAMOS LABS
(continued)

Waste Description[1]	33/50 Program Target (Y/N)	Annual Waste Quantity (Tons)	Assumptions on Waste Origin and/or Composition[2]	Potential Pollution Prevention Opportunities	Data Source[3]
General wastes from laboratories	I	N/A	Assume typical laboratory wastes and other wastes that are DOE-specific	· Educate all staff on waste minimization · Replace centralized chemical purchasing system · Order reagent chemicals in exact amounts · Encourage chemical suppliers to accept outdated supplies · Establish chemical inventory control programs · Develop running inventories of unused chemicals by department · Perform routine waste minimization audits · Scale down volumes of chemicals used in laboratory experiments · Reduce or eliminate use of highly toxic chemicals · Recover metal from catalysts · Investigate mercury recovery and recycling	Mission Statement

Waste descriptions are derived from the data sources provided in the last column of this matrix. RCRA wastes in reported quantities below 500 lbs (0.25 tons) per year are not included in the matrix. No limits were placed on waste generation quantities for non-RCRA wastes.

A voluntary national program to reduce releases of pollutants and off-site transfers of 17 toxic chemicals by 33 percent by the end of 1992 and by 50 percent by the ending of 1995. Y = yes; N = No; I = insufficient data. (The 17 chemicals include benzene; cadmium and cadmium compounds; carbon tetrachloride; chloroform; chromium and chromium compounds, cyanide and cyanide compounds; lead and lead compounds; mercury and mercury compounds; methylene chloride; methyl ethyl ketone; methyl isobutyl ketone; nickel and nickel compounds; tetrachloroethylene; toluene; 1,1,1-trichloroethane; and trichloroethylene.)

Assumptions based on professional judgment.

BRS = RCRA Biennial Reporting System; AIRS = Aeornomic Information Retrieval System; PCS = Permit Compliance System; and TRIS = Toxic Release Inventory System.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
CRITICAL HABITAT

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

Craig Kubik, Environmental Scientist
NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL). This report, one of a series, discusses critical habitat issues at LANL.

REGULATORY SUMMARY

The National Environmental Policy Act (NEPA) requires review of proposed construction projects to evaluate potential impacts on critical habitats. Critical habitat is designated habitat within a defined area, essential to sustaining a breeding population of endangered or threatened species.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager, LANL. Following a general discussion of environmental activities, a facility tour was conducted. Later, discussions were conducted with LANL personnel regarding critical habitat.

Critical Habitat

Critical habitat is designated habitat within a defined area, essential to sustaining a breeding population of endangered or threatened species (Endangered Species Act, 16 U.S.C. 1531). The habitat may require special management considerations or protection.

LANL EM-8 personnel, Environmental Assessments and Resource Evaluations Section, review all proposed construction projects to evaluate potential impacts on critical habitats. Those projects that have potential impacts after review of the records, get reconnaissance surveys. Projects that

still have potential for impacts after the reconnaissance survey, are quantitatively surveyed. If potential for impact still exists after the quantitative survey, then an intensive survey is conducted to determine presence of a species at the project site.

Animals

The New Mexico Department of Game and Fish "Handbook of Species Endangered in New Mexico," fifth edition, and "Sensitive Wildlife of New Mexico" revised July 16, 1993, list 14 animal species as endangered, threatened or proposed for listing as endangered or threatened, that may be present in the Jemez Mountains and, therefore, may be possible on LANL.

Mammals

None of the three bat species listed by the NM Department of Game and Fish have been collected within LANL. LANL has conducted mist netting for bat collection and species identified have not been any of the listed species.

Review of documents and discussions with LANL personnel concluded that neither the New Mexican jumping mouse nor the pine marten have been confirmed on LANL.

Birds

Seven species of birds were listed by the NM Department of Game and Fish. Although sightings of several of these species are documented in historical records, only the peregrine falcon has been recorded as nesting within LANL. There has not been a recorded peregrine falcon nesting in LANL for the last 2 years.

Amphibians

The Jemez Mountain salamander is the only amphibian listed for Los Alamos County. According to LANL personnel, the Jemez Mountain salamander has been identified as being present in the Sante Fe National Forest, adjacent to the West boundary of LANL. The salamander has not been recorded within LANL.

Plants

New Mexico Forestry and Resources Conservation Division's "Inventory of Rare and Endangered Plants of New Mexico," March 1992 edition, lists three plant species for Los Alamos County:

1. Giant helleborine orchid, *Epipactis gigantea*
2. Mountain lily, *Lilium philadephicum var. andinum*
3. Grama grass cactus, *Toumeya papyracantha*

According to facility personnel, none of the three plant species have been identified in LANL.

SUMMARY OF FINDINGS

AREA OF CONCERN

Based on inspection observations, discussions with LANL personnel, and review of documentation, the following area of concern was identified:

- The peregrine falcon is the only endangered, threatened, or proposed for listing species positively identified at LANL. There has not been a peregrine falcon nesting at LANL in 2 years.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT

EPA-330/2-94-020

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico
(Volume 2 of 4)

April 1994

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Margo Dusenbury
Kenna Yarbrough
Anne Bevington
John Ellison
Ken Garing
Joyce Kopatich
Craig Kubik
Brian McKeown
Jacquelyn Miller
Mike Webb

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
Denver, Colorado

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NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
Denver, Colorado

PREFACE

NEIC conducted a multi-media compliance investigation of Los Alamos National Laboratory (LANL), located near Los Alamos, New Mexico, about 25 miles northwest of Santa Fe, New Mexico. The on-site inspection of LANL, a government-owned (Department of Energy), contractor-operated (University of California) facility, was conducted August 2 through 12, 1993. The investigation findings are presented in four report volumes:

Volume 1

- Executive summary
- Environmental management
- Pollution prevention
- Critical habitat

(NOTE: Volume 1 presents an overall perspective of the facility, allowing a better understanding of individual media reports in volumes 2, 3, and 4)

Volume 2

- Resource Conservation and Recovery Act (RCRA)
- Underground Storage Tanks (UST)
- Toxic Substances Control Act (TSCA)

Volume 3

- Clean Water Act (CWA)
  - National Pollutant Discharge Elimination System (NPDES)
  - Spill Prevention Control and Countermeasures (SPCC)
  - Wetlands
- Safe Drinking Water Act (SDWA)
  - Public water supply
  - Underground Injection Control (UIC)

Volume 4

- Clean Air Act (CAA)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

GLOSSARY

GLOSSARY

ACM: asbestos containing materials
AO: administrative order
AQCR: air quality control regulations
ARs: administrative requirements
BHP: boiler horsepower
BOD: biological oxygen demand
BTU: British Thermal Unit
CAA: Clean Air Act
CAAA: Clean Air Act Amendments
CE: civil engineering
CFR: Code of Federal Regulations
CLS: Chemical Laser and Science
CME: comprehensive groundwater monitoring evaluation
COD: chemical oxygen demand
Corps: U.S. Army Corps of Engineers
CWA: Clean Water Act
DMR: discharge monitoring report
DOE: Department of Energy
EDL: economic discard limit
EDM: electrical discharging machining
EHS: extremely hazardous substance
EM: environmental management
EOD: Explosive Ordnance Disposal
EPA: Environmental Protection Agency
EPCRA: Emergency Planning and Community Right-to-Know Act
ESP: electrostatic precipitator
FFCA: federal facility compliance agreement
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
GOCO: government owned, contractor operated
GPD: gallons per day
HE: high explosives
HEPA: high efficiency particulate air
HS-5: Health Services Department
HSWA: Hazardous and Solid Waste Amendments
INEL: Idaho National Engineering Laboratory
JCI: Johnson Controls, Inc.
LANL: Los Alamos National Laboratory
lb/MBTU: pounds per million British thermal unit
LDR: land disposal restrictions
LERC: local emergency response committee
MCL: maximum contaminant level
MEK: methyl ethyl ketone
MLSS: mixed liquid suspended solids
MOU: memorandum of understanding
MSDS: material safety data sheet
NDT: nondestructive testing
NEIC: National Enforcement Investigations Center
NEPA: National Environmental Policy Act
NESHAP: National Emission Standards for Hazardous Air Pollutant
NMAQR: New Mexico Air Quality Standards and Regulations
NMED: New Mexico Environment Department
NOI: Notice of Intent
NON: Notice of Noncompliance
NPDES: National Pollutant Discharge Elimination System
NWP: Nationwide Permit
NWT: program office for aboveground experiments
NWUSTR: New Mexico Underground Storage Tank Regulations
O&M: Operations and Maintenance
OB/OD: open burning/open detonation
PCB: polychlorinated biphenyl
pCi/L: picocuries per liter
PEDE: potential effective dose equivalent
PETN: pentaerythitol tetranitrate (an explosive compound)
PTO: permit to operate
P2: pollution prevention
PVC: polyvinyl chloride
QA/QC: quality assurance/quality control
RCRA: Resource Conservation and Recovery Act
RDX: cyclonite (an explosive compound)
RMMAs: radiological material management areas
SAIC: Science Application International Corporation
SARA: Superfund Amendments Reauthorization Act
SDWA: Safe Drinking Water Act
SERC: state emergency response commission
SIP: State Implementation Plan
SOP: standard operating procedures
SPCC: Spill Prevention Control and Countermeasures

SWPPP: Storm Water Pollution Prevention Plan
SWMU: solid waste management units
SWP: special work permits
SWSC: Sanitary Wastewater Systems Consolidation
SWTR: surface water treatment rule
TA: technical area
TAPS: toxic air pollutants
TCA: 1,1,1-trichloroethane
TCE: trichloroethylene
TCLP: toxicity characteristic leaching procedure
TDS: total dissolved solids
TNT: trinitrotoluene (an explosive compound)
TRU: transuranic
TSF: Tritium Salt Facility
TSD: treatment, storage, and disposal
TSS: total suspended solids
TSTA: Tritium Systems Test Assembly
TSCA: Toxic Substances Control Act
UC: University of California
UIC: Underground Injection Control
UST: underground storage tank
VOC: volatile organic compound
WAP: waste analysis plan
WCS: waste characterization study
WMPO: Waste Minimization Program Office
WWTP: wastewater treatment plant

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) -
HAZARDOUS WASTE MANAGEMENT

MULTI-MEDIA COMPLIANCE INVESTIGATION

Los Alamos National Laboratory
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL). This report, one of a series, addresses investigation findings and discusses Resource Conservation and Recovery Act (RCRA) issues and compliance at LANL. New Mexico Environment Department (NMED) inspectors also participated in the on-site inspection.

REGULATORY SUMMARY

LANL generates, treats, stores, and disposes of a wide variety of hazardous waste on-site at various separate facilities, referred to by LANL as Technical Areas (TAs), and, therefore, is subject to RCRA and New Mexico hazardous waste management regulations. LANL was issued a RCRA hazardous waste permit (EPA identification number NM0890010515) on November 8, 1989; this permit is in effect until November 8, 1999. Non-radioactive and mixed hazardous wastes are generated, including discarded laboratory chemicals and process wastes.

EPA delegated RCRA authority to the NMED, including mixed waste authority (July 25, 1990); the Hazardous and Solid Waste Amendments (HSWA) have not been delegated. Known hazardous waste management units are regulated by: (a) interim status, (b) a state-issued RCRA permit, or (c) RCRA closure requirements. A summary of the hazardous waste management units and their regulatory status is presented in Table 1. EPA prepared the HSWA module of the Part B permit which addressed known Solid Waste Management Units. LANL appealed the HSWA portion of the permit. The HSWA portion of the RCRA permit became effective on May 23, 1990 and expires on December 22, 1999. DOE appealed the state's portion of the permit relating to the Research and Development (R&D) incinerator. A U.S. District

Table 1

HAZARDOUS WASTE MANAGEMENT FACILITIES
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Facility Type	Regulatory Status
TA-3, building 29	2 container storage areas	Interim status
TA-14	Burn cage	Unpermitted
TA-15, building 184	Waste detonation site	Interim status
TA-16, building 88	Container storage area	Interim status
TA-16	Incinerator	Permitted
TA-16	Surface impoundment	Closed
TA-16	Landfill	Under closure
TA-16, building 387	Flash Pad	Unpermitted
TA-16, building 388	Burn Pad	Unpermitted
TA-16, building 399	Burn Pad	Unpermitted
TA-16, building 401	Burn Vessel	Unpermitted
TA-16, building 406	Burn Vessel	Unpermitted
TA-21, building 61	Container storage area	Interim status
TA-33, building 90	Container storage area	Interim status
TA-33, building 92	Container storage area	Interim status
TA-35, building 85	Surface impoundment	Closed
TA-35, building 125	Surface impoundment	Closed
TA-36, building 8	Waste detonation site	Interim status
TA-50, building 1	Batch treatment	Permitted
TA-50, building 1	Container storage	Permitted
TA-50, building 1, Rm.60D	Container storage	Interim status
TA-50, building 1, Rm.60A	Cementing process	Interim status
TA-50, building 37	Controlled air incinerator	Interim status/ Permitted
TA-50, building 37, Rm.115	Container storage area	Interim status
TA-50, building 37, Rm.117	Container storage area	Interim status/ Permitted
TA-50, building 37, Rm.118	Container storage area	Interim status

Table 1 (cont.)

Location	Facility Type	Regulatory Status
TA-50, building 69	2 container storage areas	Interim status
TA-50, building 114	Container storage area	Interim status/ Permitted
TA-53, building 166	3 surface impoundments	Interim status
TA-54, Area G	Landfill	Under closure
TA-54, Area G	3 retrievable storage pads	Interim status
TA-54, Area G	5 retrievable storage shafts	Interim status
TA-54, Area G	3 container storage domes	Interim status
TA-54, Area G	Container storage pads over pits 30 and 33	Interim status
TA-54, Area G, building 8	Container storage shed	Interim status
TA-54, Area H	Landfill	Under closure
TA-54, Area L	Tank treatment	Permitted
TA-54, Area L	2 retrievable storage shafts	Interim status
TA-54, Area L, buildings 31,32,68,69	4 container storage areas	Permitted
TA-54, Area L	Gas cylinder storage	Interim status/ Permitted
TA-54, Area L	Container storage area	Interim status
TA-54, Area L	Landfill	Under closure
TA-54, Area L	Oil storage tanks	Closed
TA-55, building 4	Cementing process	Interim status
TA-55, building 4	Oxygen sparging furnace	Interim status
TA-55, building 4	6 container storage areas	Interim status

Court ruled against DOE's appeal in August 1992. In May 1993, NMED issued a Compliance Order for alleged violations of mixed waste storage requirements, mostly at TA-54. A federal facility compliance agreement is being negotiated between LANL and EPA Region 6 to address the mixed waste storage violations.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager, LANL. Following general discussions of operations in each TA inspected, including process descriptions, waste generation, and handling, a tour was conducted. NEIC inspected various process areas, generation points, hazardous waste accumulation areas, and interim status and permitted storage and treatment areas. Records/documents affiliated with regulated activities were also reviewed. Photographs are provided in Appendix A.

During the NEIC inspection, EPA Region 6 personnel conducted a comprehensive monitoring evaluation (CME) of LANL's groundwater monitoring system. The CME findings are presented in a report prepared by Region 6 [Appendix B].

Facility Inspection/Discussions

LANL generates hazardous waste at many TAs. Processes generating hazardous wastes include laboratory research, high explosives testing, electroplating, and maintenance.

Hazardous wastes are accumulated in drums, bottles, bags, and tanks. Wastes are either stored; returned to the process; shipped off-site for

reclamation, incineration, or disposal; shipped to on-site treatment/disposal facilities; or piped to one of two on-site wastewater treatment plants (WWTPs).

Research at LANL is variable and different projects/experiments move to various TAs and buildings according to available space. Due to the transitory nature of the work, the RCRA hazardous waste management areas may change frequently. LANL uses a computerized system to track all "known" satellite accumulation, less-than-90-day accumulation, and interim status areas at the various TAs. Lists produced by this system are used by LANL staff for internal auditing purposes. The NEIC inspection team used such a list, printed August 2, 1993, to assist with the inspection, though additional areas not on the list were also inspected. TAs were selected for inspection by NEIC because of known or suspected RCRA hazardous waste generation and/or hazardous waste management areas.

Hazardous waste generation, process descriptions, and a regulatory evaluation are presented in the following sections for each TA inspected by NEIC.* The level of detail of process description/waste generation discussions vary for each TA due to the complexity of the processes found, amount of RCRA hazardous wastes generated at the TA, and number of areas inspected. Where appropriate, a table is shown with the findings for the RCRA hazardous waste management areas inspected. RCRA areas of noncompliance noted during the inspection are shown in italics in the observed status column of each table.

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* *The TAs inspected for RCRA compliance included TA-0, TA-2, TA-3, TA-8, TA-9, TA-11, TA-14, TA-16, TA-21, TA-22, TA-35, TA-41, TA-48, TA-50, TA-54, TA-55, TA-57, TA-60, and TA-61.*

TA-0

Individual facilities located away from main LANL TAs are designated as TA-0. LANL's hazardous waste tracking system inventory lists four TA-0 facilities having hazardous waste management areas. One of these four was inspected; TA-0, building 1237, the Pueblo Complex. Another TA-0 facility was discovered during the NEIC inspection; the Old Catholic Church Property, TA-0 - 030(g). This site is an abandoned septic tank which was being remediated during the NEIC inspection.

Pueblo Complex

The Pueblo Complex, TA-0, building 1237, is occupied by Johnson Controls Inc. (JCI) and includes both offices and an environmental laboratory. Two satellite accumulation areas exist within the room 203 environmental laboratory. Only one of these accumulation areas was listed in the LANL hazardous waste tracking system inventory. One area accumulating waste was not in control of the operator of the process generating the hazardous waste. The area had three waste streams accumulating. Two of the waste streams were generated at other areas besides TA-0, building 1237: Mercury contaminated wastes generated by JCI at TA-60, as the result of a mercury spill clean-up, and mercury switch wastes from the JCI Utilities Group. Table 2 presents the findings at the TA-0 satellite accumulation areas.

Table 2

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-0
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Inventory/Observed Status
Satellite Accumulation Areas		
Building 1237, room 203 Pueblo Complex JCI	"Waste COD", sulfuric acid, silver, and mercury	1 container
Building 1237, room 203 Pueblo Complex JCI Environmental laboratory		*2 of 3 waste streams not in control of the operator of the process generating the hazardous waste*
	Broken thermometers; mercury	1 small container
	Mercury switches from Utilities Group (not generated at TA-0)	1 container; dated 6/3/93
	Mercury and soil from spill clean-up at TA-60, bldg. 2	1 container

Old Catholic Church Property

The Old Catholic Church property, TA-0 - 030 (g), is located within the Los Alamos townsite, on Canyon Road. The property is owned by Philip and Joy Kunsberg, who currently live in the former Catholic Church building. The property was found to contain a septic tank, believed to be operated by LANL from 1943 to 1947. The property was designated as a solid waste management unit (SWMU) and was being remediated under the Environmental Restoration Program during the NEIC inspection. An NEIC inspection team visited the remediation site on August 5 and 6, 1993.

Remediation began in June 1993. The UC Operable Unit Project Leader is James Aldrich, EES-1, and the on-site Field Team Manager is Brent Russell, ERM/Golder. NEIC was provided a copy of an October 19, 1993 sample inventory of all septic tank samples. Samples were collected from waste materials within the tank chambers, soils surrounding the tank, in and near associated clay pipes, and from the tank's outfall. Severe radioactive contamination was found in the tank (i.e., Pu-239 = 16,310 pCi/g, U-235 = 12 pCi/g, total U = 387 mg/kg). The sludge within the tank also had total lead and total mercury present up to 600 mg/kg and 76 mg/kg, respectively.

Waste materials from inside the tank, associated pipes, and surrounding soils have been disposed of at the LANL TA-54 low-level, radioactive landfill.

An adequate RCRA hazardous waste determination was not made for all wastes from/near the septic tank prior to disposal. Total metal analyses were completed for most of the samples. Because Toxicity Characteristic Leaching Procedure (TCLP) toxicity testing involves diluting a solid sample 20-fold, the total metal result for solid samples needs to be 20-fold the TCLP limit, or 100 ppm lead and 4 ppm mercury,* in order to be TCLP toxic. Twelve samples contained lead and/or mercury above the 20-fold limit.** LANL did not perform TCLP analyses on 7*** of these 12 samples. The samples on which LANL did perform TCLP analyses, indicated that the sample analyses were below the TCLP limits for lead and mercury. TCLP analyses should have been performed on all samples over the 20-fold limit.

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* *The TCLP limit is 5 ppm for lead and 0.2 ppm for mercury.*

** *NEIC recommends performing TCLP analysis at a 10-fold limit of total metal results over TCLP limits for solid samples to account for any analytical uncertainty.*

****Seven samples requiring TCLP analyses are AAA4349, AAA4355, AAA4363, AAA4364, AAA4365, AAA4366, and the "aliquot" sample from the tank sludge.*

TA-2

TA-2 houses the Omega West nuclear reactor. This 8 megawatt reactor, operated by INC, is utilized for nuclear research, providing a source of neutrons for fundamental studies in nuclear physics and associated fields. A leak of radioactive material into nearby groundwater was discovered in January 1993. The reactor has been shut down since then.

The three satellite accumulation areas listed in LANL's hazardous waste tracking system inventory for TA-2 were inspected by the NEIC team. RCRA hazardous waste produced in TA-2 consists of spent solvent contaminated rags, solder, cleaning solutions, acids, and inorganics. Table 3 presents the findings at the TA-2 satellite accumulation areas.

Table 3

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-2
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Inventory/Observed Status
Satellite Accumulation Areas		
Building 1, room 115	Sodium dichromate mixed waste	1 container
	Boron carbide and paraffin, cobalt powder, inorganic waste sulfuric acid, K_2CrO_7, cleaning solutions, organic waste	9 containers
Building 1, room 117	Not currently used	No RCRA hazardous wastes accumulated
Building 1, room 118	Lead alloy solder waste	1 container

TA-3

TA-3 is the main technical area at LANL with approximately 20 divisions and more than 450 structures. The main LANL administrative functions are managed out of TA-3. Other activities include research, electroplating, and a range of support services such as data processing, food services, graphics, photography, publishing support, medical services, security, shipping and receiving, etc.

Research activities, conducted in numerous small and large laboratories, include, but are not limited to, mechanical testing, testing of electrical equipment and properties, chemical and physical evaluations of nuclear materials, astrophysical and radiation measurements, dielectric property testing, and instrument development and calibrations. Many machine shops are associated with equipment fabrication. Utility support services consist of the motor pool and service stations, roads and ground maintenance, and equipment repair shops. Production/processing activities include electroplating of various metals, etching of circuit boards, microwave equipment fabrication, high-tech ceramics fabrication, metal foundries and fabrication, and pipe fitting.

Waste Generation / Management

Hazardous and mixed wastes are generated at TA-3 from many of the above-mentioned activities. Much of the waste is generated at the maintenance and support shops (building 38, operated by JCI; painting, mechanical, and welding shops). The majority of the other wastes come from the various laboratory and research facilities. Much of this waste is off-specification or excess chemicals, spent solvent contaminated rags/Q-tips, and electroplating wastes.

The main electroplating operations for LANL take place in TA-3, building 66 and are managed by MST-6. Other metal treatment operations include anodizing, dying, and etching. Both ferrous and nonferrous materials are processed. Solid hazardous waste streams, such as metal and spent solvent contaminated filters and rags, are accumulated in satellite accumulation areas. These wastes are periodically picked up and transported by EM-7 for disposal at TA-54. Most liquid waste streams are discharged to the wastewater treatment plant at TA-50. The electroplating operations are discussed in further detail below.

The electroplating facility at TA-3 is located in rooms P-100 and P-106 of building 66 [Figure 1 and photograph 1]. According to MST-6 personnel, this facility is a manual, small job specialty operation with electroplating lines for chromium, gold, silver, copper, and lead. The facility also has an anodizing aluminum line and two small-scale experimental plating lines [Figure 2].

All rinsewater tanks and some electrocleaner tanks are discharged monthly to the TA-50 wastewater treatment facility. Currently, the waste is not analyzed prior to discharge. However, according to LANL personnel, samples were collected and analyzed in the past. The alkaline electrocleaner tanks are also discharged to TA-50 after pH adjustment. Solutions from other tanks in the lines are replenished with new chemicals as needed and not discharged to TA-50. The wastewater in each of these tanks is circulated through filters to prevent sludge buildup. The filters, when changed, are bagged, accumulated in a nearby satellite accumulation area, and transported to TA-54 for disposal.

The aluminum anodizing line is also located in room P-100 [Figure 1]. This line contains four dye tanks, utilizing chromium-based dyes. Wastewater from rinsewater tanks is also discharged to TA-50. Conflicting statements

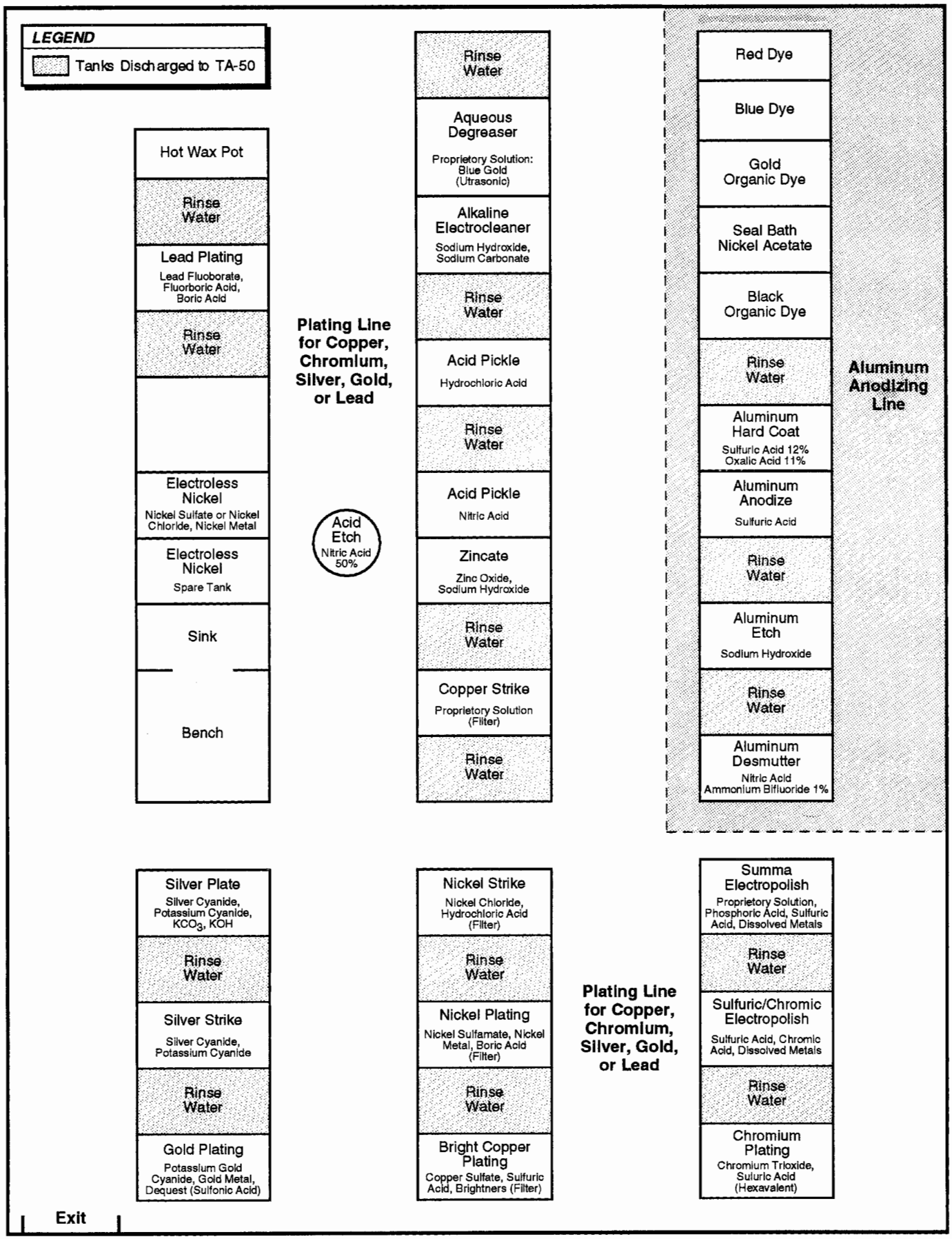

Figure 1
ELECTROPLATING TANKS, TA-3, BUILDING 66, ROOM P-100
Los Alamos National Laboratory
LosAlamos, New Mexico

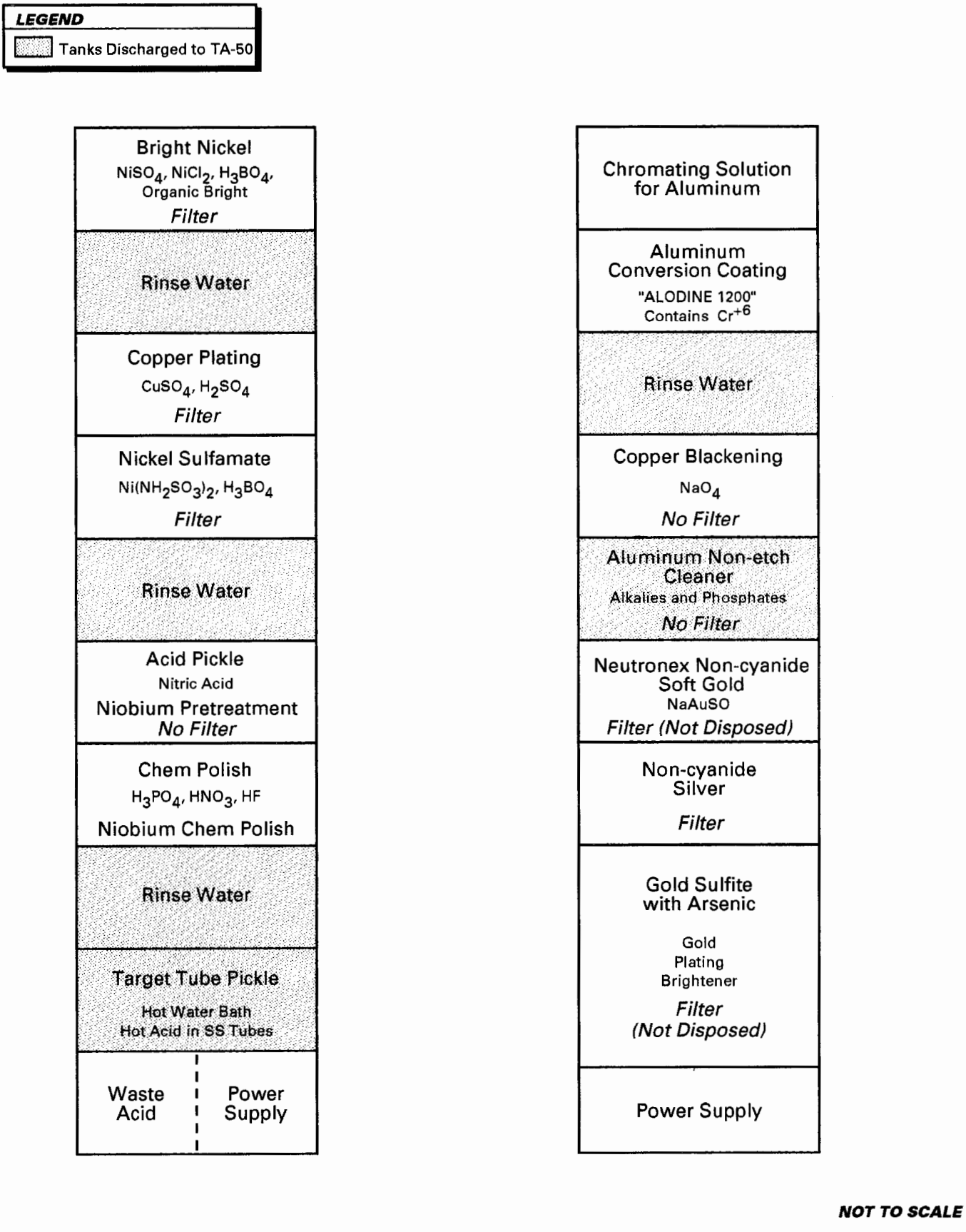

Figure 2
SMALL SCALE EXPERIMENTAL PLATING TANKS, TA-3, BUILDING 66, ROOM P106
Los Alamos National Laboratory
LosAlamos, New Mexico

were made regarding discharge of waste material from the dye tanks. According to one LANL electroplating employee, the four dye tanks are discharged to TA-50 every 3 months. However, the supervisor said the tanks had not been discharged to TA-50 for the last 7 or 8 years. He also stated the practice is to now replenish the tanks with new dye and that the dye colors are never changed.

Cyanide was previously used in the silver electroplating line to recover silver. However, during the NEIC inspection, Custike® copper strike had replaced the cyanide. A 1,1,1-trichloroethane vapor degreaser tank had also been used previously. This tank was taken out of service in April 1992. Spent 1,1,1-trichloroethane solvent residues were removed, placed into a 55-gallon drum and moved to room P1A of the building 66 basement in April 1992 [Appendix A, photographs 2 and 3]. This waste was still in room P1A during the NEIC August 1993 inspection. The approximately one-third full drum was labeled incorrectly as containing "masking wax" and there were no visible hazardous waste labels. The spent trichloroethane residues were tested for radioactivity; the results were negative. Room P1A is not a RCRA permitted storage area and the waste was not being accumulated under the control of the operator of the process generating the waste.

LANL's computerized hazardous waste tracking system indicated TA-3 had 144 satellite accumulation areas, 12 less-than-90-day storage areas, and 2 interim status storage facilities at the time of the inspection. Several additional satellite accumulation areas observed by the NEIC inspection team were not listed in the tracking system. Twenty-three satellite accumulation areas and 11 less-than-90-day storage areas were inspected by the NEIC inspection team. These areas were in buildings 38, 39, 40, 43, 66, 102, 132,

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® *Custike is a registered trademark and will appear hereafter without ®.*

379, 502, 2056, and 2133. Table 4 presents the findings at the TA-3 hazardous waste accumulation areas inspected by NEIC.

Satellite Accumulation Areas

Spent lithium and nickel-cadmium batteries, generated throughout building 40, were being accumulated at the main building 40 entrance corridor. This area was not in the control of the operator of the process generating the waste. Three separate laboratories were using the one accumulation area in building 40, room W112; this area was also not in control of the operator producing the hazardous waste.

Waste spent trichloroethane solvent sludge, accumulated in a 55-gallon drum, was generated in building 66 room P100, but stored since April 1992 out of the control of the operator in room P1A in the basement. The drum, about one-third full, was incorrectly marked as "masking wax," and was not marked with the words "hazardous waste" or the actual contents.

Less-than-90-Day Storage Areas

RCRA hazardous wastes (ignitable and toxic) were being stored in the building 2133 less-than-90-day storage area. This area was not equipped with an internal communications or alarm system or devices capable of summoning emergency assistance.

<u>TA-8</u>

TA-8 is located along the western boundary of LANL property. The area contains the administrative offices for the M-Division, records storage, the program office for aboveground experiments (NWT), and radiography research

Table 4

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-3
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Less-than-90-Day Accumulation Area		
Building 38, room 103 Paint shop/maintenance room JCI	"Dirty lacquer thinner" "Dirty solvent rags" (methyl ethyl ketone)	2 55-gallon drums; dates 6/4/93 and 7/16/93 1 55-gallon drum; date 7/29/93
Building 39, room 16, north wing beryllium shop	Rags, lead chips, scrap beryllium	1 55-gallon drum; date 8/2/93
Building 40, outside, NW dock	------	No RCRA hazardous waste accumulated during inspection
Building 43 CRM-1 Micrographics	Photographic processing waste, fixer, developer	1 box of waste marked "silver"
Building 66 (west side) outside P100 Area	------	No RCRA hazardous wastes accumulated during inspection
Building 102 east dock	Lead solder, freon	No RCRA hazardous waste accumulated during inspection
Building 102 room 118A	Waste generated from machining of shielding and weapons	Lead contaminated mixed waste, generated about 2 years prior to inspection; container moved from satellite area June 14, 1993
Building 132 room 202B	Photographic fixers and developers, solvent contaminated rags from cleaning magnetic computer tapes	3 containers photographic bleach, 3 containers of toner, 1 drum of rags contaminated with isopropyl alcohol and kerosene

Table 4 (cont.)

Location	Waste Stream Managed	Observed Status
Building 379 (Lead Shack) JCI	No RCRA hazardous wastes currently being accumulated	There is no eyewash, no internal communication or telephone, no fire extinguisher currently available. No RCRA hazardous wastes accumulated during inspection.
Building 2056 (shed on south side of building 216) P-14	Contaminated rags, tin, and lead flux from soldering, 1,1,1-trichloroethane, and acetone from degreasing a blueprint machine	1 container of ink residue, acetone, and 1,1,1-trichloroethane, 1 container of rags contaminated with ethanol and acetone
Building 2133, shed SST		*No alarm or emergency communication devices nearby*
	Ethyl alcohol, 1,1,1-trichloroethane, epoxies, sealants, conformal coating flux, anti-static cleaner, and glass cleaner wastes	3 55-gallon drums
	1,1,1-trichloroethane, ethyl alcohol, No. 135 rosin flux, and solder wastes	1 35-gallon drum
Satellite Accumulation Areas		
Building 38, room 122 JCI NTS ironworkers center	Solvent rags with acetone and petroleum naphtha	¾ full 55-gallon drum
Building 38, room 122, south wall JCI Ironworkers	Solvent rags with acetone and petroleum naphtha	1/5 full 55-gallon drum

Table 4 (cont.)

Location	Waste Stream Managed	Observed Status
Building 38, room 125 JCI Machine shop	Lead contaminated rags and debris	1 55-gallon drum
Building 38, room 132 JCI NTS Pipe Fitters	Acetone/alcohol contaminated rags	1 55-gallon drum
Building 40, entrance to corridor	Spent lithium and Ni-Cd batteries with mercury and silver	*Two hazardous waste containers were not in the control of the operator of the process generating the hazardous waste*
Building 40, room W40 SST-7	Ethanol contaminated cotton swabs	No RCRA hazardous waste accumulated
Building 40, room W112 SST-7	Acetone, 1,1,1-trichloroethane contaminated rags, paper wipes, and cotton swabs	*Three laboratories are using this satellite storage area so area is not in control of the operator generating the hazardous waste* One 30- to 35-gallon drum
Building 40, room W124 SST-9	Acetone ethanol, and propanol contaminated paper wipes and cotton swabs	1 container
Building 40, room W40 Lower basement west SST-7	------	No RCRA hazardous wastes accumulated
Building 40, room N183 MEE-11 Electrochemistry laboratory	Various spent solvents, acids and bases	Multiple small bottles/-containers accumulated
Building 40, room N185 MEE-11 Electrochemistry laboratory	(1) "Area acids": nitric acid and sulfuric acid; (2) solvents: hexane; (3) rags with acetone, ethanol, propanol, methanol, 1,1,1-trichloroethane, (4) base storage: sodium hydroxide	Multiple small bottles/-containers accumulated

Table 4 (cont.)

Location	Waste Stream Managed	Observed Status
Building 43, room C255A IT Division	Photographic fixers and developers, bleach contaminated rags	2 2-liter bottles waste, hazardous waste labels and dates on each bottle (although not full)
Building 43, room B202 X Division (exclusion area)	Photographic fixers and developers, contaminated rags	No RCRA hazardous waste accumulated
Building 66, room P103 MST-6 Electroplating	Solvent wipes with ethanol, acetone, methylene chloride, naphtha, xylene, toluene (from lacquers and lacquer thinners) "Dri-touch" cans "Sheath" cans	Several small containers 8½ 15-oz. cans, waste has been in storage since 1992 (no waste profile sent in) 9 16-oz. cans, waste has been in storage since 1992 (no waste profile sent in)
Building 66, room P1A MST-6	Waste spent trichloroethane solvent sludge	*≈⅓ full 55-gallon drum; wastes not in the control of the operator (stored in basement and waste generated in room P100); marked incorrectly as "masking wax"; neither the words "hazardous waste" nor the correct contents marked on the drum; stored since April 1992*
Building 66, room C107	Freon contaminated rags Lead chips and associated wastes	≈ 10 gallons 30 gallons
Building 66, room G3 MST-4	Lead/silver contaminated wastes Ethylene glycol waste	≈ 6 oz. ≈ 25 oz.
Building SM502, room N111 SST-11	Solder lead waste	One ≈ 1-gallon coffee can

Table 4 (cont.)

Location	Waste Stream Managed	Observed Status
Building SM502, room N111 SST-11	Laboratory/etching wastes	One ≈2½-gallon red can; empty
Building SM502, room N111A	Laboratory/etching wastes	One ≈2½-gallon red can; empty
Building SM502, room E115 SST-11	Conformal coatings, ethanol and acetone wipes, and polyurethane coatings	One ≈2½-gallon red can
Building SM502, room E116 SST-11	Laboratory/etching wastes	One ≈2½-gallon red can
Building SM502, room E114 SST-11	Laboratory/etching wastes	One ≈2½-gallon red can

and development (WX). The primary research and work performed at TA-8 involves nondestructive testing of nuclear weapons and various components. High speed and neutron radiography, videography, infrared imagery, fluorescent penetrants, and acoustics are used for the testing. Laboratory rheology experiments are also performed where properties of suspension and fluid mechanics are tested.

The primary type of RCRA hazardous waste generated in TA-8 is spent solvent contaminated rags. Photographic development hazardous wastes are occasionally generated and spent developer rinsewater is discharged to an NPDES outfall.

The LANL hazardous waste tracking system inventory lists three satellite accumulation areas in TA-8. The NEIC inspection team inspected six satellite accumulation areas; three not on LANL's tracking list. No RCRA violations were noted at the areas inspected. Table 5 presents the findings at the TA-8 hazardous waste accumulation areas.

TA-9

Hazardous waste at TA-9 is mainly generated in laboratories in building 21. The M-1 group conducts research on high explosives, and the MST-7 group conducts polymer research. High explosives are also machined and tested in several individual buildings, constructed like bunkers and surrounded by earthen berms.

Over 30 satellite accumulation areas are operated at TA-9. In building 21, liquid wastes from experiments were typically accumulated in containers such as glass jars or plastic containers in the individual laboratories where they were generated. The containers were kept under hoods or in

Table 5

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-8
Los Alamos National Laboratory
Los Alamos, New Mexico

Location and Description	Waste Stream Managed	Observed Status
Satellite Accumulation Areas		
Building 21 Photography laboratory	------	Combined with the other photography laboratories and no longer used
Building 70, room 117 Loading dock Nondestructive testing (NDT)	Spent ethanol, acetone, trichloroethane and other solvents on rags and paper wipes	55-gallon drum, 1/2 full; started filling drum approximately 2 years ago
Building 22 WX-3 Supports the nondestructive testing laboratory	Rags with ethanol, acetone, "chloroethane" and oil contamination	~2.5-gallon metal can
Building 22 WX-3 Supports the nondestructive testing laboratory; repair on equipment	Oily rags, wipes, and gloves	55-gallon metal drum; 3 bags inside drum
Building 22 Lead Storage room WX-3 Nondestructive testing laboratory; repair on equipment	Radioactive, ethanol, acetone, "chloroethane" and oily rags waste	~2.5-gallon red metal can for radioactive waste ~2.5-gallon red metal can for solvent waste
Building. 30 MEE-9 Macrostatistical Hydrodynamics (MASH) Research Laboratory	Ethyl alcohol and 12% tetrabromoethane used in laboratory for cleaning equipment	No RCRA hazardous waste accumulated

cabinets, often in a tray for secondary containment. Nonliquid wastes, such as paper or cloth wipes used for cleaning, and lead foil, were accumulated in plastic or metal cans in the individual laboratories. In the other bunker-like buildings, wastes were accumulated in cans, drums, or in containers designed for explosive material.

According to facility personnel, four less-than-90-day hazardous waste accumulation areas are maintained at TA-9. Three of the four were empty, and the other (building 39) had containers of scrap solid high-explosive waste. Twenty-seven satellite accumulation areas were inspected. Table 6 presents the findings at the hazardous waste accumulation areas inspected at TA-9.

Wastewater generated in buildings at TA-9 drains through a settling tank to an NPDES outfall. Sludge from the settling tank is thermally treated at the burning grounds at TA-16.

TA-11

TA-11, known as K-site, conducts tests of explosive components and systems under a variety of extreme environments. High explosives are subjected to physical variations, such as vibrations and shock testing, to determine stability and detonation thresholds. K-site is also referred to as Environmental Testing.

According to facility records, TA-11 has one satellite accumulation area and one rest house (less-than-90-day storage site). The satellite accumulation area was located outside building 24. There was one 55-gallon container partially filled with wipes with acetone generated from cleaning high explosive material. This site was not under direct control of the operator of the process

Table 6

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-9
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Less-than-90-Day Accumulation Areas		
Building 29, room 101A	Collects waste from nearby satellite accumulation areas	No RCRA hazardous waste accumulated
Building 38 - process bay	Accumulates containers from nearby satellite accumulation areas	No RCRA hazardous waste accumulated
Building 39	Scrap solid high explosives	Several containers of high explosive waste
Building 208A	Accumulates containers of waste from experiments	No RCRA hazardous waste accumulated
Satellite Accumulation Areas		
Building 21, room 117	Contaminated wipes	Container accumulating wipes
Building 21, room 118	Wipes contaminated with high explosives	Container accumulating wipes
Building 21, room 119	Liquid waste from hydrolysis research on high explosives, contaminated wipes	Container accumulating wipes
Building 21, room 120	Liquid waste containing solvents from binder studies on explosive powder	Container accumulating liquid solvent waste
Building 21, room 121	Wipes contaminated with solvents and high explosives, liquid waste from organic synthesis of high explosives	Container accumulating wipes
Building 21, room 124	Contaminated wipes, liquid and solid high explosive wastes	Container accumulating wipes
Building 21, room 125	Contaminated wipes and liquid waste from organic synthesis	Liquid hazardous waste in container under hood
Building 21, room 127	Contaminated wipes	Container accumulating wipes

Table 6 (cont.)

Location	Waste Stream Managed	Observed Status
Building 21, room 128 bay 1	Scrap solid high explosive samples	No RCRA hazardous waste accumulated
Building 21, room 128 bay 2	Wipes contaminated with acetone and high explosives	Container accumulating wipes
Building 2, room 128 bay 3	Foil contaminated with lead and high explosives	Container accumulating foil
Building 21, room 135	Sludge intermediate waste	Open beaker of sludge waste
Building 21, room 137	Contaminated wipes	Container accumulating wipes
Building 21, room 140	Acetone contaminated wipes	Metal can accumulating waste
Building 28, machine shop	Contaminated wipes	Container accumulating wipes
Building 29, room 106	Organic and inorganic acids; acetone-soaked wipes contaminated with high explosives	About 400 pounds of waste lead shelf lining
Building 32	Experimental waste; acetone soaked wipes contaminated with high explosives	Containers accumulating experimental waste; container accumulating wipes
Building 33	Inactive	No RCRA hazardous waste accumulated
Building 34	Solid high explosives	No RCRA hazardous waste accumulated
Building 35	Vacuum pump oil contaminated with high explosives	One can accumulating waste pump oil
Building 37	Liquid waste from latex binder studies on high explosives; contaminated wipes	2 containers liquid waste; 1 container accumulating wipes
Building 38	Ethyl acetate or methyl ethyl ketone mixed with explosives; liquid waste from pumpability tests using high explosives and melamine	55-gallon drum accumulating contaminated wipes; 55-gallon drum accumulating liquid melamine and high explosive waste (< 55 gallons total)

Table 6 (cont.)

Location	Waste Stream Managed	Observed Status
Building 45	Wipes and wastewater contaminated with high explosives	(1) 55-gallon drum, 1/2 full of wastewater, (1) container accumulating wipes
Building 46	Contaminated wipes	Container accumulating wipes
Building 48	High explosive contaminated wipes and wastewater, high explosive scrap	Container accumulating wipes
Building 49	Scrap high explosives	3 boxes accumulated
Building 208A	Experimental high explosive waste	No RCRA hazardous waste accumulated

that generated the waste. The rest house did not have any wastes accumulated at the time of inspection.

TA-14

TA-14, referred to as Q-site, is a high explosives firing site. Studies in explosives sensitivities, thermal responses, and small-scale diagnostics are performed here. Open burning operations are conducted to treat "uncharacterized" explosive/reactive wastes. These wastes consist of small sample bottles, processing equipment used in explosives development, and wipes/gloves/cleaning supplies contaminated with high explosives (HE). The burns occur in a burn cage (a converted 55-gallon drum) and contain a maximum of 50 pounds of HE contaminated waste. The burn cage is situated on a metal tray. About one-half gallon of acetone or hexane is used to start the burn, which is remotely detonated. Burns are limited to one each 24-hour period. The burn cage was used four times in 1992 and three burns occurred between January and July 1993. The ash residue, remaining after the burn, is accumulated in a 55-gallon drum near the burn cage. The ash is analyzed to determine whether or not it is a RCRA hazardous waste.

The burn cage is listed as an open burn/open detonation treatment unit with interim status on LANL's hazardous waste tracking system inventory. This unit is not included on LANL's Part A hazardous waste permit application for interim status.

TA-16

TA-16, known as S-site, is involved with development; engineering design; prototype manufacture; testing of high explosives, plastics, and adhesives; and research on process development. Facilities consist of

administrative offices, laboratories for high-explosive formulation and QA/QC, high-explosive processing, machine forming, pressurized molding and adhesives, and decontamination sites (incinerator and open burn pads).

TA-16 is involved with all class A high explosives, such as TNT, RDX and PETN. The TA is managed by two groups within LANL: (1) Design Engineering Division [(WX) Explosive testing and fabrication], and (2) Dynamic Testing Division [(M) Explosive formulation and research and development]. WX controls high explosives in machining design work, stability testing, and decontamination of high explosives and materials potentially contaminated with high explosives. M Division researches and develops new explosives and modifies formulations of known explosives and conducts quality assurance and quality control (QA/QC) procedures.

High explosives are first quality inspected by M Division for acceptance. They are then stored in the magazines at either TA-27 or TA-38. According to facility personnel, the controlled storage maintains an environment that allows almost indefinite shelf lives.

High explosives are removed from the magazines for project design and testing by WX. The high explosives are transferred from the magazines to rest houses for storage near high-explosive process areas. Rest houses are separated from production areas for safety considerations. The safe houses are connected to the production areas with controlled access corridors.

High explosives are machined to specified configurations, much like metal machining. High-explosive finished product and waste/scrap high explosives generated through milling, are returned to the safe houses for storage. Product high explosives are utilized in testing or transferred for

further operations. Waste high explosives are collected and taken to the WX burn areas for treatment.

TA-16 mostly generates wastes contaminated with high explosives. Since high explosives are Class A explosives, waste high explosives exhibit the hazardous waste characteristic of reactivity (Hazardous Waste Number D003). Hazardous wastes are generated from S-Site from the following processes:

- Off-specification/expired shelf-life high explosives
- Rejected charges (machined products did not meet specifications)
- High-explosive machined scrap
- High-explosive sludge from the bottom of wastewater settling tanks
- Spent carbon filters from wastewater treatment process
- Wipes contaminated with high explosives and solvents from clean-up of equipment
- High-explosive contaminated laboratory chemicals from research and development
- Laboratory chemicals not contaminated with high explosives

Waste high explosives are managed and treated within S-Site. All high explosives or materials potentially contaminated with high explosives are decontaminated before removal from S-Site, and the treatment process is referred to as the "retirement phase." At LANL, high explosives are treated by burning. High explosives or material that is potentially contaminated with high explosives, are burned on open burn pads or in an incinerator managed by WX. The ash residue, after burning (treatment), is containerized by WX personnel and removed from S-Site to TA-54 for waste management by LANL group EM-7. This ash is identified as barium (contaminated) sands, EPA Hazardous Waste Number D005.

Prior to April 6, 1990, barium sand, designated as D005, may have contained the spent solvents toluene and methyl ethyl ketone (MEK). During the NEIC inspection, containers of product toluene and MEK were observed in bay 102 at TA-16, building 363. Facility personnel indicated that these solvents occasionally have been used in the area, with the last time being April 6, 1990. If any wastes burned at the open burning sites contained toluene or MEK, the ash would meet the listing for Hazardous Waste Number F005. The barium sands are transported to TA-54 where they are treated and disposed of as a nonhazardous waste.

WX fabricates high-explosive charges as initiators for nuclear detonators. High-explosive charges are precision milled to required specifications. The milled-off high-explosive scrap and the milling machinery and rooms are washed with water. High-explosive contaminated wastewater is flushed through open troughs lining the walls of the milling rooms. The wastewater collects in baffled settling tanks where the high explosives settle as sludge and the wastewater is discharged under an NPDES permit, outfall 05A-054. The wastewater/high-explosive sludge is vacuumed out and transported by vacuum trucks, to one of the two sand filter burn vessels at the S-site open burning area. Wastewater passed through the sand vessels is further filtered through four activated carbon filters prior to discharge to NPDES outfall 05A-055. The spent carbon filters, EPA Hazardous Waste Number K045, are burnt at the open burn area.

Administrative office solid wastes that may have been contaminated with high explosives and the wipes used to clean milling equipment and high-explosive products are burned in a RCRA permitted incinerator. The industrial incinerator is used to decontaminate trash prior to removal from S-site by EM-7 for landfill. According to facility personnel, the ash residue from the incinerator is managed as a nonhazardous waste. The RCRA wastes

incinerated are classified by LANL as either characteristic of reactivity (because of high-explosive contamination) or ignitability (because the wipes are used with acetone and alcohol solvents) and no longer exhibit either characteristic after incineration.

Table 7 lists the hazardous waste accumulation and management areas located in TA-16 inspected by NEIC during the on-site inspection. The RCRA permitted industrial incinerator, four of the five interim status (or required to have interim status) open burning units, and five less-than-90-day storage sites were inspected. Satellite accumulation areas associated with different production/ process activities were also inspected.

RCRA Permitted Site

The industrial incinerator, TA-16, building 1409, is permitted for burning waste generated on-site listed as hazardous due to the characteristics of ignitability, corrosivity or both, or wastes that exhibit the characteristic of reactivity. The incinerator is used for decontamination of potentially high-explosive contaminated office trash and the solvent wipes generated from the high-explosive milling operations.

Records for each burn are maintained, documenting the date the waste was transferred to the burn site, the quantity of waste, the date and time of burning, and any comments concerning the burn. The residue/ash remaining after the burn is containerized and the container is stored in the less-than-90-day storage area at TA-16, building 386.

Table 7

HAZARDOUS WASTE ACCUMULATION AND MANAGEMENT AREAS
INSPECTED AT TA-16
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
RCRA Part B Permitted		
Building 1409 Industrial Incinerator	Solid wastes from offices that may be contaminated with high explosives	No RCRA hazardous waste accumulated
Facilities Required To Have Interim Status or Permit		
Building 387 Flash Pad	Equipment contaminated with high explosives	No RCRA hazardous waste accumulated *Unpermitted unit*
Building 388 Burn Pad	Open burning/open detonation (OB/OD) of solid high-explosive wastes	No RCRA hazardous waste accumulated *Unpermitted unit*
Building 399 Burn Pad	OB/OD of solid high-explosive wastes	No RCRA hazardous waste accumulated *Unpermitted unit*
Building 401 Burn Vessel	OB/OD of high-explosive sludge	HE sludge drying *Unpermitted unit*
Less-than-90-Day Storage Areas		
Building 261 rest house	Waste high explosives Waste high explosive-contaminated rags	7 boxes of hazardous waste high explosives accumulated *Six boxes not marked clearly with the words "hazardous waste" or the contents* 1 55-gallon drum accumulating rags
Building 340, room 114	Waste solvents from high-explosive processing	2 55-gallon drums
Building 345 rest house	Waste high explosive	No RCRA hazardous waste accumulated
Building 386	Ash from OB/OD areas	2 55-gallon drums
Building 463, room 100	Waste high explosive	1 box of RCRA hazardous waste high explosives
Satellite Accumulation Areas		
Building 248	Used standards for liquid scintillation counter	No RCRA hazardous waste accumulated
Building 304, room 103	Laboratory wastes	< 55 gallons of RCRA hazardous waste accumulated

Table 7 (cont.)

Location	Waste Stream Managed	Observed Status
Building 306, room 103	Laboratory wastes	< 55 gallons of RCRA hazardous waste accumulated
Building 340, bay 102	High-explosive processing wastes, solvents	< 55 gallons of RCRA hazardous waste accumulated
Building 340, bay 103	Waste solvents after recrystallization of high explosives	< 55 gallons RCRA hazardous waste accumulated
Building 340, bay 104	High-explosive slurry plants	No RCRA hazardous waste accumulated
Building 340, bay 105	Particulate from baghouse used with inactive micronizing process collection	No RCRA hazardous waste accumulated
Building 340, bay 107	High-explosive process wastes and acetone contaminated wastes	< 55 gallons of RCRA hazardous waste accumulated
Building 363	Activated carbon contaminated with high explosives and trace solvents	Activated carbon in 85-gallon drums, not spent
Building 450	Acetone, alcohol, freon soaked swabs, ammonia, wet abrasive and lead solder	< 55 gallons of RCRA hazardous wastes accumulated
Building 460, room 101	Laboratory wastes contaminated with high explosives	< 55 gallons of RCRA hazardous waste accumulated
Building 460, room 102	Laboratory wastes contaminated with high explosives	< 55 gallons of RCRA hazardous waste accumulated
Building 460, room 113	Laboratory wastes contaminated with high explosives and mercury	< 55 gallons of RCRA hazardous waste accumulated
Building 460, room 114	Laboratory waste of acids contaminated with high explosives	< 55 gallons of RCRA hazardous waste accumulated
Building 460, room 115	Laboratory wastes contaminated with high explosives	< 55 gallons of RCRA hazardous waste accumulated

Facilities Required To Have Interim Status or Permit

S-site operates an open burning site used to decontaminate high explosives. There are five open burn units; two burn pads, two sand filter pits (vessels), and one flash pad. The open burning site does not have interim status; the burn units were not specified in the Part A application or amendments. Four of these five units were inspected.

The two burn pads, TA-16, buildings 388 and 399, burn solid high-explosive components, high-explosive contaminated oil, carbon from the wastewater treatment filters, and solvent contaminated with high explosives. The charges are placed on wheeled carts under a peaked metal covering and ignited with flammable liquids. According to facility personnel, the high explosives readily burn in the open and, without containerization, pressure does not build for potential explosions.

The two sand pit vessels, TA-16, buildings 401 and 406, burn the high-explosive sludge collected from wastewater settling tanks throughout S-site and LANL. The sludge is removed from the settling tanks by vacuum truck and transported to the vessel. The sludge is emptied onto the sand filters to separate it from the wastewater. The high-explosive sludge is dried atop the sand and then burned after sufficient quantities are collected. There are normally two burns a month.

The flash pad, TA-16, building 387, is an open area with a sand substrate. Equipment that may have been contaminated with high explosives is burned to ignite any residue high explosives prior to removal from S-site.

Less-Than-90-Day Storage Areas

Wastes are transferred and consolidated from satellite accumulation areas to less-than-90-day storage areas or are transferred to TA-54. TA-16 has 13 less-than-90-day storage areas; 5 areas were inspected [Table 7]. Waste high explosives, in the rest house (TA-16, building 261), were accumulating in six containers that were not labeled or marked clearly with the words "hazardous waste."

Satellite Accumulation Areas

Generated wastes are accumulated in satellite accumulation areas. According to facility records, 34 satellite accumulation areas are located within TA-16. Fifteen satellite accumulation areas were inspected by NEIC in TA-16 [Table 7]. No areas of noncompliance were noted.

TA-21

TA-21 was the old plutonium processing facility; some uranium was also processed. Plutonium and uranium are no longer processed at TA-21. Current activities at TA-21, administered by several laboratory organizations, include basic research in geophysics, biology, and radiological materials; storage of hazardous and nonhazardous materials; equipment repair; and radioactive waste treatment.

TA-21 operations generate several types of liquid effluents. These include chemical waste, radioactive waste (including tritiated water), treated cooling water, noncontact cooling water, boiler blowdown, and sanitary wastes. Inorganic chemical and radioactive wastes are discharged to the liquid radwaste treatment plant at building 257. Treated effluents are transferred

to an outfall at TA-50 through a cross-canyon pipeline. Organic chemical wastes generally are collected in containers and handled as hazardous or mixed wastes (e.g., removed by EM-7 and transported to TA-54). Other liquid wastes are discharged to the environment through 13 listed outfalls from TA-21 into the canyons to the north and south.

Several divisions generate various types of hazardous, radioactive, mixed, and solid wastes at TA-21. Hazardous and mixed wastes generally are collected in containers, accumulated in satellite storage or less-than-90-day accumulation areas, and transported to TA-54 by EM-7.

LANL's hazardous waste tracking system inventory lists 1 interim status storage area, 2 less-than-90-day accumulation areas, and 26 satellite accumulation areas in TA-21. The NEIC team inspected the interim status storage area, the 2 less-than-90-day accumulation areas, and 18 satellite accumulation areas. Table 8 presents the findings at the hazardous waste accumulation areas inspected at TA-21.

The interim status storage area had not been used for over 3 years. At the building 427 less-than-90-day accumulation area, there was no emergency communications or alarm system, no grounding wires on the metal accumulation building to minimize the possibility of a fire, and the nearby fire extinguisher could only be used for trash/wood/paper, not flammable liquids fires. Flammable liquids were in storage during the NEIC inspection. A portion of hazardous wastes being "accumulated" in TA-21, building 3, room 361S were actually generated in building 3, rooms 301A and 301B, not in control of the operator of the process generating the waste.

Table 8

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-21
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Interim Status Storage Area		
Building 61	Former PCB storage area	Not currently used; was used from 1980 until 1989/1990
Less-than-90-Day Accumulation Area		
Building 209 MST-3	Li(DT) mixed waste; reactive (Located within a glovebox)	No RCRA hazardous waste accumulated
Building 427 JCI Painting Operations		*No emergency communications system, no grounding wires on metal accumulation building to minimize the possibility of fires, fire extinguisher present was not compatible with the type of materials accumulated*
	"Dirty paint/lacquer thinner"	30-gallon drum
	"Dirty rags with paint/lacquer thinner"	30-gallon drum
	"Waste lacquer thinner (alcohol, acetone, toluene, methylene chloride)"	55-gallon drum
Satellite Accumulation Areas		
Building 2, room 2J INC-1	Developer fluids	≈ 4 gallons
	Miscellaneous laboratory wastes	≈ 24 gallons
Building 3, room 301 Cabinet under hood INC-1	Laboratory wastes	≈ 5 gallons
Building 3, room 301 Under hood, North wall INC-1	Laboratory wastes	No RCRA hazardous wastes accumulated

Table 8 (cont.)

Location	Waste Stream Managed	Observed Status
Building 3, room 326 Upstairs INC-1	Laboratory wastes produced to test Fernald waste for radioisotope content	
	Lead liquid wastes	¾ gallon
	Lead solid wastes	3 gallons
	Carbon tetrachloride	½ gallon
Building 3, room 361N INC-1	Laboratory wastes	≈ 5 gallons liquid wastes and ≈ 8 gallons solids
Building 3, room 361S		*Wastes produced in TA-21, building 3, rooms 301A & 301B; not in control of the operator of the process generating the hazardous wastes*
	"Nonhalogenated radioactive solvent waste; non-halogenated radioactive organic solvent wastes Major constituents: acetone, tetrahydrafuran, toluene, diethyl ether, hexane, isopropanol; Principal radioisotopes, U^{238}, TH-NAT"	≈ 4¼ gallons; one employee stated that the wastes had been in this accumulation area since the mid-1980s, another said the wastes were just "found" in 2/92
Building 4, room 401W INC-1	Laboratory wastes	4 containers

Table 8 (cont.)

Location	Waste Stream Managed	Observed Status
Building 4, room 3154 INC-1	Wastes produced separating elemental nickel out of simulated Hanford nuclear waste using ion exchange:	
	1) Hardened paint (CWDR#1005170)	2¼ gallons
	2)"Dirty, uncontaminated mercury" (CWDR#1005111)	250 ml (Name; P. Springer; Accum. start date 8/88)
	Hexane containing Pu^{239}, A^{241}	5 gallons
	Mercury contaminated plastic and rubber	2 pints
	"Thalliuous formate (Kodak)" and lead	100 grams and 8 oz. jar, respectively
	Chunks of lead pipe	2 chunks
Building 5, room 500A INC-14	Mixed waste; toluene, THF, dichloromethane, ether, hexane, acetone, used vacuum pump oil, ^{99}Tc, ^{238}U, ^{232}Th	6 containers
Building 5, room 315 INC-14	Laboratory wastes	≈ 7 gallons
Building 30 cold laboratory	Liquid from acid/base scrubber titration	Drum stored in secondary containment safety pack
Building 31	No representative available to describe wastes generated	
	"Glue on rags"	1 30- to 35-gallon drum
	Unknown wastes; labeled "This can being profiled by EM - Unknown - Can abandoned by MEC-10, ENG is assuming responsibility"	1 30- to 35-gallon drum (accum. start date: 2/3/92)
Building 150, room B2 INC-14	Simulated sludge (elemental nickel in nitric acid)	3 containers
Building 150, room 605 INC-14	Solvents from flash chromatograph including chloroform rinsate	Several small containers

Table 8 (cont.)

Location	Waste Stream Managed	Observed Status
Building 150, room 606 INC-14	Solvents from flash chromatography, washes from protein stains; phenol/-"chloridine", silver nitrate, pyridine, sodium hydroxide, methanol, and acetic acid	17 containers; total volume ≈ 13 gallons
Building 150, room 607A INC-1	Organic laboratory wastes	Several small containers
Building 150, room 607A INC-1	Inorganic laboratory wastes; including silver nitrate and cyanide	Several small containers
Building 210, room 120 EES-3 Geophysics group	Soldering flux, acetone, ethyl alcohol, solvent contaminated wipes	1 drum accumulating wipes with solvent residues; 1 drum accumulating wipes with non-solvent wastes

TA-22

Development of special detonators to initiate high explosive systems is performed at TA-22. Research in support of this activity includes studying rapid shock-induced reactions and investigating the results associated with initiating high explosives. High-powered explosive detonators for nuclear devices are designed, developed, and fabricated at TA-22. Printed circuit boards are milled and etched to be used in the explosive devices. Ferric chloride is used for etching, and acetone, kerosene, and ethanol are used for cleaning the circuit boards.

The main RCRA hazardous wastes produced in TA-22 include materials contaminated with high explosives, spent solvents used for cleaning, and printed circuit board production wastes. High speed circuit etch wastes, containing cadmium and chromium, are drummed and accumulated at the TA-22 less-than-90-day accumulation area outside building 91. Rinsewater from the etching process is treated in three tanks in building 91 [photograph 4].

Precipitation of ferric chloride and other metals occurs in Tank No. 1. The liquid from Tank No. 1 is transferred to Tank No. 2 where calcium hydroxide is used for additional precipitation. Tank No. 2 liquid is decanted to Tank No. 3 and the pH is adjusted using acetic or hydrochloric acid. Personnel from TA-54 are then called to arrange for a vacuum truck to pump the liquids for disposal/treatment at TA-54. Sludge from Tank Nos. 1 and 2 is accumulated in a 220-gallon carboy located outside the tank treatment area, at the less-than-90-day accumulation area. The sludge is picked up by EM-7 for disposal.

The sludge from Tank Nos. 1 and 2 has not been adequately tested for its metal content. The most recent shipment of sludge sent to the TA-54 TSD facility was manifested as a corrosive (D002) waste only, using knowledge of process [Appendix C]. No analyses were performed on the sludge. The liquid etching waste from the circuit board production area was analyzed in March 1993 and was determined to contain cadmium and chromium [Appendix C]. Because the liquid contains these metals, the treatment sludges should also be analyzed for their metal content.

The area outside the tank treatment area is used as a less-than-90-day accumulation area. There were no emergency alarms or internal communication system near this area.

Pressing, weighing, and assembly of test shots of explosives occurs in building 93. The main secondary explosive used here is PETN - pentaerythritol tetranitrate. Other explosives include RDX, HMX, TNT, and TATB. High-explosive contaminated wastewater, from two sinks and a Maytag washing machine, discharges through a floor trough to a 5-foot by 8-foot aluminum-lined, concrete sump. The sinks are used for wash down of high-explosive contaminated trays and high-explosive contaminated garments are cleaned in the washing machine. The concrete sump contains an underflow and overflow baffle, allowing high-explosive contaminated solids to be collected for disposal at TA-16. Liquids from the sump drain through a pipe approximately 100 feet downslope to an injection well. This injection well is 5 feet wide by 35 feet deep and is filled within 5 feet of the top with gravel. The surface is covered with corrugated metal to keep rainfall from entering. An aluminum tray is placed inside the well, just beneath the discharge pipe, to collect any high-explosive contaminated wastes which may have escaped through the sump.

Another less-than-90-day accumulation area is located in the building 96 magazines. Building 96 is bermed to the north and opens outward to the south, away from the production buildings. Reactive RCRA hazardous wastes (wipes contaminated with high explosives and off-specification parts) are accumulated here. These wastes are then transported to the S-site in TA-16 or to TA-36 for treatment/disposal. Table 9 presents the findings at the hazardous waste accumulation areas inspected at TA-22.

TA-35

At TA-35, known as Ten-site, nuclear safeguard research and development is conducted. This research and development primarily involves techniques for nondestructive detection, identification, and analyses of fissionable isotopes. Research in reactor safety and laser fusion is also performed here. TA-35 houses the Antares Laser Complex where high-voltage pulse work for electron beam and laser experiments using chemical lasers is conducted. The TA-35 Target Fabrication Facility performs materials sciences research and development involving organic and inorganic chemistry, physical vapor deposition (PVD), chemical vapor deposition (CVD), electrochemical processes, polymer synthesis, micro-fabrication and assembly, and materials characterization. Additional areas of research and work include laser and optical sciences, high-strain rate engineering studies, photo facilities, pulse power systems, high-energy physics, tritium fabrication, metallurgy and ceramic technology, and chemical plating. The EM-9 environmental analysis laboratory is also housed at TA-35.

Up to 16 groups are located at TA-35. The main groups include: P1, the High-Energy Density Plasma Physics Group; N Division, the Nuclear Technology and Engineering Division; CLS, the Chemical Laser and Science Group; and MST, Polymers and Coatings Group.

Table 9

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-22
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Less-than-90-Day Accumulation Area		
Building 96 Magazine building	Alcohol and "Geeturp" contaminated cleaning towels; high-explosive contaminated burnable material	1 box
	Nonburnable high-explosive contaminated parts	1 box
Building 91, room B160		*No nearby alarm or emergency communications system*
	High speed circuit etch (ferric chloride), traces of HCl, cadmium, and chromium	55-gallon polyurethane drum; dated 7/22/93
Satellite Accumulation Areas		
Building 91, room 111 Printed Circuit Shop	Teri-cloths, rags, Q-tips, kleenex, and paper wipes contaminated with solvents	2 2-gallon cans
	Ethanol with polymer Resist	1 1-gallon can
	Alcohol/hydrochloric acid/water	≈ 3 gallons
	"Tenposit (R) LT-34" (used to prep solder)	5-gallon container
	80% phosphoric acid and 5% nitric acid and 5% acetic acids with 10% water	5-gallon container
Building 91, room B145	Ethanol and acetone contaminated cleaning materials	1/4 full 35-gallon drum
Building 93, room C111	"Cleaning materials contaminated with HE"	1 2-quart can
	"Burnable Group L HE"	1 2-quart can
	"Non-burnable Group L HE"	1 2-quart can

Table 9 (cont.)

Location	Waste Stream Managed	Observed Status
Building 93, room C121	"Cleaning materials contaminated with HE"	1 2-quart can
	"Burnable Group L HE"	1 2-quart can
	"Non-burnable Group L HE"	1 2-quart can
Building 93, room C123	"Materials contaminated with HE"	1 2-quart can
Building 93, room C125	"Cleaning materials"	1 2-quart can
Building 93, room 126	"Burnable Group L HE"	1 2-quart can
	"Cleaning material contaminated with HE"	1 2-quart can
	"Non-burnable Group L HE"	1 2-quart can
	"Non-burnable HE contaminated materials"	≈ 25-gallon can
Building 93, room C114	"Acetone"	10-gallon can
	HE contaminated waste; acetone and alcohol towels and paper wipes	1 2-quart can
Building 34	Solder wastes; HE contaminated wastes; Group L burnable HE; Group L non-burnable HE	5 2-quart cans, 1 1-gallon can, and one bag (solder wastes)

Hazardous and mixed wastes are generated at TA-35 from many of the above mentioned activities. The primary RCRA hazardous wastes generated include spent solvents, photographic development wastes, plating wastes, and ignitable wastes.

According to LANL's computerized hazardous waste tracking system, 31 satellite accumulation areas existed at TA-35 during the NEIC inspection. No interim status or less-than-90-day accumulation areas were reported or observed. The NEIC team inspected 26 satellite accumulation areas. Table 10 presents the findings at the areas inspected. The following buildings were inspected:

Building 46

Optics and electronics assembly are performed by MEE-12 in building 46. Two satellite storage areas were being used to accumulate RCRA hazardous wastes in Room 102. At one, spent solvents were being accumulated and the other spent nitric acid with mercury and a PCB capacitor. The spent nitric acid with mercury was generated in building 2 during the cleanup of a spill. This area was not in control of the operator of the process generating the waste.

Building 85

The CLS-5 group operates the Mercury Krypton Fluorine Laser facility in building 85. This area was accumulating spent solvents, solvent contaminated rags and wastewater, and waste lead at a satellite accumulation area. The area, Room 106B, contained over 59 gallons of RCRA hazardous waste, greater than the 55 gallons allowed to accumulate at any one satellite accumulation area. The containers holding the excess accumulation of

Table 10

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-35
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Satellite Accumulation Areas		
Building 46, room 102 Optics and Electronics Assembly, MEE-12 Two satellite accumulation areas in room	Area #1: "Solvents, MS190 flux remover, ethyl alcohol" wastes	1 30-gallon drum
	Area #2: 1 capacitor	2.27 liters
	"Nitric acid and mercury solution"	4-6 ounces; *This waste was generated in TA-35, Bldg. 2, Room A144 and was not being accumulated in control of the operator who generated the waste.*
Building 85, room 106B Mercury KrF Laser Facility CLS-5	Used freon for parts cleaning	≈ 12 gallons
	Mop water with Freon 113	≈ 10 gallons
	Lead wastes	≈25 gallons; *This waste was generated in another building at TA-35 and was not being accumulated in control of the operator who generated the wastes.*
	Rags and Q-tips used with freon, wipes used with acetone	≈ 10 gallons
	Miscellaneous wastes with haz. waste labels	≈ 2 gallons
	Liquids (commercial epoxies and "O" thread solvent)"	Small container
		Minimally, 59 gallons of RCRA hazardous wastes were being accumulated at this area, in excess of the allowed 55 gallons, without a permit or interim status. The containers holding the excess accumulation of hazardous waste were not marked with the date the excess amount began accumulating.

Table 10 (cont.)

Location	Waste Stream Managed	Observed Status
Building 125, room A22 (basement room) CLS Group	Kimwipes contaminated with acetone and alcohol Spent batteries	≈ 30-35 gallons Small container
Building 125, room A100 High Magnetic Field Laboratory	"Rags and kimwipes with alcohol, acetone, toluene, and GE varnish"	≈ 30-35 gallons
Building 125, room A101 Supercritical Fluids Laboratory	"Solid waste (hydrocarbons)", "Per halogenated solvents", freon, "Alcohols", "Paper towels, machine oil, toluene 730/93 3BW"	4 small containers
Building 125, room F108 Polishing room	Adhesive contaminated ethanol, acetone contaminated rags	Small containers *RCRA hazardous wastes not being accumulated in control of the operator of the process generating the wastes.*
Building 128, room 7 CLS Group	Spent solvents and hazardous waste samples	7 small containers
Building 213, room C103	NaOH, acetone wastes, spent batteries	≈ 10 gallons
Building 213, room A107	Acid and solvent wastes	3 trays
Building 213, room A107A	Acid, solvent, and NaOH wastes	3 trays
Building 213, room B106	Trichloroethane and NaOH wastes	1 tray
Building 213, room C116 Two satellite accumulation areas	Trichloroethane and metal liquid wastes	1 tray
Building 213, room G104B	Chromium trioxide wastes	1 5-gallon carboy
Building 213, room B14	Laboratory waste	No RCRA hazardous waste accumulated
Building 213, room B20 Two satellite accumulation areas	Sulfuric acid and additional wastes	2 trays

Table 10 (cont.)

Location	Waste Stream Managed	Observed Status
Building 213, room B22	Acetone wastes	1 cabinet
Building 213, room B24	Acetone, toluene, acetonitrile, styrene, pump oil, divinyl benzene, ethyl ether, and benzene wastes	*Open 5-gallon plastic container, with 2 to 3 gallons of wastes, left open while not being added to.*
Building 213, room G5	Acid and solvent wastes	2 containers
Building 213, room C18	Spent batteries Solvent rags	5-gallon can 55-gallon drum (not full)
Building 213, room F6A	Organic solvent and acid waste	2 trays
Building 213, room H10	Laboratory waste	No RCRA hazardous waste accumulated
Building 213, room H9	Pump oil with trace organics	2 containers
Building 255, room 101 CLS-5	Solvent contaminated rags, waste pump oil, spent batteries	≈ 40 gallons *RCRA hazardous wastes not being accumulated in control of the operator of the process generating the wastes.*

hazardous waste were not marked with the date the excess amount began accumulating. A portion of the wastes, lead sheets, were brought to this area from another area of TA-35 and was not in control of the operator of the process generating the waste.

Building 125

Building 125 houses the optics experiments/research, supercritical fluids laboratory, high magnetic field lab, and electronics assembly. Four satellite accumulation areas were inspected. The room F108 accumulation area had operators from other areas of the building accumulating waste, not in control of the operator of the process generating the waste.

Building 128

The groups CLS-2, CLS-5, and CLS-6 perform experimental advanced oxidation system research in order to improve treatment of RCRA hazardous wastes. "Silent discharge plasmas" are used to experimentally destroy organic wastes. Hazardous wastes produced within the building include spent solvents, solvent contaminated rags and hazardous waste samples left over after efficiency analyses have been performed.

Building 213

The MST-7 group conducts polymer and coatings research in TA-35 building 213. Building 213 is in a controlled access, secured area. Activities include physical vapor deposition, chemical vapor deposition, polymers research and development, precision machining, and assembly. There are small plating operations in two laboratories. According to facility personnel, the plating baths have rarely been changed. The building has many small laboratories

and is not a large scale production facility. The building manager indicated there were 20 satellite accumulation areas at building 213.

Typically, under the laboratory hood there was a two-door cabinet that was marked as a satellite accumulation area. Inside the cabinet was a collection of miscellaneous waste laboratory chemicals. Outside each laboratory, there was information indicating the types of chemicals used and waste generated in each laboratory.

In room B-24, an open 5-gallon plastic container with a hazardous waste label was observed in the satellite accumulation area cabinet under the laboratory hood [photograph 5]. About 2 to 3 gallons of liquid were in this container. The contents, marked on the outside of the container, included acetonitrile, acetone, toluene, styrene, pump oil, ethyl ether, and benzene.

Building 255

This building is a trailer used by CLS-5. Hazardous wastes accumulating at the one satellite accumulation area in Room 101 included solvent contaminated rags, waste pump oil, and spent batteries. These wastes were generated in building 189 by the Groups CLS-5 and P4, and were not in control of the operator of the process generating the wastes. Jody Goddard, CLS-5, stated that these were accumulated in building 255 due to ignitability hazards at the building where the wastes were generated.

<u>TA-41</u>

Engineering design and development of nuclear components is conducted at TA-41. The group designated as WX-5 is responsible for the design and development of the boost system for nuclear weapons, and generates the

majority of hazardous waste at TA-41. A small amount of hazardous waste, primarily office machine waste, is generated by the engineering design group. The hazardous waste accumulation areas at TA-41 are presented in Table 11.

Table 11

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-41
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Less-than-90-Day Accumulation Area		
Building 1, room 101	Mixed waste generated by WX-5	No RCRA hazardous waste accumulated
Satellite Accumulation Areas		
Building 6	Fired actuators containing trace amounts of HE and lead	1 30-gallon drum
	Freon solvent containing 1,1,1-trichloroethane	11 aerosol cans
	1,1,1-trichloroethane wastes	2 glass bottles
	Mercury wastes	2 containers
Building 30, room 319	Ammonium hydroxide, toner, epoxy hardener, fuser oil from office machines	11 containers

TA-48

TA-48 is also known as the Radiochemistry Site. Activities include production of medical radioisotopes, environmental chemistry on old weapons, dissolving and testing samples from the Nevada Test Site, and environmental analysis of research samples from Yucca Mountain. Many of the areas in TA-48 are radioactively controlled.

According to a building 1 Waste Coordinator, Matt Roybal, 40 to 60% of the satellite accumulation areas are typically empty because the waste is produced in batches and turned in as soon as possible to EM-7. The LANL hazardous waste tracking system inventory listed 39 satellite accumulation areas and no interim status or less-than-90-day accumulation areas. NEIC inspected building 1, the main laboratory building, where 30 of the accumulation areas were located. Thirteen hazardous waste accumulation areas were inspected. The findings are presented in Table 12.

TA-50

TA-50 is the treatment facility for radioactive wastewaters generated at LANL. TA-50 contains the following waste treatment operations:

- A batch treatment facility for treating hazardous waste (permitted)
- A controlled air incinerator for treating hazardous and radioactive mixed waste (permitted for hazardous waste, interim status for mixed waste)
- A cementing operation for radioactive mixed waste (interim status)
- A size reduction facility for storing mixed waste (interim status)

TA-50 also contains a lead decontamination operation for treating radioactive lead bricks for reuse. The waste management group, EM-7, is responsible for wastewater treatment and waste handling at the site; and the environmental chemistry group, EM-9, is responsible for the laboratory operations.

Table 12

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-48
Los Alamos National Laboratory
Los Alamos, New Mexico

Location/Activity	Waste Stream Managed	Observed Status
Satellite Accumulation Areas		
Building 1, room 4 Laser work and Raman spectroscopy	Wipes contaminated with oil, alcohol, and acetone Waste cyclohexane Arsenic sulfide; metal complexes in solution	1 container 1/2 gallon container 2 gallons
Building 1, room 6 Scintillation counting	Scintillation cocktails	No RCRA hazardous waste accumulated
Building 1, room 206B	Rags contaminated with oil and acetone	No RCRA hazardous waste accumulated
Building 1, room 303A	Copper and lead solder flux scraps	1 plastic container
Building 1, room 306 Laboratory	"Lab trash"; "possibly contaminated with HgI_2 <0.2 ppm"	1 plastic container
Building 1, room 309 INC-9 Laboratory sorption studies	"Laboratory waste"	No RCRA hazardous waste accumulated
Building 1, room 310 INC-9 Laboratory diffusion studies	Scintillation cocktails	No RCRA hazardous waste accumulated
Building 1, room 314	Mostly inorganic laboratory wastes from emission spectrographic analysis	No RCRA hazardous waste accumulated
Building 1, room 338 Hot cell - recovery of radioisotopes from radiating targets	Soap, water and acid from cleaning and refurbishing manipulator hands; contaminated lead bricks	No RCRA hazardous waste accumulated
Building 1, room 409 Laboratory (2 satellite areas in this room)	Solid mercury Halogenated solvents	1 plastic bag 1 container

Table 12 (cont.)

Location/Activity	Waste Stream Managed	Observed Status
Building 1, room 423 Laboratory	"10/5/92 TBP, HDEP, PaOH, NH_4OH, dodecane, LiOH, aluminum nitrate, HF, and mixed fission products" from analysis of dissolved soil from the Nevada Test Site	About 1 gallon accumulated in a 5-gallon container
Building 1, machine shop	Rags contaminated with cutting fluids containing >80% trichloroethane	1 container

TA-50 receives wastewater from processes involving radioactivity throughout LANL. The TAs and groups discharging wastewater to TA-50 are shown in Figure 3. Wastewater discharged from plutonium processing operations at TA-55, building PF4, is pretreated at TA-50, building 1, room 60. The pretreated wastewater is discharged to the main treatment facility in TA-50, building 1, rooms 16 and 116. The pretreatment sludge is mixed with cement in a drum tumbler. The cemented sludge is stored in drums in the interim status container storage area in room 60D and then taken to TA-54, Area G for storage as a radioactive mixed waste (EPA waste numbers F001, F002, F005, D007, D008, and D009).

The sludge from the main wastewater treatment facility is drummed and disposed of in the nonhazardous, low-level radioactive landfill at TA-54. Prior to May 1992, the sludge was handled as a radioactive mixed waste and was shipped off-site as EPA waste numbers F001, F002, and F005. In April 1992, a sampler was installed at the headworks to the main treatment facility to demonstrate that only *de minimis* losses of U-listed hazardous waste constituents were being discharged to the treatment facility [Appendix D]. [*De minimis* losses of commercial chemical products and intermediates are excluded from the mixture rule under 40 CFR § 261.3(a)(2)(iv)(D).] Additionally, the sampler was used to demonstrate that the concentration of solvent contaminants based on the total weekly flow of influent into the headworks was below the exclusion levels in 40 CFR § 261.3(a)(2)(iv)(A) and (B).

An adequate waste determination has not been made for the sludge from the main wastewater treatment facility. TA-3, building 66, discharges wastewater from electroplating operations to the main wastewater treatment facility at TA-50. (For description of electroplating processes and wastestreams

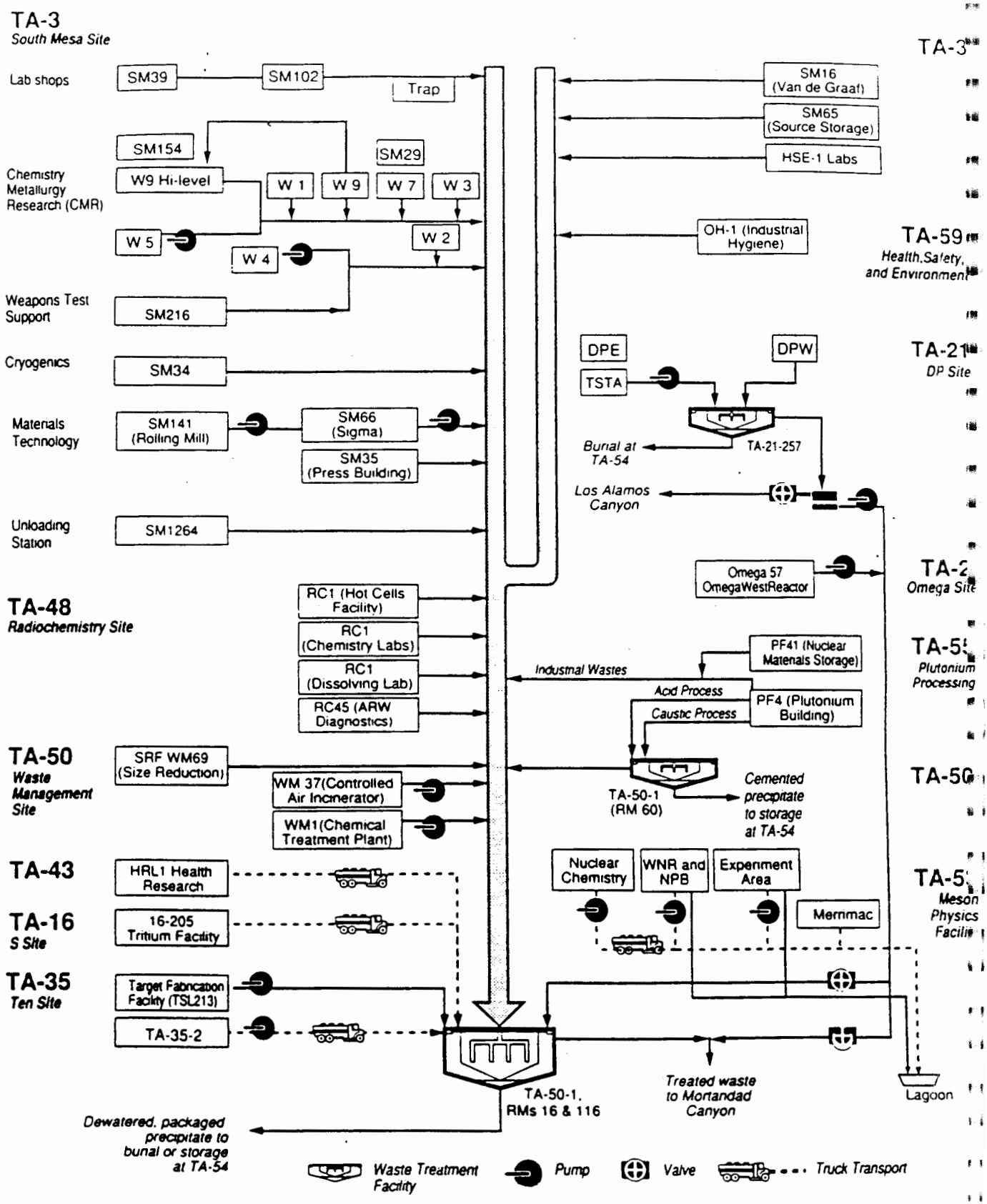

Figure 3
WASTEWATER DISCHARGED TO TA-50
Los Alamos National Laboratory
Los Alamos, New Mexico

discharged, see process description discussion for TA-3, building 66.) Wastewater treatment sludges from electroplating operations meet the listing of EPA waste number F006. As discussed above, the sludge has been drummed and disposed of in the nonhazardous, low-level radioactive landfill at TA-54 since May 1992. Records of the disposed sludge are in Appendix E.

Additionally, if the aluminum anodizing dye tanks at TA-3, building 66, are being discharged to the TA-50 wastewater treatment plant, the sludge may contain heavy metals. Conflicting statements were made regarding the discharge of the aluminum anodizing dye tanks. One of the employees stated that the four dye tanks are discharged to TA-50 about every 3 months, while the supervisor stated that the tanks had not been discharged for the last 7 or 8 years (refer to discussion of TA-3, building 66). MSDSs indicated the dyes contained total chromium ranging from 3 to 10% [Appendix F].

The permitted batch treatment facility for hazardous waste, located in building 1, room 24, is not operating. Facility personnel indicated that the unit has never been used. LANL plans to close the facility under RCRA.

The TA-50 controlled air incinerator is not operating. The incinerator was built to burn both hazardous and radioactive mixed waste. According to facility personnel, the incinerator will not be operational until 1995, and another trial burn will be conducted prior to use.

The size reduction facility for mixed waste has not operated since the spring of 1992. The facility consists of a large glove box in which radioactive-contaminated machinery can be handled. Machinery parts are dismantled so the parts can be packaged for storage or disposal.

The lead decontamination operation for treating radioactive-contaminated lead bricks for reuse is located in a trailer at TA-50. The lead bricks are blasted with a grit and water mixture, and the grit is reused until it loses its efficiency. The grit is then solidified with cement and analyzed for lead by the TCLP. Analysis shows that the grit exhibits the characteristic for lead by the TCLP prior to solidification. After solidification, the cemented grit has not exhibited the characteristic for lead.

The waste analysis plan for treatment of the grit in containers was not filed with the Region or state. The waste analysis plan provided by LANL during the NEIC inspection is included in Appendix G.

Inorganic radioactive samples are analyzed in the EM-9 laboratories at TA-50. The majority of samples analyzed are incoming wastewater samples or soil samples suspected to be contaminated with inorganics and radioactivity. Organic radioactive samples are prepared in room 34, TA-50, building 1 for analysis at TA-35. Sample residues are accumulated as hazardous waste. Solvents and samples containing metals are generally handled by EM-8. Samples found only to be acidic or corrosive are generally discharged down the drain to the main treatment facility.

According to facility personnel, two interim status storage areas, one permitted storage area, one less-than-90-day accumulation area, and nine satellite accumulation areas are active at TA-50. Container storage and accumulation areas at the batch treatment facility, controlled air incinerator, and size reduction facility are inactive. Observations at the hazardous waste accumulation and storage areas inspected at TA-50 are presented in Table 13.

A waste determination was not made for a container stored in the modular building 114 interim status storage area at TA-50. The 55-gallon

Table 13

HAZARDOUS WASTE ACCUMULATION AND STORAGE AREAS INSPECTED AT TA-50
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Interim Status Storage Areas		
Building 1, room 60D	Cemented pretreatment sludge	No RCRA hazardous wastes stored
Building 114	Mixed waste generated by EM-7	*An adequate waste determination was not made* Mixed wastes waiting analysis
Permitted Storage Area		
Building 114	Hazardous waste generated by EM-7	Hazardous waste pretreatment sludge stored
Less-than-90-Day Accumulation Area		
Building 1, Port-a-Berm	Mixed waste generated by EM-9 labs	RCRA hazardous wastes accumulated
Satellite Accumulation Areas		
Building 1, room 123	Laboratory waste	RCRA hazardous wastes accumulated; acids and metals
Building 1, room 124	Laboratory waste	RCRA hazardous wastes accumulated: acids and xylene
Building 1, room 130	Laboratory waste	RCRA hazardous wastes accumulated: corrosives, acids, Ni-cad batteries, mercury
Building 1, room 34	Laboratory waste	RCRA hazardous wastes accumulated: methylene chloride
Building 1, room 34	Laboratory waste	RCRA hazardous wastes accumulated: methylene chloride
Building 1, room 10	Laboratory waste	No RCRA hazardous waste accumulated
Building 1, room 10 hallway	Laboratory waste	RCRA hazardous waste accumulated: acids, metals
Building 1, room 11	Laboratory waste	No RCRA hazardous waste accumulated
Building 1, room 1	Laboratory waste	RCRA hazardous wastes accumulated: acids

drum was marked as being sampled May 1990 and was still pending analysis to determine whether it was a hazardous waste [photograph 6]. The drum was marked as containing "radioactive hot dirt from WM66 flume industrial waste line."

TA-54

TA-54 is the central storage, treatment, and/or disposal area for radioactive solid waste, hazardous waste, and mixed waste at LANL. EM-7 handles the physical waste management activities at TA-54, and EM-8 is responsible for classification of the wastes. TA-54 consists of three major waste management areas (Areas G, L, and J).

Area G

Area G is used for the disposal of low-level radioactive solid wastes, tritium wastes, PCB contaminated solid wastes, and animal tissue; and for the storage of solid transuranic (TRU) wastes* and radioactive mixed wastes. Area G has interim status for storage of mixed wastes at the following units:

- Retrievable storage pads 1, 2, and 4
- Retrievable storage shafts 145, 146, 147, 148, and 149
- Building 48 storage dome (pad 3)
- Building 49 storage dome
- Building 8 holding shed
- Building 33 storage dome (waste preparation facility)

---

* *Wastes contaminated with long-lived elements with an atomic number greater than that of uranium*

- Storage pads over pit 30
- Storage pad over pit 33
- Site for planned storage shafts

TRU mixed waste is stored on pads 1, 2, and 4 overlain by a soil cover, and cannot be properly inventoried, identified, or assessed for compliance with applicable RCRA storage requirements. The waste was placed on the pads from 1979 to January 1991. Boxes and steel containers stacked six high in plywood cells with polyethylene liners were used to contain the waste on the asphalt pads. Each pad consists of several of these cells overlain by soil. LANL is planning to remove the mixed waste from these pads and to place the containers in a storage facility meeting 40 CFR Part 264 Subpart I standards. Pads 1, 2, and 4 will be upgraded to meet 40 CFR Part 264 Subpart I standards or will be closed.

According to facility personnel, retrievable storage shafts 145, 146, and 147 have never stored mixed waste. LANL plans to delete these units from their mixed waste permit application. LANL plans to submit a closure plan for storage shafts 148 and 149. According to facility personnel, these shafts are not currently used to store mixed waste, but have been used in the past.

The building 48 storage dome is used to store solid-state TRU waste. Approximately 2,000 drums of mixed waste are currently stored in the dome. EM-8 personnel stated that about 50% of the mixed waste drums contain TRU waste which may contain lead constituents. Instead of analyzing the drums and risking radioactive contamination, the drums were conservatively determined to be mixed waste.

The building 49 storage dome is used to store solid-state low-level radioactive waste. Approximately 2,400 drums of mixed waste are currently being stored. In the storage dome, the berm was cracked and several holes were present in the pad [photograph 7]. The crack in the berm was located at column 69. Only solid mixed wastes are stored, and the berm is used to prevent run-on, not to contain spills.

According to facility personnel, no mixed waste is stored in the building 8 holding shed or the building 33 storage dome. A dome storing fiberglass reinforced boxes has been extended over the pit 30 storage pads. The boxes containing mixed waste consist of lead-contaminated glove boxes.

Four sheds used to store tritium wastes are present on the storage area over pit 33. In shed 144, three containers (container numbers C92031912, C92031913, C92031914) marked with the waste number F001 were not marked with an accumulation start date. Each container had a tag attached marked with the date of October 20, 1992. Facility personnel indicated that the tags are dated when the drum is swiped for radioactivity. The date on the tag may not be the accumulation start date.

Area L

Area L is used to process and store hazardous and mixed waste generated at LANL before it is shipped off-site. The following interim status and permitted units are located at Area L:

- Retrievable storage shafts 36 and 37 for mixed waste storage (interim status)
- Four tanks for the treatment of hazardous waste (permitted)
- Building 32 storage pad for hazardous waste (permitted)

- Modular buildings 68 and 69 for hazardous waste storage (permitted)
- Gas cylinder storage area for mixed and hazardous waste (interim status for mixed waste, permitted for hazardous waste)
- Container storage in yard area for mixed waste (interim status)
- Building 31 for short term storage of hazardous waste (permitted)

Area L also contains a sampling pad, a vial crusher, and a drum crusher.

Retrievable storage shafts 36 and 37 are used to store radioactive lead "stringers." A total of seven lead "stringers" are currently being stored.

The four treatment tanks are used to treat barium nitrate contaminated sands generated at TA-16. The barium nitrate is reacted with sulfuric acid to precipitate barium sulfate. The liquid is transported to the wastewater treatment plant at TA-50. The residual solids are mixed with cement in drums and analyzed for barium and chlorine. According to facility personnel, the drums are stored as hazardous waste until analysis results are received. According to facility personnel, the sludges have always been found nonhazardous. The cemented solids are disposed of in the solid waste disposal trench at Area J.

Six containers of hazardous waste (nonradioactive) have been stored at TA-54 for over a year. One of the containers is stored in building 32 and is marked with the following information: Container #C92030377; Waste Numbers D002, D007, D009; and an accumulation start date of July 29, 1992. The other five containers are stored in modular building 69. The information marked on each of these five containers is summarized in Table 14 below.

Table 14

HAZARDOUS WASTE STORED OVER 1 YEAR IN TA-54, BUILDING 69
Los Alamos National Laboratory
Los Alamos, New Mexico

Container Identification Number	EPA Waste Numbers	Accumulation Start Date
C92030417	D009, D011	8/3/92
C92031097	D009	7/10/92
C92030498	D004, D006, D009, D010, and D011	7/28/92
C92030519	D009	7/29/92
C92028745	F027, D001, D016, D017, and D042	5/20/92

According to facility personnel, LANL is unable to find an off-site TSD facility that will accept either mercury or dioxin wastes. Documentation provided by LANL to support their claim is in Appendix H.

A waste determination has not been made for approximately 148 gas cylinders stored in the gas cylinder storage area [photograph 8]. LANL is in the process of obtaining a contractor to characterize the contents of the cylinders. A statement of work has been prepared and is included in Appendix I. LANL claimed the cylinders were not characterized earlier due to safety precautions. The unknown gas cylinders were accumulated from throughout LANL during a gas cylinder characterization project conducted in late 1990. An inventory of gas cylinders with contents unknown is in Appendix J.

Five gas cylinders containing hazardous or mixed waste were not marked with an accumulation start date. Information on the undated gas cylinders is summarized in Table 15 below.

Table 15

GAS CYLINDERS NOT MARKED WITH AN ACCUMULATION START DATE
Los Alamos National Laboratory
Los Alamos, New Mexico

Gas Cylinder Identification Number	Waste Number or Contents Marked on Cylinder	Hazardous/Mixed Waste
C907423N	Nitric Oxide	Hazardous Waste
C92027888	P056	Mixed Waste
Not marked	D002	Mixed Waste
C92025952	Unknown Poison, Flammable	Mixed Waste
GCP1636A	D002	Mixed Waste

The accumulation start date was illegible on two additional gas cylinders (Nos. C92026976 and C920297) and two accumulation dates were marked on one gas cylinder (No. C909372N) during the state inspection of TA-54 on August 6, 1993. However, during the NEIC inspection of the area on August 11, 1993, the two illegible labels had been replaced and only the earlier date was indicated on cylinder No. C909372N.

Over 600 gas cylinders containing restricted, nonradioactive hazardous wastes have been stored over 1 year. An inventory of gas cylinders stored at Area L and the accumulation start date of each cylinder is in Appendix K.

Mixed waste are stored outside in containers, without any covering structures. The mixed waste yard area inspection records have noted that container No. 88085700 needs repacking since February 16, 1993. The plastic drum was discolored, but did not appear to be leaking [photograph 9]. The drum was marked with waste numbers F003 and D001, and dated August 8,

1987. The yard slopes toward the canyon through a stormwater channel. If drums leaked, wastes would run off into the canyon [photograph 10].

A vial crusher used to separate the liquid from scintillation vial containers is located in the mixed waste yard area. According to facility personnel, only the scintillation cocktails containing pseudocumene have been treated in the vial crusher. The drums of crushed vials, both plastic and glass, were marked "non-hazardous" during the NEIC inspection. The drums of liquid were marked with waste number D001. All drums of crushed vials generated since start-up of the vial crusher are being stored in the mixed waste yard area. LANL also generates scintillation cocktails containing toluene and acetone, which may be treated in the vial crusher in the future.

Area J

Area J is used to package, label, and store asbestos wastes before shipment off-site and contains two disposal shafts for nonhazardous classified waste and three burial trenches for nonradioactive, nonhazardous solid wastes. Two of the trenches have been closed, and one is currently active. Wastes disposed of in the Area J trench include:

- Nonhazardous debris from high-explosive testing areas that has been flashed to remove the reactive characteristic
- Treatment residues from Area L that have been cemented and drummed
- Crushed drums

TA-55

Processing of plutonium and research in plutonium metallurgy are done at TA-55. Hazardous wastes are generated in the research laboratories in building 3 and from plutonium recovery operations in building 4. The plutonium recovery operations include the following hazardous waste treatment units:

- A cementing operation for mixed waste (interim status)
- An oxygen sparging furnace for treating mixed waste (interim status)

A thermal decomposition unit is also being constructed for treatment of mixed waste rags used in the plutonium recovery area.

Plutonium is generally recovered from metal byproducts, filter residues, impure oxides, and sample solutions. The plutonium recovery is conducted by either a nitration process or a combination of a chloride process and the nitration process. In the nitration process, the material is dissolved in nitric acid [Figure 4]. The liquid then passes through an ion exchange system. The eluate is piped to a reaction vessel, oxalic acid is added, and plutonium oxalate is formed. The effluent is piped to an evaporator, where it is boiled down to salt bottoms and the vapors form a distillate. The distillate and the evaporator bottoms are tested for plutonium content. Distillate above the economic discard limit (EDL) is discharged back into the evaporator, and distillate below the EDL is discharged to the TA-50 wastewater treatment facility. Evaporator bottoms above the EDL are returned to the process prior to the ion exchange system, and bottoms below the EDL are cemented and handled as a mixed waste (EPA waste numbers D006, D007, D008).

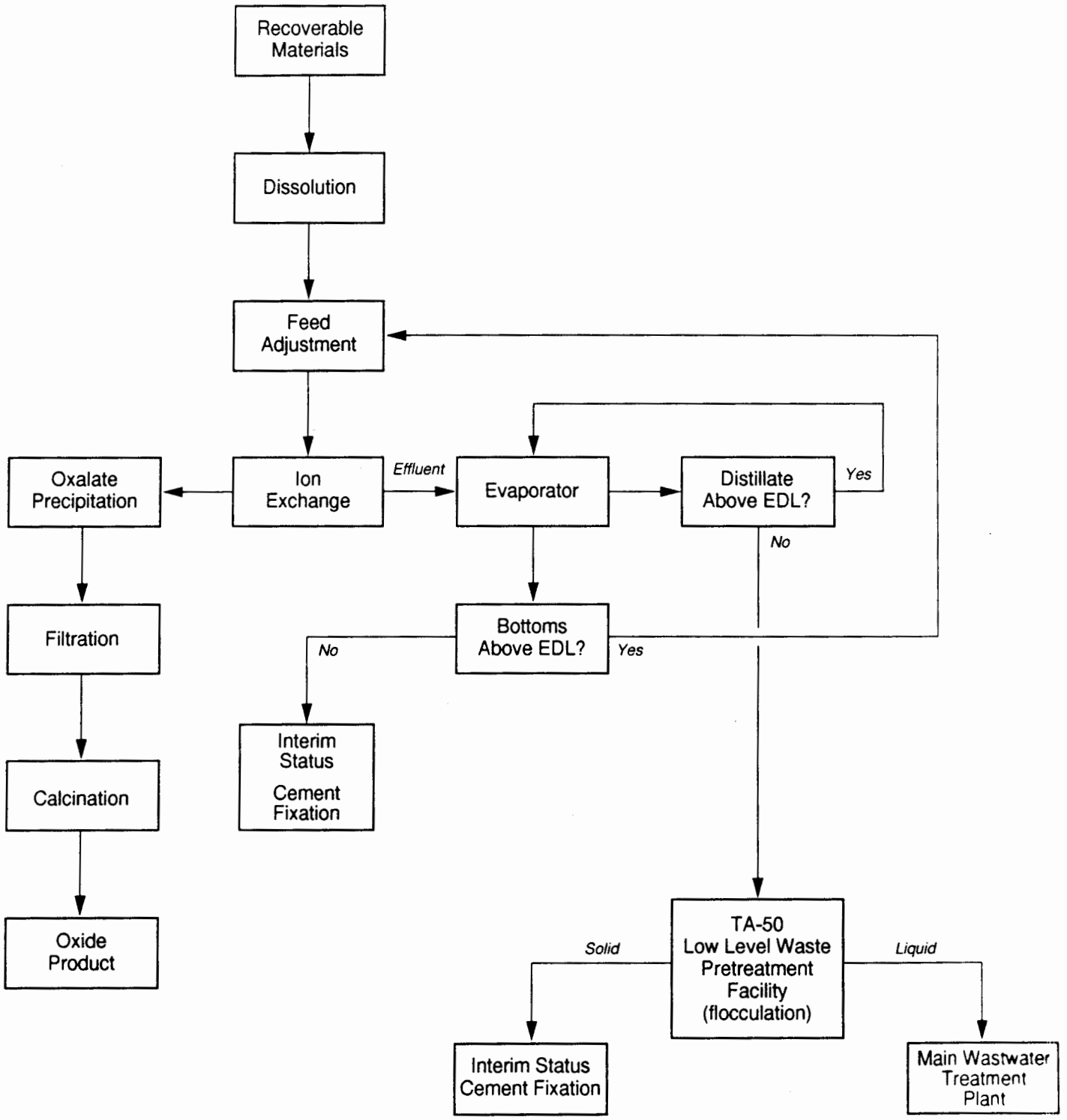

Figure 4
NITRATION PROCESS FLOWCHART FOR PLUTONIUM RECOVERY OPERATIONS
Los Alamos National Laboratory
Los Alamos, New Mexico

In the chloride process, the material is dissolved in a chloride media. The liquid then passes through an ion exchange system. The eluate contains the recovered plutonium. The effluent goes through a hydroxide precipitation and forms a hydroxide cake. The cake is then further processed in the nitration process.

The oxygen sparging furnace is used to treat waste pyrophoric salts which may be hazardous for reactivity and contain metal constituents. Waste salts were generated from two processes involved in plutonium oxide production: (1) calcium salt stripping, and (2) a classified process. The second process is considered classified by LANL for national security reasons. LANL has determined the waste salts from both processes to be hazardous wastes prior to treatment. These processes were no longer in operation; however, approximately seven batches of waste salts remained to be treated at the time of the NEIC inspection. The waste salts are stored in the building 4 basement vault prior to treatment. The oxygen sparging unit heats and oxygenates the waste salts, separating the metal constituents from the salts and making the waste nonreactive. The metal-containing layer is stored for plutonium recovery in the basement vault, and the waste salts are disposed of as a nonhazardous radioactive waste.

LANL is in the process of changing an incinerator used to treat hazardous waste rags to a thermal decomposition unit. Prior to July 1989, LANL used cheesecloth rags to wipe down the inside of the glove boxes used for the nitration process. When the nitric acid comes in contact with the cellulose in the cheesecloth, nitrocellulose can be generated causing the rags to become ignitable or reactive. When LANL found that the treatment of the rags would be hazardous waste incineration, they began storing the rags.

Approximately 21 5-gallon* cans of rags are currently stored in glove boxes in building 4. After July 1989, LANL began using a poly rag to wipe down glove boxes which will not react with the nitrate. The thermal decomposition unit will use argon instead of oxygen to decompose the waste to avoid combustion. The ash resulting from the thermal treatment will be processed to recover any plutonium.

LANL will need to obtain a treatment permit for the thermal decomposition unit prior to treating any hazardous waste. LANL's position is that the thermal decomposition unit is exempt from regulation as a recycling unit under 40 CFR § 261.6(c), because plutonium is recovered from the ash [Appendix L]. The thermal decomposition unit will treat the waste to reduce the volume and make it more amenable for recovery. The reclamation of the plutonium occurs in the nitration process when a usable product is generated. Therefore, reclamation does not occur in the thermal decomposition unit and the unit must be permitted for thermally treating a hazardous waste.

Six interim status storage areas for mixed waste are located in the basement of TA-55, building 4. During the NEIC inspection, only four of the areas had mixed waste in storage. NEIC inspected all four, including the room 33 vault and three referred to as basement areas 1 through 3. The room 33 vault contained plutonium as finished product, mixed waste, and high-level residues for recovery of plutonium. The hazardous waste in the vault was not fully inspected or inventoried due to radiation hazards. Basement areas 1 through 3 each contained both radioactive and mixed waste. Area 1 contained 101 55-gallon drums of cemented TRU mixed waste generated by NMT-2. All the waste drums were marked as exhibiting the RCRA characteristic of toxicity for lead, cadmium, and chromium. The drums had

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* *Five gallons is the approximate size of the containers.*

waste accumulation dates back to July 1, 1987. Area 2 contained two 55-gallon drums of mixed waste with the RCRA hazardous waste characteristic of toxicity for lead. Area 3 contained seven 55-gallon drums of mixed waste. The waste was both RCRA listed (spent solvents) and characteristic due to ignitability and toxicity for lead, cadmium, chromium, and barium. Observations of the storage areas are summarized in Table 16.

TA-57

TA-57 is also known as the Fenton Hill Geothermal Site (Fenton Hill) or the Fenton Lake Site. During the inspection, the research projects at the site were inactive. Fenton Hill is noncontiguous with the rest of LANL, so it has a separate EPA identification number (EPA ID). The EPA ID used on manifests prior to the NEIC inspection was NMP360026994. The number was provisional, and had limited use, so Region 6 assigned the permanent number NMD986676807 after the inspection.

The one hazardous waste stream currently generated is spent solvent from a parts cleaning station in a machine shop known as the High Bay Workshop. Off-specification or unusable chemicals could also be generated from a chemical storage area, but the containers were all identified as unused product by facility personnel.

An EPA Region 6 inspector toured the Fenton Hill site, including the machine shop and the chemical storage area [Appendix M]. The machine shop had a parts washing station that used Safety-Kleen 105 solvent. No areas of noncompliance were noted.

Table 16

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-55
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
	Interim Status	
Building 4, basement vault	High-level mixed waste generated by NMT-4 (also stored finished product and residues for recovery)	Multiple rooms inside vault; did not inspect individual containers due to radiation hazards
Building 4 basement, Area 1	Cemented TRU mixed wastes generated by NMT-2	101 55-gallon drums; all with RCRA hazardous waste labels indicating waste to be D006, D007, and D008 Waste accumulation dates observed: 7/1/87 to 10/30/92
Building 4 basement, Area 2	Radioactive and mixed waste generated by NMT-2	33 containers stored, 2 with RCRA hazardous waste labels identifying waste as D008 (drums LA55236 and La55207) dates: 2/23/93 and 4/1/93
Building 4 basement, Area 3	Mixed waste storage generated by NMT-2	22 55-gallon drums: 7 with RCRA hazardous waste; 1) Chemstrip - methylene chloride, methyl alcohol D001, F002, F003 Date:1/92 2) Broken lead glass D008, Date:1/13/92 3) Methyl ethyl ketone, ethyl alcohol F003, D001, D006, D007, D008 Date: 4/19/90 4) Methyl ethyl ketone, ethyl alcohol F003, D001, D006, D007, D008 Date 7/23/91 5) Lead solder joints, D008 Date 6/9/93 6) Methyl alcohol, MEK D008, D007, D005, D001, F003 Date 9/90 7) Lead brick; radiation contamination Date: 10/31/90

TA-60

TA-60 contains various physical support and infrastructure facilities, and is commonly known as the Sigma Mesa Site. The generalized activities include the motorpool (vehicle repair, maintenance, and storage) and pesticide storage facilities for LANL. Two more specific activities include the Rack Assembly and Alignment Center (RAAC), where experimental racks are assembled prior to shipment to the Nevada Test Site and the Pull Test Facility, where strength tests are performed on large scale components. Painting of large pieces of equipment and components is conducted in a paint bay in building 17.

The majority of RCRA hazardous wastes generated in TA-60 are from the painting operations (spent solvents and paints) in building 17 and rags with spent solvents from the garage in building 1, RAAC operations, and the Pull Test facility. There were no RCRA hazardous wastes stored in building 29, the pesticide storage area.

Four satellite accumulation areas are shown in LANL's hazardous waste tracking system list; all four were inspected. The hazardous waste accumulation areas inspected at TA-60 are presented in Table 17. RCRA hazardous wastes produced from painting operations in building 17 are stored in the satellite accumulation area east of building 1. This waste is not in the control of the operator of the process generating the waste.

TA-61

TA-61 includes physical support and infrastructure facilities, including the sanitary landfill. The C-4 Communications Division is housed in building 23. C-4 maintains communications equipment for LANL and produces

spent batteries and some spent solvent contaminated rags. Building 23 contains the one satellite accumulation area listed in LANL's hazardous waste tracking system. This accumulation area was inspected, and no RCRA areas of noncompliance were found [Table 18]

Table 17

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-60
Los Alamos National Laboratory
Los Alamos, New Mexico

Location/Activity	Waste Stream Managed	Observed Status
Satellite Accumulation Areas		
Building 1, East of Building JCI Maintenance garage	 Mercury wastes Used paint and paint thinner Rag with paint thinner and Safety-Kleen mineral spirits, petroleum naphtha, stoddard solvents	*Area not in control of the operator of the process generating the hazardous waste* Liter can 30- to 35-gallon drum full (produced in TA-60 building 17, NB) Greater than 10 gallons
Building 29 JCI Pesticide product storage	------	No RCRA hazardous wastes accumulated
Building 17 JCI Pull-test area	1,1,1-trichloroethane solvent contaminated rags, Magnatlay Spotcheck developers and penetrants, Safetap, Malub Alloy 369, and Houghto Draw 7007	1 drum
Building 19 JCI Rack Assembly and Alignment Center (RAAC)	Trichloroethane, Safetap, Malub alloy, alcohol, thinner solvent rags	≈ 15 gallons

Table 18

HAZARDOUS WASTE ACCUMULATION AREAS INSPECTED AT TA-61
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Waste Stream Managed	Observed Status
Satellite Accumulation Area		
Building 23, room 102 C-4	D006, cadmium soiled wastes; D009, mercury contaminated wastes	Less than 10 gallons

Record/Document Review

NEIC reviewed the waste analysis plan, waste determination and tracking procedures, manifests, biennial hazardous waste reports, operating records, personnel training program and records, and contingency plan. Each type of record/ document is discussed below.

Waste Analysis Plan

LANL is currently using two waste analysis plans (WAP): an interim status WAP for mixed waste, and the WAP in the RCRA permit for nonradioactive hazardous waste. The interim status WAP was marked draft; however, facility personnel handling mixed waste indicated that it was the WAP they were using.

The interim status WAP states that the waste is characterized primarily by knowledge of the process from the generator of the waste. Mixed waste analyses may be performed for the following: (1) To obtain waste composition data if a generating process changes or is suspected to have changed, (2) to determine the composition of an unknown waste, (3) to perform routine

verification of knowledge of process waste profiles, or (4) to certify that restricted waste meets the applicable LDR treatment standards. The Organic Analysis Section of EM-9, located in TA-35, TA-50, and TA-59, has the capability for analyzing low-level mixed waste for standard organic parameters using SW-846 analytical methods, including the Toxicity Characteristic Leaching Procedure (TCLP). The Inorganic Analysis Section of EM-9, located in TA-50, has the capability to perform standard ignitability, corrosivity, TCLP, and SW-846 inorganics tests on low-level mixed waste. Actual analyses are not routinely performed on TRU mixed waste because of the potential for radiation exposure, so generator knowledge of process is used to characterize the waste.

The WAP included in the permit is outdated [Appendix N]. According to the plan, wastes are first characterized by the generator's knowledge of the process, and then analyzed for reactivity, corrosivity, ignitability, and toxic metals by the extraction procedure (EP) toxicity test. Although LANL analyzes waste by the TCLP, the WAP does not specify that this analysis is performed.

Waste Determination and Tracking

Waste determinations are conducted by EM-8 personnel. When a generator determines he has a waste, the generator submits a Waste Profile Form to EM-8. The generator uses knowledge of the process generating the waste, the MSDS for the chemical, and any waste analysis data to complete the form. Analysis of the waste can also be requested on the Waste Profile Form. EM-8 uses the information supplied on the form to make the waste determination. A Waste Profile Form is reportedly completed for each wastestream and is updated annually. A new form is reportedly submitted when a wastestream changes or a new one is generated.

Once the waste determination is made, EM-8 sends the Waste Profile Form back to the generator with any waste codes determined to be applicable. The generator then submits a Chemical Waste Disposal Request to EM-7. EM-7 picks up and transports the waste accompanied by shipping papers (referred to by LANL as an "internal manifest") to the TA-54 storage, treatment, or disposal area. EM-7 maintains a database to track where and when the waste is stored and/or disposed.

Manifests

LANL generally uses "internal manifests" to ship hazardous wastes to different areas within LANL's property. Roads used to transport the waste are used by the public. Roads are closed off to the public during the transfer of classified or highly radioactive materials. According to facility personnel, hazardous waste transported when the roads are closed off may not be accompanied by an "internal manifest."

Hazardous wastes are transported on public roads without the required Uniform Hazardous Waste Manifest, EPA form 8700-22, OMB control number 2050-0039. The "internal manifests" are not consistent with the required EPA manifest form 8700-22. LANL's position is that intra-laboratory transfers of hazardous waste on government property for consolidation at TA-54 do not need a Uniform Hazardous Waste Manifest. A memorandum describing LANL's policy and an example of LANL's "internal manifest" is included in Appendix O. NEIC's position is that any hazardous waste transported for off-site treatment, storage, or disposal must have the required manifest. Off-site includes any road to which the public has access where hazardous waste is transported along the roadway, as opposed to directly crossing the road.

NEIC inspectors witnessed two occasions where hazardous waste was picked up to be transported on public roads without the required manifest. Additionally, on one of the occasions, the transporter did not have the "internal manifest" for the shipment. Hazardous waste was observed being loaded at TA-16, building 306 on August 5, 1993 [photograph 11]. The driver of the truck stated that he was enroute to TA-54. Any paperwork accompanying the shipment was requested, and an "internal manifest" was not provided. The documents which were provided are included in Appendix P. Hazardous waste enroute to TA-54 was also observed being loaded at TA-35, building 46 on August 4, 1993.

Manifests for off-site shipments and associated land disposal restriction (LDR) notifications were requested for May 5, 1992 (the date of the last state inspection) through August 1993. Approximately 460 manifests were reviewed jointly by NMED and NEIC.

Copies of LDR notifications were not retained for 23 manifests [Appendix Q]. The manifest numbers and dates of shipment are presented in Table 19. The manifest numbers were not included on the LDR notifications for 13 shipments [Appendix R]. The numbers and dates of shipment of the manifests for which the LDR notifications did not include the manifest number are presented in Table 20.

Table 19

MANIFESTS MISSING LAND DISPOSAL
RESTRICTIONS NOTIFICATIONS
Los Alamos National Laboratory
Los Alamos, New Mexico

Manifest Number	Date
00130116	7/30/92
00130117	7/30/92
00130118	7/30/92
00130119	7/30/92
00130121	7/30/92
00103304	5/05/92
00130049	5/05/92
00130050	5/05/92
00130051	5/05/92
00130052	5/05/92
00130053	5/05/92
00130054	5/05/92
00130056	5/05/92
00130057	5/05/92
00130058	5/05/92
00130059	5/05/92
00130060	5/05/92
00130061	5/05/92
00130062	5/05/92
00130063	5/05/92
LAA6026570	8/04/92
LAA6026571	8/04/92
00103374	9/24/92

Table 20

LDR NOTIFICATIONS MISSING MANIFEST NUMBERS
Los Alamos National Laboratory
Los Alamos, New Mexico

Manifest Number	Date
LAA6026559	7/16/92
00552694	10/22/92
00552695	10/22/92
00552696	10/22/92
00552697	10/22/92
00552698	10/22/92
00552699	10/22/92
00552700	10/22/92
00552701	10/22/92
00552702	10/22/92
00552074	10/22/92
00552075	10/22/92
00552076	10/22/92

Biennial Hazardous Waste Reports

The EM-8 group is responsible for submitting the LANL biennial report to EPA, Region 6. At the time of the inspection, the 1991 biennial report had been submitted on time. Included in the biennial report were the waste generation and management forms (form GM) and an Executive Summary from the Waste Minimization Program Office (WMPO). The executive summary reported successes in:

- Developing an alternate process waste assessment methodology
- Establishing a waste minimization incentive award program
- Developing a waste minimization orientation training for new employees
- Involvement of the WMPO in reviewing SOPs for new process designs and modifying existing processes
- WMPO staff providing technical assistance to LANL waste generators, like the Solvent Substitution Committee

The executive summary also reported that funding is the major problem in implementing the waste minimization program.

Operating Record

The operating record for the following permitted and interim status storage and treatment units was reviewed during the NEIC investigation:

- Interim status and permitted storage/treatment areas at TA-50
- Building 49 storage dome at TA-54, Area G
- Sheds located on storage pad over pit 33 at TA-54, Area G
- Interim status and permitted storage areas at TA-54, Area L

The record included container inventories and inspection records. The inventory and inspection records were reviewed for the period beginning January 1990 up to the date of the August 1993 NEIC inspection.

The inspection form used for the storage areas throughout LANL is not specific to the separate storage and treatment units, especially at TA-50 and TA-54, Area L. The specific storage or treatment unit is not indicated on the inspection form, which makes it difficult to determine if all storage units were thoroughly inspected. Examples of inspection logs for TA-50 and TA-54, Area L are presented in Appendix S.

Personnel Training Program and Records

The Personnel Training attachment to LANL's RCRA permit was reviewed. NEIC also interviewed EM-8 personnel to evaluate and assess LANL's RCRA-related training program and to determine whether the actual program matched the details in the RCRA permit. LANL's personnel training program is directed by the HS-8 Training Office, with assistance from EM-8 for environmental-related training.

LANL's Personnel Training section (Attachment C) of the RCRA permit specifies the following training specifications:

- All employees will receive the proper amount of training
- Training requirements for generic job descriptions
- All hazardous waste management and handling personnel attend annual refresher courses

The training specifications are not carried out at LANL, as described in the permit, according to EM-8 personnel. The hazardous waste management procedures training program is incomplete at present. The following was noted:

- A list of the type and amount of introductory and continuing training for LANL* employees, required by hazardous waste handling personnel with particular job titles, is included in the permit but there is no system in place to see that the training is received.

- Job titles of personnel in the various groups are often not specific (i.e. Staff Member, etc.) and do not identify whether that person handles/manages RCRA hazardous wastes and whether the person is required to have the above-mentioned training.

- Actual written job descriptions for hazardous waste personnel were not specific or no RCRA-related duties were specified [Appendix T].

The LANL subcontractor, Johnson Controls World Services Inc. (JCI), has "craft" employees working in the various TAs. Many of these craft employees generate hazardous waste in the course of their jobs (i.e., ironworker, painter, maintenance worker). According to a JCI Labor Relations Supervisor, Martin V. Dominguez, "there are not specific job descriptions for our craft employees in the traditional sense ...." [Appendix U]. Since there are no specific job descriptions, there are no RCRA-related duties specified.

According to EM-8 personnel, LANL personnel in the various TAs are given Administrative Requirements (AR) documents which give instructions to contact EM-8 for pertinent RCRA-related requirements, including training requirements. When LANL generators of hazardous waste call concerning their waste, EM-8 personnel are to ask if the generators have had training.

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* *University of California employees only*

If not, they try to have these people set up training. This system does not assure that personnel have the training required by RCRA.

Hazardous waste management program training for JCI employees producing hazardous wastes, consists of a one-time only hazardous waste generator training. There is no annual review of program training.

According to EM-8 personnel, RCRA-related training records and job titles/descriptions are not maintained in one specific location but are kept either by group offices, at the HS-8 Training office, or at EM-8. This makes it difficult to locate the records.

NEIC inspectors requested pertinent records for 13 LANL employees who were determined* to handle/manage RCRA hazardous waste. Of the 13 personnel records reviewed, 4 of the employees worked for JCI. The results of the review of these records are summarized in Table 21. Written job descriptions were not provided for 4 personnel, there were incomplete or no RCRA-related written job duties for an additional 8 employees, and 10 employees were not provided with the required annual review of the RCRA-related program training [Appendix V]. The Environment, Safety & Health Course Catalog lists three courses needed to fulfill compliance requirements of 40 CFR 265.16: (1) Hazardous Waste Generator Training, (2) Hazardous Waste Generator Requirements for Temporary Storage, and (3) RCRA Personnel Training. Of the 13 hazardous waste handlers whose records were reviewed, 1 employee had completed 2 of the classes, and the other 12 had only completed 1 class. None had completed all three classes.

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* *These employees were determined to handle/manage RCRA hazardous wastes through discussions with the NEIC inspection team while inspecting the various TAs.*

Table 21

PERSONNEL TRAINING RECORDS SUMMARY
Los Alamos National Laboratory
Los Alamos, New Mexico

Employee Name/Group	Job Title Available	Written Job Description Available	Program Training Received	Annual Review of Program Training
George Brooks WX-3	Yes	Yes; RCRA-related duties not described	Hazardous Waste Generator Training - 8/7/90	None
Randall Edwards MST-6	Yes	Yes; vague RCRA-related duties described	Hazardous Waste Generator Training - 5/23/90 Hazardous Waste Management - 9/25/90	None
Pauline Flynn JCI	Yes	No	Hazardous Waste Generator Training - 9/19/90	None
John (Henry) Flemming C-4	Yes	Yes; RCRA-related duties not described	Hazardous Waste Generator Training - 5/30/90	None
Robert Fresquez M-7	Yes	Yes; vague RCRA-related duties described	Hazardous Waste Generator Training - 8/21/90	Not provided for 1991 - 1992 Less than 90-day Storage - 2/5/93
Jody Goddard CLS-5	Yes	Yes; RCRA-related duties not described	Hazardous Waste Generator Training - 8/20/91 Hazardous Waste Management - 11/5/91	Hazardous Waste Generator Requirements for Temporary Storage - 5/28/92
John Hanlon ME-12	Yes	Yes; RCRA-related duties not described	Hazardous Waste Generator Training - 9/24/91	None
Don Hastings WX-3	Yes	Yes; vague RCRA-related duties described	Hazardous Waste Generator Training - 2/10/93	Annual training due in 1994
Ronald Hinsley MST-3	Yes	Yes	Hazardous Waste Generator Training - 9/23/92	Annual training due by end of 1993
Richard Larson WX-5	Yes	Yes; vague RCRA-related duties described	Hazardous Waste Generator Training - 8/16/90	Not provided for 1992 Waste Management Coordinator Training - 5/20/91 Waste Management Training/WX-5 Specific - 1/22/91
Edward Lucero JCI	Yes	No	Hazardous Waste Generator Training - 9/20/90	None
Narzario Roybal JCI	Yes	No	Hazardous Waste Generator Training - 3/27/91	None
Donna Salazar JCI	Yes	No	Hazardous Waste Generator Training - 4/9/91	None

Contingency Plan

The EM-8 group is responsible for the contingency plan at LANL. At the time of the inspection, the contingency plan was in place. The contingency plan states that EM-7 is responsible for responding to all spills, clean-up, and pick-up of hazardous waste from the less-than-90-day storage areas in all TAs that produce hazardous waste. Each TA had a designated person who is responsible for keeping records of the waste and arranging for EM-7 to remove the waste from the TA. Personnel at each TA appeared to be aware of the contingency plan and they knew who to contact in the event of an emergency.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

The following areas of noncompliance with New Mexico Hazardous Waste Management Rules and/or 40 CFR §§ 262, 264, 265, 268, and 270 were identified during the investigation. The page number where the area of noncompliance is discussed more fully in the text is included in italics and parentheses after each finding.

40 CFR § 262.11	An adequate waste determination had not been made for the following solid wastes generated at the facility: • Metal-containing wastes being removed from a septic tank at the former Catholic Church [TA-0-030(g)] and disposed of at the LANL low-level, radioactive landfill *(8)* • Metal-containing treatment sludges from the circuit board production at TA-22, building 91 *(42)* • Wastewater treatment sludge generated at TA-50 *(56 and 58)* • Container pending analysis at TA-50, building 114 *(59)* • Approximately 148 gas cylinders stored at TA-54 gas cylinder storage area *(65)*
40 CFR § 262.20(a)	During the NEIC inspection, hazardous wastes were transported on public roads without the required hazardous waste manifests, EPA form 8700-22, OMB Control Number 2050-0039. *(78)*

40 CFR § 262.34(a)(3)	Waste high explosives accumulating in rest house TA-16, building 261, were stored in six containers that were not labeled or marked clearly with the words, "Hazardous Waste." *(35)*
40 CFR § 265.31, as referenced by 40 CFR § 262.34(a)(4)	The TA-21, building 427 less-than-90-day accumulation area metal building, containing ignitable liquids, was not grounded to minimize the possibility of a fire, explosion, or any unplanned sudden release of hazardous waste. *(36)*
40 CFR § 265.32 (a), as referenced by 40 CFR § 262.34 (a)(4)	No internal communications or alarm system equipment was available which was capable of providing immediate emergency instruction to facility personnel in the following areas: • TA-3, building 2133 *(15)* • TA-21, building 427 *(36)* • TA-22, building 91 *(42)*
40 CFR § 265.32(b), as referenced by 40 CFR § 262.34(a)(4)	No devices, such as a telephone or hand-held radio, were available to summon emergency assistance in TA-3, building 2133. *(15)*
40 CFR § 265.32(c), as referenced by 40 CFR § 262.34(a)(4)	No portable fire extinguisher or fire control equipment capable of putting out fires for hazardous waste stored at the TA-21, building 427 less-than-90-day accumulation area. *(36)*
40 CFR § 262.34(c)(1)	RCRA hazardous wastes were not being accumulated under the control of the operators of the processes generating the wastes in the following locations: • TA-0, building 1237, room 203 (Pueblo Complex) *(6)* • TA-3, building 40, entrance to corridor *(15)* • TA-3, building 40, room W112 *(15)* • TA-3, building 66, room P1A *(15)* • TA-11, building 24 *(23)* • TA-21, building 3, room 361S *(36)*

	• TA-35, building 46, room 102 *(46)* • TA-35, building 85, room 106B *(50)* • TA-35, building 125, room F108 *(50)* • TA-35, building 255, room 101 *(51)* • TA-60, building 1 (wastes from TA-60, building 17) *(74)*
40 CFR § 265.173 (a), as referenced by 40 CFR §262.34(c)(1)(i)	A container in TA-35, building 213, room B24, accumulating RCRA hazardous waste was left open when wastes were not being added or removed. *(51)*
40 CFR § 262.34(c)(1)(ii)	Spent trichloroethane solvent waste was not clearly marked with the contents or the words "hazardous waste" in TA-3, building 66, room P1A. *(15)*
40 CFR § 262.34(c)(2)	Greater than 55 gallons of waste were being accumulated at a satellite accumulation area at TA-35, building 85, room 106B, without a permit or interim status. The containers holding the excess accumulation of hazardous waste were not marked with the date the excess amount began accumulating. There were six waste streams present at the area. *(46)*
40 CFR § 264.13(b)	The waste analysis plan in the permit has not been modified to specify procedures used to sample and analyze wastes for the Toxicity Characteristic Leaching Procedure (TCLP). *(77)*
40 CFR 264.16(c)	Ten facility personnel did not take part in an annual review of the hazardous waste management program. Records were reviewed for 13 LANL employees. *(85)*
40 CFR § 268.7(a)(1)(iii)	Manifest numbers were not included on the LDR notifications for 13 shipments of restricted hazardous waste. *(79)*
40 CFR § 268.7(a)(4)(ii)	The waste analysis plan for treatment of restricted hazardous waste in containers at

the lead decontamination trailer at TA-50 was not filed with the Region or NMED. *(59)*

40 CFR § 268.7(b)(7)	Copies of LDR notifications were not retained for 23 manifests for shipments of restricted hazardous waste. *(79)*
40 CFR § 268.50(a)(2)(i)	The accumulation start date was not marked on the following containers: • Three drums of mixed waste stored in shed 144 over pit 33 at TA-54, Area G *(63)* • Five gas cylinders of restricted hazardous and mixed waste at TA-54 gas cylinder storage area. *(65)*
40 CFR § 268.50(b)	The following containers of restricted hazardous wastes have been stored beyond 1 year not for the purpose of accumulating quantities necessary to facilitate proper recovery, treatment, or disposal: • One one-third full 55-gallon drum of waste spent trichloroethane solvent sludge at TA-3, building 66, room P1A *(14)* • One container of hazardous waste at TA-54, building 32 *(64)* • Five containers of hazardous waste at TA-54, building 69 *(64)* • Over 600 gas cylinders of hazardous waste at TA-54 gas cylinder storage area *(66)*
40 CFR § 270.71 (a)(2)	The facility treated hazardous wastes at TA-16 in five units by processes not specified in the Part A permit application or amendments. The units were: building 387, flash pad; buildings 388 and 399, burn pads;

and buildings 401 and 406, sand pit vessels. In addition, a burn cage treatment unit is being utilized at TA-14 to treat HE contaminated wastes. This unit is also not identified in LANL's Part A permit application or amendments. *(27 and 34)*

AREAS OF CONCERN

During the NEIC investigation, the following areas of concern were noted.* Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements or adverse environmental impacts.

- Dates are often incorrectly marked on hazardous waste labels when containers begin accumulating waste at satellite accumulation areas. Although it is a good management practice to record how long a given container accumulates waste, the date on the label could be mistaken for the date required to be marked when greater than 55-gallons are accumulated. Start of accumulation dates at satellite accumulation areas should be recorded, as required, and other dates should be recorded in a location other than the label, such as a notebook, to avoid confusion.

- Some areas were designated as satellite accumulation areas, but were not located at or near any point of generation. For example, at TA-57, building 56, a sign indicated a chemical storage area

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* *If the area of concern is discussed in further detail in the text of the report, the page number where the discussion can be found is noted in italics and parentheses.*

was a satellite accumulation point, but no identified waste generation processes were identified nearby.

- Prior to April 6, 1990, barium sand and ash waste (waste code D005) generated at the TA-16 OB/OD sites may have contained the spent solvents toluene and methyl ethyl ketone (MEK). During the NEIC inspection, containers of product toluene and MEK were observed in bay 102 at TA-16, building 363. Facility personnel indicated that these solvents occasionally have been used in the area, with the last time being April 6, 1990. If any wastes burned at the OB/OD sites contained toluene or MEK, the ash would meet the listing for F005. The ash and barium sands are transported to TA-54 where they are treated and disposed of as a nonhazardous waste. *(30)*

- Wastewater treatment sludges, meeting the listing of EPA waste number F006, have been improperly disposed of in the nonhazardous, low-level radioactive landfill at TA-54. The facility did not make an adequate waste determination for the sludge from the main wastewater treatment facility at TA-50. TA-3, building 66, discharges wastewater from electroplating operations to the main wastewater treatment facility at TA-50. *(11 and 56)*

- If the aluminum anodizing dye tanks at TA-3, building 66, are being discharged to the TA-50 wastewater treatment plant, the wastewater treatment sludge may contain heavy metals. Conflicting statements were made regarding the discharge of the dye tanks. One of the employees stated that the four dye tanks are discharged to TA-50 every 3 months, while the supervisor stated that the tanks had not been discharged for the last 7 or 8

years. MSDSs indicated the dyes contained total chromium ranging from 3 to 10%. The wastewater treatment sludge from TA-50 is drummed and disposed of in the nonhazardous, low-level radioactive landfill at TA-54. *(11, 14, 58)*

- In the TA-54, Area G, building 49 storage dome, the berm was cracked and several holes were present in the pad. The crack in the berm was located at column 69 in the storage dome. Only solid mixed wastes are stored, and the berm is used to prevent run-on, not to contain spills. *(63)*

- The TA-54 mixed waste container storage area slopes toward the nearby canyon through a stormwater channel. There are no berms or runoff protection devices for the drums stored. If the drums leaked, wastes would runoff into the canyon. *(66 and 67)*

- LANL will need to obtain a treatment permit for the thermal decomposition unit at TA-55 prior to treating any hazardous waste. LANL is in the process of changing an incinerator to a thermal decomposition unit to treat hazardous waste rags. The thermal decomposition unit will treat the waste to reduce the volume and make it more amenable for recovery. The reclamation of the plutonium occurs in the nitration process when a usable product is generated. Therefore, reclamation does not occur in the thermal decomposition unit and the unit must be permitted for thermally treating a hazardous waste. *(71)*

- The EPA ID used on manifests at TA-57 (the Fenton Hill Geothermal Site) prior to the inspection, NMP360026994, was

provisional. Provisional numbers have limited use, so Region 6 assigned the permanent number NMD986676807 after the NEIC inspection. *(72)*

- The inspection form used for storage areas throughout LANL is not specific to the separate storage and treatment units; especially at TA-50 and TA-54, Area L. The specific storage or treatment unit is not indicated on the inspection form, which makes it difficult to determine if all storage units were thoroughly inspected. *(83)*

- The executive summary of LANL's biennial report, written by the Waste Minimization Program Office, reported that funding is the major problem in implementing LANL's waste minimization program. *(82)*

- The job title for each position related to hazardous waste management and the written job description is required to be documented and maintained by the owner/operator [40 CFR 264.16]. Many of the subcontractor (JCI) employees generate and/or manage RCRA hazardous wastes. These employees do not have written job descriptions and LANL does not have a listing of job titles for JCI positions which relate to hazardous wastes. Many of the job descriptions for LANL employees which handle RCRA hazardous wastes are vague and do not specify RCRA-related duties. *(84)*

- In several of the TAs, employees stated that low toxicity solvents (i.e., acetone, alcohols) were being used on rags and wipes for

cleaning but higher toxicity solvents were found in squirt bottles and chemical storage cabinets (i.e., Freon 113, 1,1,1-trichloroethane). If these higher toxicity solvents are being used on rags and wipes for cleaning, then the associated RCRA wastes may be characterized incorrectly. The higher toxicity solvents were found in TA-8, TA-16, TA-35, TA-60, and TA-61.

APPENDICES

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I	Statement of Work for Unknown Gas Cylinders
J	Inventory of Unknown Gas Cylinders
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APPENDIX A

PHOTOGRAPHS

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PHOTOGRAPH 2: 1,1,1,-Trichloroethane spent solvent residues (in yellow recovery drum) stored in TA-3, building 66, room PIA

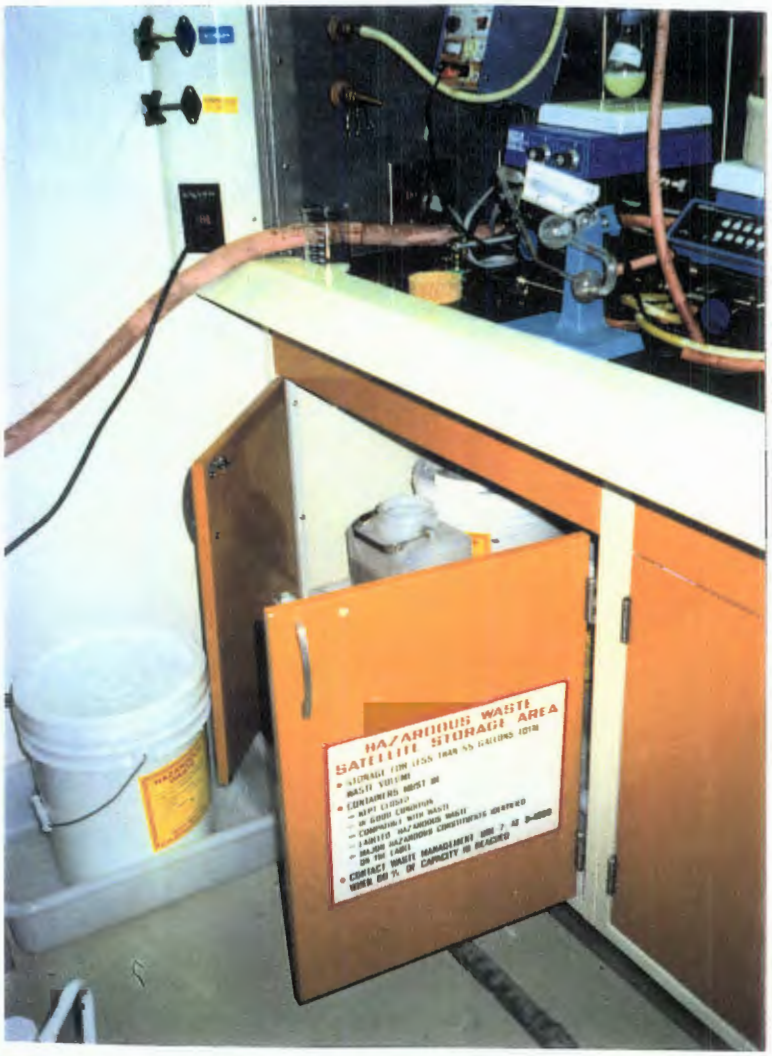
PHOTOGRAPH 3:

1,1,1-Trichloroethane spent solvent residues stored in TA-3, building 66, room PIA

PHOTOGRAPH 4: Wastewater treatment facility for high speed circuit etch rinsewater, TA 22, building 91

PHOTOGRAPH 5:

Open container of hazardous waste
TA-35, building 213, Room B-24



PHOTOGRAPH 6: 55-gallon drum pending analysis in TA-50, building 114, labeled as being sampled in May 1990

PHOTOGRAPH 7: Cracked berm in TA-54, building 49 storage dome

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Discolored drum in
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Stormwater channel
downslope from TA-54
Area L mixed waste
storage yard

PHOTOGRAPH 11:

Hazardous waste
being loaded
for transportation
at TA-16, building 306

APPENDIX B

EPA REGION 6 COMPREHENSIVE MONITORING EVALUATION REPORT

INSPECTION COVER SHEET
Comprehensive Ground Water Monitoring Evaluation
U.S. Environmental Protection Agency
Region 6, Dallas, Texas

EPA I.D. No.: NM089010515

Name of Facility: Los Alamos National Laboratory

Mailing Address: P.O. Box 1663, Los Alamos, New Mexico 87545

Location: Los Alamos Area Office, Los Alamos, New Mexico

Telephone: (505) 667-5288

Type of Facility: Research facility containing areas designated to work on space technology, nuclear weapons, health and medical research, nuclear reactors, basic nuclear and particle physics, and non-nuclear ordinance.

Date of Inspection: August 3 - 6, 1993

Type of Inspection: Lead EPA inspection at a Federal Facility as part of a Multi-Media Inspection

Inspection Participants:

NAME	AGENCY/COMPANY	TELEPHONE
Greg Lyssy	U.S. EPA	214-655-8317
Steve Alexander	NMED	505-827-4308
Terry Davis	NMED	505-671-0448
Alice Barr	Los Alamos	505-667-0820
Alan Stoker	Los Alamos	505-667-0818

Report Prepared By: Greg J. Lyssy **Date:** March 16, 1994

Concurred By: Ronald D. Crossland **Date:** March 16, 1994

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INSPECTION SUMMARY

GENERAL COMMENTS

- LANL has ground water monitoring waivers on file at the facility for the following areas:

  TA 54 Area L & G
  TA 35 125 Surface Impoundment (SI) & 85 SI
  TA 53 Northwest SI, Northeast SI, & South SI
  TA 16 Area P SI & Area P Landfill

- All of these ground water monitoring waivers should be reviewed by NMED to determine if they are still adequate and appropriate based upon additional information provided from recent investigations and studies at LANL.

TECHNICAL CONCERNS

- There is insufficient final cover on the Area P landfill in TA 16. The landfill does not appear to have any run-on or run-off controls and there are numerous erosion channels transecting the landfill. These erosion channels are providing a direct path for possible contaminant migration to the wetlands area in Canon de Valle below the landfill. In addition, the wetlands in Canon de Valle appear to bisect the toe of the landfill. The wetland areas could be in direct communication with a potential migration pathway. Numerous intact laboratory chemical bottles were also present in the landfill. Some of these bottles may still contain chemical constituents which could migrate from the landfill. The Area P landfill is currently inactive and pending closure.

- Two wells in TA 54 Area G, due east of Area L, consisted of open steel casings without caps or locks. These open wells are possible contaminant migration pathways and should be properly abandoned. In addition, two soil-gas cluster wells in Area G were not locked.

- Several monitoring wells and/or neutron moisture wells have grout that is cracked and/or pulled away from the casing. These wells may have lost their integrity and should be repaired or replaced. During the inspection, the following wells were noted with grout integrity problems.

MCO-4.0	TW 1-53
MCO-3.0	TW 3-53

GROUND WATER MONITORING CONCERNS

- The current facility-wide ground water monitoring program does not appear to adequately characterize the ground water flow regime beneath the facility. The recharge areas for the main aquifer and the perched-intermediate aquifer have not been completely identified. It is not known if a significant quantity of water is recharging the main aquifer through the fracture fault zones at Pajarito Plateau. Most RCRA operating permits, closure plans, and annual surveillance reports state that "major recharge to the main aquifer is from the intermontane basin of the Valles Caldera in the Jemez Mountains west of Los Alamos". The

water-level map published by LANL suggests a recharge area to the west. The Pajarito fault zone at the west edge of the plateau could provide a pathway for some of this recharge. However, stable-isotope data suggest that some component of recharge occurs at elevations higher than available in the Jemez Mountains. The Sangre de Cristo Mountains have been suggested as the site of these higher elevations. Further work is needed on this matter.

- The ground water flow directions of the main aquifer and perched intermediate aquifer, as influenced by the numerous production wells in the LANL area, have not been completely determined. There are nineteen public water supply wells in the LANL area. Ground water flow will be towards the pumping supply wells. Ground water potentiometric maps should depict the actual conditions at the facility.

- Recent transducer studies by LANL indicate that barometric pressure influences ground water levels in the main aquifer. This would seem to indicate that the main aquifer is confined or semi-confined. Additional testing should be conducted to verify the confining characteristics of the main aquifer. Previous studies and/or modeling have used the assumption that the aquifer was unconfined. The old studies should be reviewed and revised, as necessary, to utilize the new information, once collected.

- The HSWA portion of the RCRA Permit required the installation of ground water monitoring wells in the Los Alamos Canyon shallow alluvium to determine if the old LAO-series of wells installed in the mid-1960's provide accurate ground water monitoring data. As per the Permit, the new wells were installed and sampled once in 1990. Preliminary results from the one sampling event seem to indicate that there are increases in concentrations of constituents in the ground water in the new HSWA ground water monitoring wells when compared to the old LAO-series of wells. It is therefore recommended that additional sampling events be conducted in both series of wells, so that a statistical comparison can be performed.

- The ground water monitoring waiver for TA 54 Area L & G states: 1) there is not a perched water table at these areas, and 2) there is not any hydraulic connection to the main aquifer. However, there are not any ground water monitoring wells in the vicinity of Area L & G which verify this statement. It is understood that LANL was preparing to install a monitoring well penetrating the main aquifer, just east of TA 54, which could have been used to provide this information. However, it is also understood that due to budget constraints, the proposed installation of this well has been halted. It is recommended that this well be installed as expeditiously as possible in order to verify the ground water conditions in this area.

- LANL has conducted extensive soil-gas monitoring at TA 54 Area L in order to characterize the vapor contamination in the vadose zone. It is recommended that LANL and EPA meet to discuss the results of the soil-gas monitoring.

INSPECTION RECOMMENDATIONS

- All of the ground water monitoring waivers should be reviewed by NMED to determine if they are still adequate and appropriate based upon additional information provided from recent investigations and studies at LANL. In order to fully evaluate the ground water monitoring waiver at TA-54, a ground water monitoring well may need to be installed downgradient of TA 54 to determine if the main aquifer has been impacted. If a perched ground water table is encountered, a ground water monitoring well should also be installed in the perched zone.

- LANL, NMED, and EPA need to schedule a meeting to discuss the results of LANL's soil-gas monitoring.

- The recharge areas for the main aquifer and the perched intermediate aquifer must be determined to see what impact the waste handling practices of LANL will have on the aquifers. The location of the recharge areas and the rate of recharge must be determined.

- The ground water monitoring wells in the shallow alluvium of Los Alamos Canyon should be resampled for the target analytes to determine the impact of facility operations to the ground water in the Canyon. If the old LAO-series wells are acting as a possible contaminant migration pathway, they should be properly abandoned following NMED requirements.

CME TECHNICAL REPORT

SECTION 1 -- INTRODUCTION

I. Facility: Los Alamos National Laboratory

II. Facility Background:

Los Alamos National Laboratory (LANL) is located west of the Rio Grande in Los Alamos County, approximately forty miles northwest of Santa Fe, New Mexico (Figure 1). Geologically, it is located on the Pajarito Plateau, an area of deeply dissected Quaternary-aged volcanic deposits and Tertiary fill of the Espanola Basin. The volcanics belong primarily to the Bandelier Tuff. The Bandelier Tuff consists of rhyolitic ash flows and pumice falls that were derived from the Valles Caldera in the Jemez Mountains to the west. The basin fill is represented by the Puye Conglomerate (fanglomerate, lake clays, basalt flows, and ash and river gravels) and the Tesuque Formation (mostly poorly-consolidated sand and gravel). The average elevation of the resulting finger-like mesas is approximately 7,000 feet. The area is drained by ephemeral and intermittent streams that flow easterly to the Rio Grande, lying some 1,450 feet below the Plateau. Regional ground water flow is also generally eastward except near the public water supply well fields.

Radioactive and hazardous waste has been generated and disposed of at LANL since its inception in 1943. There are twenty-three Materials Disposal Areas (MDAs): A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S, T, U, V, W, X, and Y. All such sites are considered potential sources of ground water contamination. A 1975 report summarized burial conditions and environmental monitoring at eight of these MDAs (A, B, C, D, E, F, G and T) in conjunction with an evaluation of monitoring efforts at LANL. A 1977 report made a two-volume compilation of the history and environmental setting of the same MDAs covered by the 1975 report. Volume I includes background (historical) information on the site, the geologic and hydrologic setting, type of waste involved, and the mode of disposal. Volume II consists of Appendices including a list of photos, slides and engineering drawings, LANL's solid radwaste management policy, the guidelines for disposal pit construction, and records of disposal in Tech Area 54, Area G shafts.

Waste-disposal sites were identified by LANL as part of the Comprehensive Environmental Assessment and Response Program (CEARP), under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). A Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA), conducted by A.T. Kearney in 1987 for the Lab, provided additional information on Solid Waste Management Units (SWMUs) at LANL. In 1988, a draft SWMU report, providing "reasonably available" information, was submitted to the Environmental Protection Agency (EPA). The 1988 draft SWMU report was revised by International Technology Corporation under contract to LANL and includes an update on SWMU's identified at LANL in 1990. The 1990 report identifies 537 SWMU's located in 50 active and former Technical Areas. The current number of potentially contaminated areas at the facility is approximately 2,000. Many of these are minor and will probably be handled under Voluntary Corrective Actions or No Further Action proposals. The RCRA permit was recently modified and LANL is required to investigate 101 SWMU's.

DP-LA Canyon received treated industrial (including radioactive) and sanitary effluent between 1952 and 1984. The effluent, together with natural runoff, resulted in a shallow body of perched ground

water in the alluvium of LA Canyon.

Sandia Canyon received cooling tower blowdown and treated sanitary effluent from TA-3. The stream in the canyon is perennial for a short distance downstream of the outfall in the upper canyon. No perched ground water has been identified in the alluvium of the lower canyon.

Mortandad Canyon received radioactive liquid waste from TA-50. This maintains a perched ground water body in the alluvium on the canyon floor. A 1974 report stated that this water moves at a rate ranging from 59 ft/d in upper reach to 7 ft/d in the lower reach of the canyon. Elevated NO_3, Pu, and Tritium (^3H) have been identified in Mortandad Canyon.

Acid-Pueblo Canyon received radioactive effluent from 1944 to 1964 and receives treated sanitary effluent from the Los Alamos County Bayo Canyon sewage treatment plant. In 1990, the sewage effluent produced flow in lower Pueblo Canyon and into Los Alamos Canyon for most of the year. However, subsequent sampling in the canyon indicated that Pu values were below detection and ^3H content was at background level, which is very near its detection limit.

III. LANL's Conceptual Ground Water Model:

- Ground water occurs in three situations at LANL:
  - perched water in alluvium in canyons,
  - perched water in basalts and sedimentary units of the Puye Conglomerate, and
  - ground water in the main aquifer.
- The alluvium on canyon floors is recharged by surface-water runoff.
- The main aquifer consists of the Tesuque Formation and the lower parts of the overlying Tschicoma Formation (in the western part of the Pajarito Plateau), and the Tesuque Formation and overlying Puye Conglomerate (in the central and eastern parts of the Pajarito Plateau).
- Water in the main aquifer is separated from that in the shallow alluvium and other perched systems by 250 - 620 feet of unsaturated tuff and sediments.
- There is little or no recharge of the main aquifer from the mesas, the shallow alluvium, or other perched ground water.
- The main aquifer is recharged in the Valles Caldera, west of the LANL.
- Ground water in the main aquifer flows easterly until discharging to the Rio Grande.
- Tritium was found at a depth of approximately 200 feet within the Bandelier Tuff. Other radionuclides have apparently moved only a few feet beneath the alluvial aquifer. No organic contaminants were detected above, in, or below the perched water in the alluvium.
- Saturation is confined to a relatively thin zone in the Mortendad Canyon shallow alluvium, extending 5 - 20 feet above the contact of the alluvium with the underlying Tshirege Member

of the Bandelier Tuff. Thickness of the saturated zone in Mortendad Canyon decreases towards the canyon margins. Since 1960, the saturated portion of the alluvium aquifer in Mortendad Canyon has neither changed significantly in size nor moved down canyon.

IV. Facility Ground Water Monitoring Network:

LANL's 1990 Surveillance Report identifies forty-three ground water monitoring wells. Of the forty-three, twenty-six are deep and target the main aquifer and seventeen are shallow and monitor perched water in the alluvium. Of the twenty-six deep wells, nineteen are public water supply wells; the remaining seven are test wells which were used to determine aquifer characteristics. The supply wells used for monitoring include seven in the Guaje well field, six in the Los Alamos well field, and six in the Pajarito well field. None of the shallow wells are public water supply wells. In addition to these wells, ground water is also monitored by means of thirty-three springs that primarily discharge along the eastern edge of the plateau in White Rock Canyon.

Different sites at LANL are analyzed for slightly different lists of parameters. Springs in White Rock Canyon are monitored for sixteen non-radioactive parameters (SiO_2, Ca, Mg, K, Na, CO_3, HCO_3, P, SO_4, Cl, F, NO_3-N, TDS, hardness, pH, specific conductance), six radiochemical parameters (Tritium, ^{137}Cs, total U, ^{238}Pu, $^{239/240}Pu$, gross gamma) and twenty trace metals (Ag, Al, As, B, Ba, Be, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Sb, Se, Sr, Tl, U, V, Zn). Ground water in supply wells and the water distribution system at LANL is monitored for six radiochemical parameters (gross alpha, gross beta, Tritium, ^{238}Pu, $^{239/240}Pu$, and total U), eighteen EPA primary/secondary standards (Ag, As, Ba, Cd, Cr, F, Hg, $N0_3$-N, Pb, Se, Cl, Cu, Fe, Mn, SO_4, Zn, TDS, pH), and twenty other parameters (Al, SiO_2, Ca, Mg, K, Na, CO_3, HCO_3, P, hardness, specific conductance, B, Mo, Sr, V, Be, Ni, Sb, Tl, NO_2-N). Ground water is also monitored for organic compounds: sixty-eight volatiles, seventy-one semi-volatiles, nineteen pesticides, two herbicides, and four PCB's.

Existing wells are employed in the monitoring network where possible. However, the large number of water-supply wells used for monitoring at LANL is a concern. Wells constructed for supply have large screened intervals in order to maximize water production. Ground water monitoring wells are screened over a narrow interval to provide information on a discrete portion of the aquifer. The wells drilled as part of the RCRA permit requirements are not currently included in LANL's Environmental Surveillance network.

V. NMED's Assessment of LANL's Ground Water Monitoring

NMED's 1993 *Initial Assessment of the Ground Water Monitoring Program at LANL* Report had the following concerns with LANL's ground water monitoring program:

- The recharge area(s) for the main aquifer under the Pajarito Plateau has not been clearly identified. Most RCRA operating permits, closure plans, and annual surveillance reports state that "major recharge to the main aquifer is from the intermontane basin of the Valles Caldera in the Jemez Mountains west of Los Alamos". The water-level map published by LANL suggests a recharge area to the west. The Pajarito fault zone at the west edge of the plateau could provide a pathway for some of this recharge. However, stable-isotope data gathered by LANL suggest that some component of recharge occurs at elevations higher than available in the Jemez Mountains. The Sangre de Cristo Mountains have been suggested as the site of these higher elevations. Further work is needed on this matter.

- Maps published by LANL show that the main aquifer is generally unconfined, except in a wedge-shaped area near the central part of Los Alamos County. Since unconfined conditions suggest connection with the surface (i.e. atmospheric conditions occur at the water table), the common contention in operating permits and work plans, that the Bandelier Tuff is an impermeable barrier to recharge, does not seem to be valid over most of the plateau. Further work is needed to resolve this issue.

- Perched water beneath the Bandelier Tuff suggests that there is recharge through the tuff. Various methods of monitoring recharge (e.g. chloride mass balance, chlorine 36, etc) should determine if ground water is migrating through the Bandelier Tuff.

- TW-1 is a deep ground water observation well that shows a fifty-foot water mound. TW-1A is completed in perched water above the screened interval of TW-1. The perched water from TW-1 A and the alluvial water in this area have similar chemistry, different from that in TW-1. This situation raises questions concerning the effectiveness of the Bandelier Tuff as a barrier to vertical migration and needs to be investigated.

- If Tritium has penetrated at least 200 feet beneath the alluvium aquifer in Mortandad Canyon, it seems possible that it could ultimately reach the main aquifer.

- The hydraulic properties of all aquifers should be characterized in the field through properly designed pumping tests, using appropriately constructed and placed wells. Such tests should include wells on both sides of major faults in order to better define the role of these structures as conduits, barriers, or inconsequential.

- Water level maps for the shallow, perched systems should be contoured separately from those for the deep (main) aquifer.

- Previously published water-level maps essentially depict pre-development conditions; no impacts of pumping at production wells (i.e. cones of depression) are indicated. However, water-level changes (i.e. drawdown values) are regularly given in the annual reports on the water supply at LANL. Modeling predicts significant cones of depression in the future as well. As ground water flow is toward such depressions, their position and extent are critical to both designing and evaluating the monitoring network. Water-level maps for LANL should include these features.

- Water-level maps commonly used for closure plans, RCRA Facility Investigation (RFI) Work Plans, operating permit applications, etc, all include data collected over 10 years ago at TA-49 in wells DT-5A, DT-9 and DT-10. The ground water potentiometric levels in the southwestern part of the Pajarito Plateau may not reflect actual conditions. It is understood that this is, in part, because there is no access port for water-level measurement at these wells. This should be remedied such that water levels can be monitored on a regular basis.

VI. Hazardous Waste Management Units:

UNIT	Waste Type	Size	Construction	Status/Age
TA 54 AREA G	Low-level radioactive materials, small quantities of asbestos, beryllium, empty pesticide containers, PCB contaminated solids	63 acres	31 pits; 4 trenches; over 100 shafts; 10 shafts are lined with steel pipe and concrete. Constructed in 1957.	Active. Some pre-1980 units have been possible targets of closure activities during the RFI process.
TA 54 AREA L	Organic and inorganic chemicals	2.5 acres	1 disposal pit, 1 surface impoundment, and 34 shafts. Constructed in 1964.	Active. Some pre-1980 units have been possible targets of closure activities during the RFI process.
TA 54 AREA H	Lithium Hydride 15 pounds	1 shaft RCRA #9 regulated. 6-feet wide. 60 feet deep.	Filled to 25' below surface as of 3/86. Has a steel cap on top.	Active. Some pre-1980 units have been possible targets of closure activities during the RFI process.
TA 35 125 S.I.	Shell Dialia(R) Oil (Dielectic Oil) Received Spills from building 129. Cleaning degreasers were used in Bldg 129.	29' X 31' 900 ft. sq. 5.7 feet deep 8000 gal	1978 constructed 1979 used	Certified Clean Closure by LANL. Awaiting approval by NMED.
TA 35 85 S.I.	Shell Dialia(R) Oil (Dielectic Oil) Received spills from Building 85. Cleaning degreasers were used in Bldg 85.	34 X 24' 816 ft sq. 4 feet deep 18,750 gal 7,640 gallons with 2' freeboard	1985 built 1986 used gunite/ bentonite	LANL has received NOD on clean closure. NMED has requested amended closure plan. LANL has requested extension for submittal for additional 90 days
TA 53 NW SI	Sanitary, industrial and RAD wastes until 1989. Rad wastes were not sent to this SI after 1989. They were sent to the south pond	210 X 210' 6 feet deep 1,629,000 gallons	1969 built 1969 used gunite sides bentonite clay bottom 4 " thick	Closure pending approval of plan with NMED
TA 53 NE SI	Sanitary, industrial and RAD wastes until 1989. Rad wastes were not sent to this SI after 1989. They were sent to the south pond	210 X 210' 6 feet deep 1,629,000 gallons	1969 built 1969 used gunite sides bentonite clay bottom 4" thick	Closure pending. NMED has closure plan and it is currently under review.

UNIT	Waste Type	Size	Construction	Status/Age
TA 53 South Pond	Sanitary, Industrial and Rad wastes until 1989. From 1989 on it received predominantly RAD wastes, but would periodically from two other impoundments to weigh down the liner as well as to avoid concentrating RAD components in liquid.	305 X 148' 6 feet deep 2,580,000 gallons	1985 built 1985 used 36 mil Hypalon Liner	Active Unit
TA 16 SI	Barium liquids,	60 X 40' 8-foot deep 2,400 sq ft 18,600 gal	1985 constructed 1985 used Hypalon Liner	LANL certified clean closure. NMED is reviewing closure.
TA 16 Area P Landfill	Flashed equipment (contaminated with HE) Barium contaminated sands, various lab bottles, Administratively controlled wastes, old equipment, building debris.	250' X 125' approximately 30 feet deep. Approximately 3 acres for surface area.	1950s built Used from late 1950s to 1985.	Closure pending. NMED has requested resubmittal of closure plan. Due August 30, 1993.

VII. Date of Previous CME: A CME with a site inspection had not been conducted previously.

VIII. Facility Status: LANL was permitted in November 1989. The Permit expires on December 22, 1999.

IX. Permit conditions and relevant dates pertaining to the ground water monitoring system:

1. The Permittee was required to install thirteen ground water monitoring wells and one boring in the perched saturated alluvium across seven different canyons. For these wells, the Permittee was to gather ground water elevation data and develop a map to delineate the known extent of the perched ground water at the facility. The Permittee was required to sample each well for Appendix IX constituents and designated radioactive constituents.

2. Annual reports on surface and ground water monitoring are to be submitted to EPA.

3. The Permittee, through the existence of sediment traps or construction of new sediment traps, shall ensure containment of all residual sediment contamination within the facility boundary.

4. Any boring drilled to a depth of 300 feet or deeper shall grout the surface casing to prevent the downward migration of surface contamination along the wellbore. Any well drilled to the main aquifer which encounters a perched zone shall hydraulically isolate the main

aquifer.

5. The Permittee shall continue quarterly sampling of the soil gas plumes and resume vadose zone plume delineation at TA-54.

6. The Permittee shall conduct a subsurface investigation of saturation by drilling test holes through the shallow alluvial perched aquifer in Mortandad Canyon. Construction of the test holes will hydraulically isolate the perched aquifer from the underlying unsaturated tuff. This perched aquifer is recharged in part from waste water treatment discharges located upstream. The investigation shall provide an initial evaluation of the maximum extent of the vertical and horizontal water and contaminant movement into the unsaturated tuff beneath the saturated alluvium. The study shall attempt to recover cores from the tuff to be used to determine laboratory values for unsaturated hydraulic conductivity, conductance, specific retention and specific yield, effective porosity, and saturated permeability. The boring shall be analyzed for applicability of installation of neutron moisture probe access tubes to determine moisture over time. Chemical and radiochemical analyses of the cores shall also be made to assist in the determination of fluid movement from the perched alluvial aquifer into the underlying unsaturated tuff. The chemical analysis shall include Appendix IX constituents, while the radiochemical analysis shall include ^{3}H,^{137}Cs, Total U, ^{238}Pu, ^{239}Pu,^{240}Pu,^{241}Am, Gross Gamma, and Gross Alpha, as appropriate. A report detailing the results of this study shall be submitted within one year of the effective date of this permit.

7. The Permittee was required to submit a reference of all known geologic, hydrogeologic and all environmental studies relevant to potential contamination or migration of contamination from SWMUs, previously performed at and/or by the facility, with a summary of the scope of the study, and significant findings thereof.

SECTION 2 -- APPLICABILITY AND SITE CHARACTERIZATION

I. **Has a ground water monitoring program (capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility) been implemented as per 40 CFR § 265.90. Uppermost aquifer means the geologic formation nearest the natural ground surface that is an aquifer as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.**

No, the facility does not have a ground water monitoring program capable of determining all of the facility's impact on the uppermost aquifer. LANL has ground water monitoring waivers on file for each unit requiring ground water monitoring. LANL followed the requirements of 40 CFR 265.90(c) which states:

(c) All or part of the ground-water monitoring requirements of this subpart may be waived if the owner or operator can demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to water supply wells (domestic, industrial, or agricultural) or to surface water. This demonstration must be in writing, and must be kept at the facility. This demonstration must be certified by a qualified geologist or geotechnical engineer and must establish the following:

(1) The potential for migration of hazardous waste or hazardous waste constituents from the facility to the uppermost aquifer, by an evaluation of:

(i) A water balance of precipitation, evapotranspiration, runoff, and infiltration; and

(ii) Unsaturated zone characteristics (i.e., geologic materials, physical properties, and depth to ground water); and

(2) The potential for hazardous waste or hazardous waste constituents which enter the uppermost aquifer to migrate to a water supply well or surface water, by an evaluation of:

(i) Saturated zone characteristics (i.e., geologic materials, physical properties, and rate of ground-water flow); and

(ii) The proximity of the facility to water supply wells or surface water.

II. **Has the facility adequately identified the uppermost aquifer?**

No, based upon the reviewed documents, the uppermost aquifer has not been adequately characterized. Additional studies are required. Each ground water monitoring waiver needs to be evaluated to determine its appropriateness. If the ground water monitoring waiver does not meet the requirements of 40 CFR 265.90(c), LANL will be required to submit additional information or install ground water monitoring wells at each regulated unit.

III. Regional Geology

A. Regional Geology Background:

LANL is situated on the Pajarito Plateau on the east flank of the Jemez Mountains and on the west side of the Rio Grande valley (Figure 2). The Jemez Mountains are part of the Jemez volcanic field, which consists of some 432 mi^3 of volcanic rocks erupted from numerous vents, including a giant, multistage caldera. The Jemez volcanic field occurs at the intersection of the Jemez lineament, a northeast-trending alignment of volcanic fields, and the Rio Grande rift, a major north-trending zone of extensional tectonics.

Two major volcanic eruptions in the Jemez Mountains that occurred about 1.5 and 1.13 million years ago produced widespread and voluminous ash flow sheets: the Otowi and Tshirege members of the Bandelier Tuff. The morphology of the Pajarito Plateau is dominated by a gently eastward-sloping surface, formed on top of the Bandelier Tuff, which is dissected by numerous steep-sided canyons. The Otowi and Tshirege Members of the Bandelier Tuff were erupted concomitantly with the collapse of the Toledo and Valles calderas, respectively. Following the formation of the calderas, volcanism continued with the extrusion of domes along ring fractures. The latest eruption in the Jemez Mountains occurred about 130,000 years ago, producing the El Cajete pumice and Banco Bonito rhyolite flow. Vestiges of volcanic activity continue today, as evidenced by solfataric and hot spring activity both within and outside of the Valles caldera. Studies of P-wave arrival time delays suggest the presence of partially molten rock beneath the Valles caldera, possibly the remnants of the cooling Bandelier magma chamber.

The Pajarito Plateau is in the western part of the Espanola basin of the Rio Grande rift, a major tectonic feature of the western United States. The Espanola basin lacks distinct major faults on its eastern margin; however, faults of major vertical offset may exist within the Precambrian rocks of the Sangre de Cristo uplift. The western margin is characterized by a prominent zone of major faults, which cuts Miocene to Quaternary rocks of the Jemez volcanic field. These border faults exerted strong control on the location and development of the volcanic field.

Rocks formed before the rift developed are exposed around the margins of, and underlie, the Espanola basin. These rocks consist of Mississippian to Permian marine limestones, sandstones, and shales; Mesozoic marine to terrestrial sandstones and shales; and Eocene sandstones, shales, and freshwater limestones. Precambrian rocks -- predominantly quartzite, granitic gneiss and schist, and greenstone -- are exposed in the cores of the flanking Sangre de Cristo, Nacimiento, and Brazos uplifts. The earliest sediments deposited in the Tertiary Espanola basin are those of the Abiquiu, Picuris, and Los Pinos formations, which consist of tuffaceous sandstones and volcaniclastic conglomerates derived largely from volcanic highlands to the north and northeast. These units range in age from about 28 to 17 million years old.

B. Stratigraphic Units

Beneath a veneer (typically less than fifteen feet) of soils and alluvial deposits, the mesas of the Pajarito Plateau are immediately underlain by the Bandelier Tuff of Pleistocene age,

which is exposed in the canyon walls and is penetrated by numerous drill holes. Beneath the Bandelier Tuff, a sequence of inter-stratified sedimentary and volcanic rocks of Miocene to Pleistocene age occur, which have been penetrated by water supply wells and which have been studied where they outcrop in canyons on the margins of the Pajarito Plateau. These rock units include volcanic rocks of the Paliza Canyon Formation, Tschicoma Formation, and the Cerros del Rio volcanic field, and sedimentary deposits of the Puye Formation, the Totavi Formation, the Cochiti Formation, and the Santa Fe Group (Figures 3 & 4). Individual units are discussed below.

Santa Fe Group -- The Santa Fe Group of Miocene and early Pliocene age (formed 18 to 4.5 million years ago) is a thick series of terrestrial conglomerates, sandstones, and mudstones, with minor limestones, evaporites, volcanic tuffs, and intercalated basalts. These rocks are the most extensive units filling the Rio Grande rift, and most production from water wells at Los Alamos is from the Santa Fe Group. Sedimentary rocks usually dominate the Santa Fe Group, although basalts constitute up to 45% of the section penetrated by water supply wells at LANL. In the Espanola basin and underlying the northern part of Los Alamos County, the Santa Fe Group is subdivided into two formations (Tesuque and Chamita formations) and several members, which reflects the diversity of the coalesced alluvial fans deposited in the Espanola basin.

Keres Group -- Two formations of the Keres Group, may be important in the pre-Bandelier Tuff subsurface in the southern parts of LANL. These are the Paliza Canyon and Cochiti formations, each about 13 million to about 6 or 7 million years old. The St. Peter's Dome area lies about 3 miles from the southern boundary of LANL and was a major center of Keres Group volcanism. Large volumes of Paliza Canyon andesite were erupted from the St. Peter's dome center and spread to the east and north. It appears that some of the volcanic units encountered in wells at TA-49 may be Paliza Canyon lavas that have been misidentified as Tschicoma and Cerros del Rio units, as discussed below.

Beneath the southern Pajarito Plateau, sedimentary deposits of the Cochiti Formation compose the Miocene basin fill and are therefore laterally equivalent to the sedimentary rocks of part of the Santa Fe Group and possibly also to those of the Puye Formation to the north. The Cochiti Formation consists dominantly of basin fill gravels derived from the volcanic centers of the southern and central Jemez Mountains volcanic field. The transition between the Cochiti, Santa Fe, and Puye formations probably occurs somewhere beneath Los Alamos County, but it is very poorly defined.

Tschicoma Formation -- The Tschicoma Formation consists of a sequence of dacitic domes and lavas that were erupted from vents in the central to northeastern Jemez Mountains between about 7 and 3 million years ago. These volcanic rocks outcrop extensively in the mountains immediately west of LANL and are reported in the subsurface beneath the western and southern part of LANL.

Puye Formation -- The Puye Formation consists of a Pliocene-to-Pleistocene fanglomerate that was shed eastward from Tschicoma volcanic centers in the northeastern Jemez volcanic field between about 4 and 1.7 million years ago. Earlier work included the Totavi Lentil, now considered a separate formation, as part of the Puye Formation. Most of the Puye conglomerates contain cobbles of dacitic to andesitic composition in a volcanic sand matrix.

The beds include stream flow deposits, debris flow deposits, volcanic ash and block flow deposits, and ash fall and pumice fall deposits. The Puye Formation is best exposed north of the LANL, but lithologically similar rocks have been penetrated in drill holes as far south as Frijoles Mesa. Under parts of LANL, the Puye Formation is inter-stratified with basalts of the Cerros del Rio volcanic field. In Los Alamos water supply wells, the top of the main aquifer is usually within the Puye Formation.

Totavi Formation -- Immediately beneath the fanglomerates of the Puye Formation, unconformably overlying the Santa Fe Group, is a section of poorly consolidated fluvial gravels. The gravels contain clasts that differ lithologically from those in the Puye, including abundant well-rounded cobbles and boulders of quartzite, granite, and pegmatite that record a source area distant from the Jemez Mountains; this unit probably represents axial channel gravels of an ancestral Rio Grande. These fluvial gravels have been defined as a separate formation, the Totavi Formation, which also includes lacustrine sediments that are complexly inter-stratified with the upper Puye Formation. In some water supply wells beneath LANL, the Totavi was reported between the Santa Fe and the Puye, occurring at lower elevations in the eastern wells. The presence of the Totavi at these levels suggests that Rio Grande river gravels were deposited on erosional surfaces, a setting analogous to Quaternary terraces of the Rio Grande in the Espanola basin before deposition of the Puye fans, which unconformably overlie older formations.

Cerros del Rio Basalts -- Basaltic flows, breccias, and scoria of the Cerros del Rio occur in the subsurface beneath much of the Pajarito Plateau and outcrop in the east and southeast parts of Los Alamos County. These volcanic rocks are associated with the Pliocene-to-Pleistocene Cerros del Rio basalt field, east of the Rio Grande, and rocks from this field have been dated at 4.6 to 2.0 million years old. The youngest lava flows in this area occurred between the two Bandelier Tuff eruptions, 1.5 and 1.1 million years ago. Part of this volcanic field is also known as basaltic rocks of Chino Mesa. The top of the main aquifer beneath LANL is locally within this section of basaltic rocks.

Otowi Member, Bandelier Tuff -- The Otowi Member of the Bandelier Tuff underlies the Tshirege Member in the subsurface beneath much of the Pajarito Plateau and outcrops in many of the canyons. The Otowi Member is mostly a nonwelded ash flow tuff that was erupted from the Jemez Mountains 1.5 million years ago. It is highly porous and poorly indurated and is composed of multiple flow units. Where it outcrops, cooling joints are typically absent because of relatively low emplacement temperatures and the lack of induration. The Guaje Pumice Bed generally occurs at the base of the Otowi Member and consists of sorted pumice fragments that average 0.8 to 1.6 inches in size.

Cerro Toledo Rhyolite and Interbedded Sediments -- An interbedded sequence of rhyolitic tuffs and sediments commonly occurs between the Otowi and Tshirege members of the Bandelier Tuff. The rhyolitic tuffs were erupted between 1.5 and 1.2 million years ago, predominantly from the Cerro Toledo domes in the northeastern Jemez Mountains. Beneath the Pajarito Plateau, the sediments are epiclastic sands and sandy gravels that lithologically resemble Puye Formation fanglomerates. At LANL, deposits in this interval have sometimes been referred to as "Tsankawi pumice" or "Tsankawi member." These units may play an important role in the migration of water in the subsurface beneath the Laboratory.

Tshirege Member, Bandelier Tuff -- The most widespread rock unit on the Pajarito Plateau is the Tshirege Member of the Bandelier Tuff, which was erupted from the Valles caldera in the Jemez Mountains about 1.1 million years ago. The Tshirege Member is composed of multiple flow units of crystal-rich ashflow tuff and displays significant variations in welding and alteration, both in a single stratigraphic section and with varying distance from the caldera. Individual units tend to be more welded and thicker to the west. Flow units are locally separated by volcanic surge deposits of well-sorted, fine-grained, cross-bedded crystal and pumice fragments. Vapor phase alteration, caused by post-emplacement cooling and migration of entrained magmatic gases, occurs in much of this unit. The base of the Tshirege Member is often marked by 1.5- to 10-foot of bedded, unconsolidated, pumice-rich ash fall tuff of the Tsankawi Pumice Bed. The Tsankawi Pumice Bed is generally poorly recognized in drill bit cuttings because rotary drills commonly grind the soft materials into dust.

The Tshirege Member has been subdivided into a sequence of mappable units based either on erosional characteristics or on primary cooling units. These units have been correlated over large distances on the Pajarito Plateau. However, the boundaries between the units are not always distinct in the field and can be difficult to recognize in drill holes, causing investigators to place the contacts between units at different locations. Furthermore, in the absence of geologic mapping in the intervening areas, the validity of the correlations is uncertain.

Stratigraphic features in the tuff, such as volcanic surge deposits, may locally provide a preferential migration pathway for moisture and contaminants in the subsurface. There are increased rates of vapor phase migration of tritium away from storage shafts at TA54 along a stratigraphic boundary that includes surge layers. Individual flow units in the Tshirege Member contain vertical cooling joints that may or may not cross flow unit boundaries. In ash flow tuffs, cooling joint spacing varies primarily with the thickness of the unit, emplacement temperature, substrate temperature, and topography. Joint density tends to be greatest in welded tuff and least in nonwelded tuff. Hydraulic conductivities are generally greatest in the fractured, welded parts of ash flow tuffs and least in the nonwelded parts.

Post-Bandelier Units -- Stratigraphically overlying the Bandelier Tuff are discontinuous Quaternary alluvial units that occur as thin deposits (typically less than fifteen feet) on mesa tops and as deposits in canyons. Alluvial fans consisting mostly of dacite debris are being shed over the Bandelier Tuff at the western boundary of the Laboratory. Well-sorted to poorly sorted sandy and gravelly alluvium occurs in the major drainages of the Pajarito Plateau, ranging up to at least seventy ft thick in some drill holes. Additional, older alluvium occurs on stream terraces on the sides of the canyons, which can be buried by colluvial deposits from the canyon walls. The distribution of alluvial deposits on the mesas has not been mapped, but these deposits are most widespread on the western part of the Pajarito Plateau. Post-Bandelier alluvial units represent a range of ages from 1.1 million years ago to the present. Generally, alluvial units on the surface of the mesas are probably oldest, becoming inactive as drainages were incised into the plateau. Those units lowest in the drainages grade into the active alluvium along canyon bottoms.

The alluvial sediments in the canyon bottoms probably record a complex history of erosion and deposition, in part related to regional climatic changes. In Cabra Canyon, immediately

north of Los Alamos, several cycles of erosion and deposition of sediment have occurred over the last 6,000 years, during which most of the previously stored sediment was eroded. Similar cycles of erosion and deposition have been documented in many parts of the southwestern United States, and the older alluvial units in the vicinity of Los Alamos may also record the effects of regional climatic changes. The mesas of the Pajarito Plateau are also covered in part by deposits of the El Cajete pumice, erupted from El Cajete crater in the Jemez Mountains. Deposits of pumice on the mesas have not been mapped, but at the Laboratory they are generally most common to the south, and the axis of the volcanic dispersal plume is south of Los Alamos County. Available data suggest that the El Cajete pumice is 130,000 to 170,000 years old.

IV. Site Hydrogeology

A. Site Stratigraphy and Ground Water:

Ground water occurs in three modes in the Los Alamos Area: (1) perched water in the shallow alluvium in some of the larger canyons, (2) perched ground water in the volcanic sediments and basalts, and (3) ground water of the main aquifer of the Los Alamos area. Each unit that contains ground water is summarized in the following paragraphs.

1. Perched Ground water in Alluvium

Intermittent and ephemeral stream flows in the canyons of the Pajarito Plateau have deposited alluvium that ranges in thickness to as much as 100 feet. The alluvium in canyons that head on the Jemez Mountains is generally composed of sands, gravels, pebbles, cobbles, and boulders derived from the Tschicoma Formation and Bandelier Tuff on the flank of the mountains. The alluvium in canyons that head on the plateau is comparatively more finely grained, consisting of clays, silts, sands, and gravels derived from the Bandelier Tuff. Saturated hydraulic conductivity of the alluvium typically ranges from 10^{-2} cm/s for a sand to 10^{-4} cm/s for a silty sand.

The alluvium is quite permeable, in contrast to the underlying volcanic tuff and sediments. Ephemeral run-off in some canyons infiltrates the alluvium until downward movement is impeded by the less permeable tuff and sediments, which results in a buildup of a shallow alluvial ground water body. Depletion by evapotranspiration and movement into the underlying rocks limits the horizontal and vertical extent of the alluvial water. The limited saturated thickness and extent of the alluvial ground water preclude its use as a viable source of municipal and industrial supply to the community and the Laboratory. Lateral flow of the alluvial perched ground water is in an easterly, down-canyon direction. Tracer studies in Mortandad Canyon have shown that the velocity of water ranges from about 60 ft/day in the upper reach to about 7 ft/day in the lower reach of the canyon.

The water quality in the alluvial perched ground water is variable, depending on the location and history of effluent discharges. In Mortandad Canyon, for example, plutonium concentrations fluctuate up and down in response to variations in treatment plant effluent and storm run-off water, which cause some dilution of the shallow alluvial perched ground water. Tritium concentrations have fluctuated

almost in direct response to the average annual concentration of tritium in the TA50 effluent, with a lag time of about 1 yr.

2. Perched Water in Volcanic Sediments and Basalts

Perched water bodies occur in the conglomerates and basalts beneath the alluvium in the mid and lower reaches of Pueblo and Los Alamos canyons and in the lower reach of Sandia Canyon. Depth to perched water ranges from about 90 feet in the midreach of Pueblo Canyon to about 450 feet in lower Sandia. The vertical and lateral extent of the perched ground water, the nature and extent of perching units, and the potential for migration of perched water to the main aquifer is not fully understood.

Patterns of chemical quality and water level measurements indicate that the lower perched ground water in Pueblo Canyon is hydrologically connected to the stream in Pueblo Canyon. Water from this perched ground water discharges at the base of the basalt at Basalt Spring, which is off LANL property in lower Los Alamos Canyon on the San Ildefonso Pueblo. The rate of movement of the perched ground water in this vicinity has been estimated at about 60 ft/day or about 6 months from recharge to discharge.

It is unknown whether the perched water systems are hydraulically interconnected. Available data, however, suggest that most of the systems are of limited extent: testing of the perched system in mid-Pueblo Canyon resulted in depletion of the perched ground water after about an hour's pumping at 2 to 3 gal./min. Perched water was encountered in mid-Los Alamos Canyon during the drilling of the Otowi-4 supply well, but it was not reported in an adjacent well (Test Well 3) located 300 feet to the east. However, Test Well 3 was drilled with a cable tool rig in 1947 and the driller may not have noticed the perched ground water if it was present.

Some perched water occurs in volcanics on the flanks of the Jemez Mountains off-site to the west of LANL. This water discharges in several springs (including American and Armistead springs) and provides flow for the gallery in Water Canyon. The gallery contributed to the Los Alamos water supply for 41 years, producing 23 to 96 million gallons annually.

3. Ground Water in the Main Aquifer

The main aquifer of the Los Alamos area is the only aquifer capable of large-scale municipal water supply. In 1989, water for LANL, the communities of Los Alamos and White Rock, and Bandelier National Monument was supplied from 11 deep wells in three well fields. The wells are located on the Pajarito Plateau and in Los Alamos and Guaje canyons east of the plateau. Municipal and industrial water supply during 1992 was 1.43 billion gallons, with individual well yields ranging from about 175 to 1,400 gpm.

The surface of the main aquifer rises westward from the Rio Grande within the Santa Fe Group into the lower part of the Puye Conglomerate beneath the central

and western part of the plateau. The depths to water below the mesa tops range from about 1,200 feet along the western margin of the plateau to about 600 feet at the eastern margin. The main aquifer is separated from the water in the alluvium and perched water in the volcanics by 350 to 620 feet of tuff and volcanic sediments. The main aquifer exhibits artesian conditions in the eastern part along the Rio Grande. Continuously recorded water level data collected in test wells since the fall of 1992 indicate that, throughout the plateau, the main aquifer responds to barometric and earth tide effects in the manner typical of confined aquifers.

The exact source of recharge to the main aquifer is unknown. Three sources of recharge are proposed: infiltration of run-off in canyons, underflow from the Valles Caldera through the Tschicoma Formation, and infiltration on mesas. However, a large quantity of hydrologic, structural, and geochemical data indicate that the caldera may not serve as an appreciable source of recharge to the main aquifer. Furthermore, natural recharge through undisturbed Bandelier Tuff on the mesa tops is believed to be insignificant, and few or no data exist to support an evaluation of canyon run-off as a recharge source. It is inferred that major recharge of the main aquifer occurs from the west because the piezometric surface slopes downward to the east. Water level elevations suggest that ground water flows from the Jemez Mountains east and east southeast toward the Rio Grande, where a part is discharged into the river through seeps and springs. Springs fed by the main aquifer discharge an estimated 4,300 to 5,000 acre-ft of water annually into White Rock Canyon along an 11-mile reach between Otowi Bridge at State Road 502 and the mouth of Rito de Frijoles.

The hydraulic gradient of the aquifer averages about 60 to 80 ft/mi within the Puye Conglomerate but increases to 80 to 100 ft/mi along the eastern edge of the plateau as the water in the aquifer enters the less permeable sediments of the Santa Fe Group. The rate of movement of water in the upper section of the aquifer varies, depending on the materials in the aquifer. Aquifer tests indicate that the movement ranges from 20 ft/yr in the Tesuque Formation to 345 ft/yr in the more permeable Puye Conglomerate.

In an effort to better understand the nature of recharge to the main aquifer in the Los Alamos area, a series of isotope and age-dating measurements on selected water samples has been initiated LANL and other DOE researchers. To date, low detection limit tritium analyses have been completed on 12 samples from springs in White Rock Canyon and on 5 samples from wells into the main aquifer.

The values for tritium in the ground water range from less than detectable to about 7 pCi/L. The values are all less than values for tritium in contemporary precipitation (about 30 to 60 pCi/L) and much less than the roughly 700 pCi/L that would be present now in water precipitated in northern New Mexico during 1962 and 1963, when tritium from atmospheric nuclear weapons testing was at its maximum. The conclusion is that the water from the main aquifer cannot contain any significant component of recharge from water precipitated during the last several decades. The inference is that the water in the aquifer considerably predates the period when nuclear weapons were tested in the atmosphere.

Preliminary interpretation of ^{14}C data for samples from the same five deep wells indicate that the water ranges in age from several thousand years to more than 10,000 years.

4. Hydrologic Properties and Conditions of the Bandelier Tuff

At the central portion of LANL, there is in excess of 1,000 feet of unsaturated volcanic tuff, sediments, and basalts of the Bandelier Tuff, the Puye Conglomerate, and the basaltic rocks of Chino Mesa. Numerous investigations focusing on hydrologic characterization of the upper 100 feet of the Bandelier Tuff have been conducted in the Los Alamos area since the 1950s. The vadose zone below about 100 feet has not been adequately characterized.

Most of the initial investigations of hydrogeologic properties of the Bandelier Tuff have been conducted on samples of crushed or disturbed tuff. Hydrologic property tests conducted since the mid-1980s largely have been on undisturbed cores.

Physical characteristics of the tuff that affect fluid flow result primarily from the degree of welding and jointing. The degree of welding, which varies markedly within and between tuff units, influences the nature and variability of hydrologic characteristics. Welding results in increased density, decreased porosity, and decreased hydraulic conductivity of the rock matrix. However, welded tuffs tend to be more highly fractured and jointed than nonwelded tuffs, and the overall permeability of the welded tuff may be locally enhanced.

Porosity measurements range from 20% to 74% by volume, generally decreasing with increasing degree of welding. A great deal of the high porosity occurs when pumice fragments are incorporated in the tuff. The higher porosities are comparable to those of the upper ranges found in fine clays. Such high porosities, however, are unusual for indurated materials. Extreme changes in porosity over a short vertical distance have been observed.

A number of hydraulic properties of the Bandelier Tuff vary with changing moisture content. The tuff is only partially saturated throughout LANL, even beneath stream channels containing alluvial perched ground water systems. The moisture contents of the tuff beneath mesa tops are very low, typically less than 5% by volume. Tuff moisture contents are higher beneath disturbed soils than beneath undisturbed soils and, generally, moisture content decreases with depth. At sites with relatively high near-surface moisture contents, the volumetric moisture content decreases rapidly with depth to less than 5%. Moisture contents of the tuff beneath the canyon bottoms are considerably higher than those beneath the mesas, typically ranging from 20% to 50% by volume. Field studies in Mortandad, Sandia, and Potrillo canyons show that moisture content varies greatly with depth, depending on texture. Generally, moisture content decreases with depth below stream channels.

The relationship between moisture content and soil-water potential has been obtained from undisturbed mesa top cores at TA-54. The data indicate (1) extremely high residual moisture contents, ranging up to 80%, and (2) a low air-entry pressure

head. Test results indicate that at TA-49 specific retention (residual moisture content) ranged from 11% to 27%. These latter results are fairly consistent with recent tests on undisturbed tuff samples in Mortandad Canyon. However, detailed analyses in Mortandad Canyon show that there are significant differences in moisture retention characteristics between and within formational units. One report determined the energy relationship with moisture content of a moderately welded tuff. The saturated moisture content of the tuff was about 41% by volume. When moisture contents are below about 4%, there is no movement of water; from about 4% to 8%, moisture is redistributed by diffusion; from about 8% to 23%, distribution is by gravity and capillarity; and above 23%, movement is by drainage from gravity.

Hydraulic conductivity is the parameter that describes rate of flow of fluid through a porous medium in response to a hydraulic gradient; it is a function of both the fluid and the medium. Saturated hydraulic conductivities have been measured for tuff many times under laboratory and field conditions, with values ranging from 1.9 x 10^{-5} to 2.3 x 10^{-2} cm/s (0.054 to 6.5 ft/day), comparable to those of silty sand. In general, nonwelded tuff has greater saturated conductivity than welded tuff, and horizontal conductivities are greater than vertical conductivities. Unsaturated hydraulic conductivities may be many orders of magnitude lower, typically ranging from 10^{-6} to 10^{-11} cm/s, depending on in-situ moisture contents.

Joints formed by cooling of the ash flows or by later faulting typically divide the tuff into irregular blocks. The major joint sets are vertical or nearly vertical, with dips greater than 70°, and joint frequency increases with the degree of welding. Joints and fractures in moderately welded tuffs generally terminate in nonwelded tuffs. The joints are often vertically limited to a single ash flow or ash fall unit. Joint apertures range from closed to open as much as several centimeters. The joints are commonly filled with caliche near the surface, grading downward to clay, and may be open to depths greater than 30 feet. Examination of cores obtained from horizontal drilling beneath a waste disposal site at TA54 showed that about 80% of the joints were filled or plated with clay or secondary mineralization.

The movement of moisture in the Bandelier Tuff is governed by a complex interaction of many factors. Climatic and site-specific land use factors control the supply of moisture available for infiltration, and hydrogeological characteristics control the redistribution of moisture in the tuff. Perhaps the most significant aspect of the tuff is its ability to act as a sponge. Most of the pore spaces in the tuff are of capillary size and have a strong tendency to hold water against gravity by surface tension forces. Thus, a slug of water entering dry tuff is slowed or retained by capillary tension forces.

Water moves through the tuff in two ways: (1) by liquid and vapor movement through the pores of the tuff and (2) by movement through open, interconnected joints. When moisture content is low, movement in the vapor (gaseous) phase becomes more preponderant, and liquid movement through the rock matrix is extremely slow. Water entering open, interconnected joints might move rapidly downward through the joints; however, to maintain continuous flow through the fractures, it is likely that large volumes and a continuous supply of water are

necessary because of the sponge effect of the adjacent tuff that forms the wall of the fracture. The existence of a low-permeability coating on the wall of the fracture, on the other hand, could increase the travel depth of water flowing through fractures. If the joints are not continuous through contacts between subunits of the tuff, the water might be perched above the contact and would tend to move laterally, potentially to the walls of canyons.

C. **Is the uppermost aquifer hydraulically connected with deeper aquifer? Describe the connecting strata. If no, describe the Aquitard:**

The upper aquifer is connected with the main aquifer. See the previous sections on site geology.

D. **Was the site investigation and/or data collection conducted by the facility performed by a qualified geologist? (265.90.c.) (Y/N)**

Yes

E. **Does the owner/operator maintain documentation and/or the raw data from the site hydrogeologic assessment? (Y/N)**

Yes

F. **Has the owner/operator prepared a regional map of the area and delineate the facility? (Y/N)**

Yes

G. **Has the owner/operator prepared a regional hydrogeologic map? (Y/N)**

Yes

H. **If yes, does this hydrogeologic map indicate: 1) Major areas of recharge/discharge? 2) Regional ground water flow direction? 3) Potentiometric contours which are consistent with observed water level elevations?**

1) Yes, but the exact recharge area for the main aquifer and the perched intermediate aquifer have not been completely identified.
2) Yes
3) Yes, but because of the small number of wells utilized for potentiometric contouring, the results are not adequate.

I. **Has the owner/operator prepared a facility site map? (Y/N)**

Yes

J. **Did the owner/operator present geologic cross sections of the site? (Y/N)**
Yes

SECTION 3-- MONITORING WELL SYSTEM

I. General System Status

X	Permitted	____	Interim Status
____	Detection	____	Detection
____	Compliance	____	Assessment
X	Corrective Action		

II. Has at least one monitoring well been installed in the uppermost aquifer hydraulically up-gradient from the limit of the waste management area? 265.91(a)(1) (Y/N)

No, the facility has filed ground water monitoring waivers for each regulated unit requiring ground water monitoring.

A. Are ground water samples from the uppermost aquifer, representative of background ground water quality and not affected by the facility (as ensured by proper well number, locations and depths?) (Y/N)

No

B. Is designated up-gradient well(s) confirmed as up-gradient? (Y/N)

Not Applicable

III. Have at least three monitoring wells been installed hydraulically down-gradient in the uppermost aquifer at the limit of the waste handling or management area? (Y/N)

No, the facility has filed ground water monitoring waivers for each regulated unit requiring ground water monitoring.

A. Do well number, locations and depths ensure prompt detection of any statistically significant amounts of HW or HW constituents that could migrate from the waste management area to the uppermost aquifer? (Y/N)

No

B. Are designated down-gradient well(s) confirmed as down-gradient? (Y/N)

Not Applicable

IV. Have the locations of the waste management unit/areas been verified to conform with information in the ground water program? (Y/N)

No, the facility has filed ground water monitoring waivers for each regulated unit requiring ground water monitoring.

A. If the facility contains multiple waste management components, is each component

adequately monitored? (Y/N)

No

V. **Do the numbers, locations, and depths of the ground water monitoring wells agree with the data in the ground water monitoring system program? If "No", explain discrepancies.** (Y/N)

No, the facility has filed ground water monitoring waivers for each regulated unit requiring ground water monitoring.

LANL LOCATION MAP

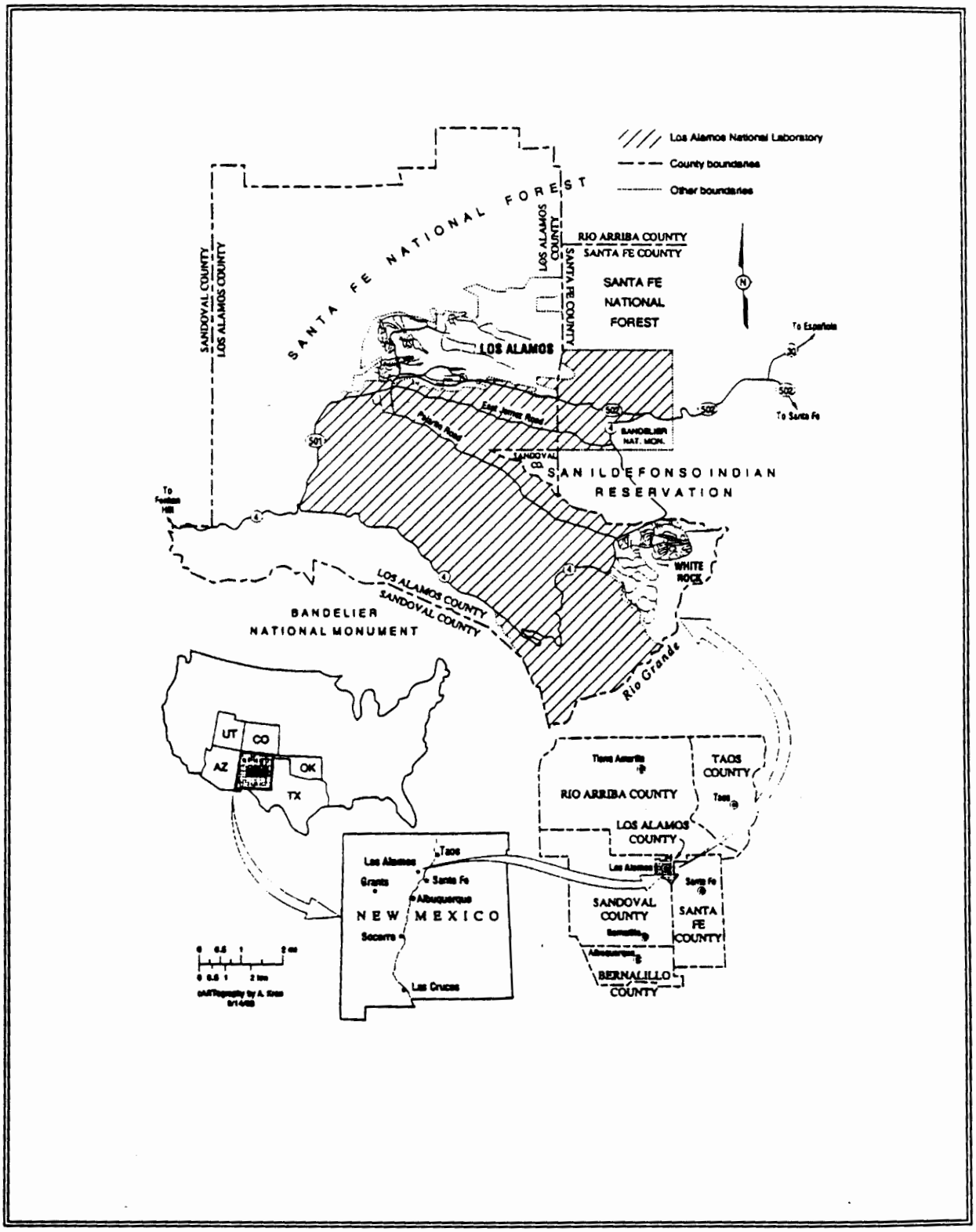


FIGURE 1 -- LANL Comprehensive Ground Water Monitoring Evaluation Report

GENERAL TOPOGRAPHIC FEATURES

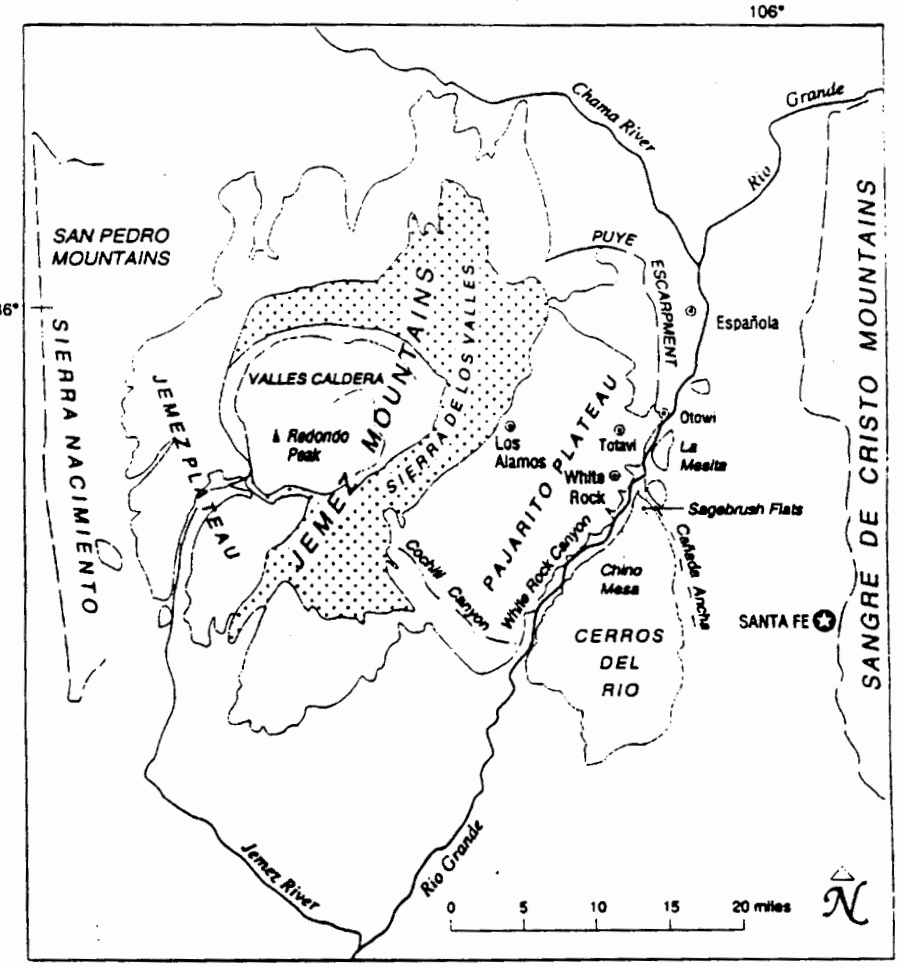


FIGURE 2 -- LANL Comprehensive Ground Water Monitoring Evaluation Report

GENERALIZED GEOLOGIC CROSS-SECTION

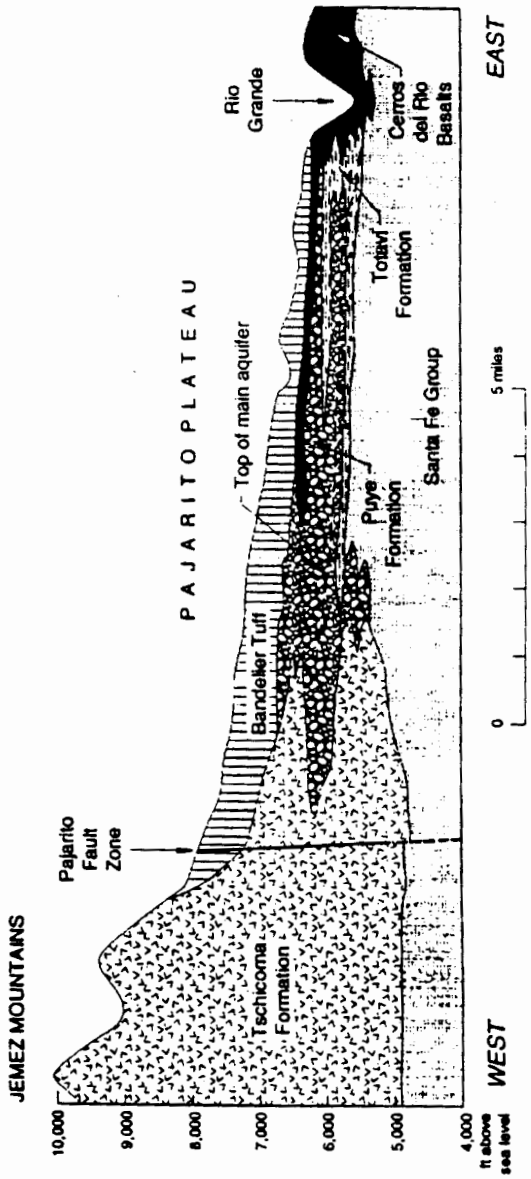
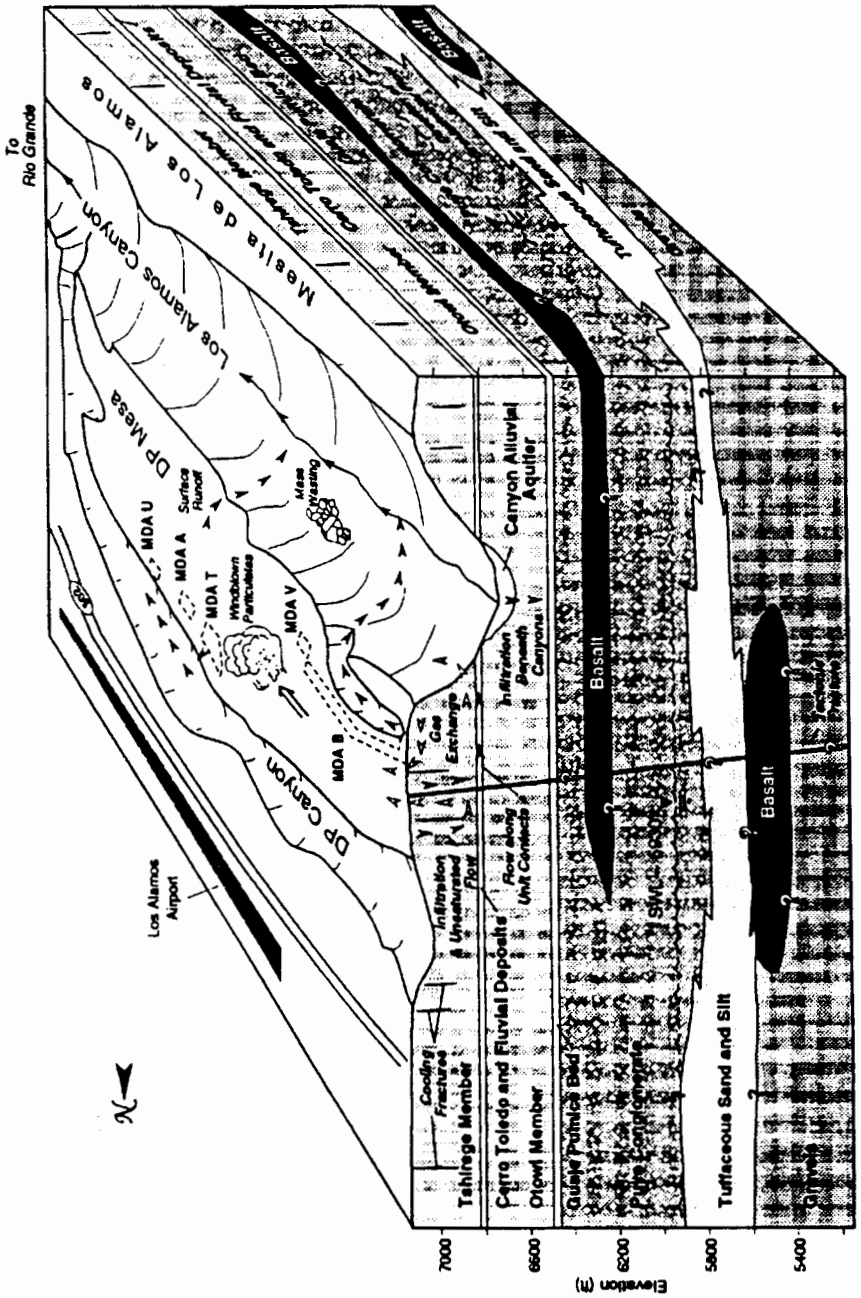


FIGURE 3 -- LANL Comprehensive Ground Water Monitoring Evaluation Report

GENERALIZED 3-D CROSS-SECTION



Three-dimensional conceptual model

FIGURE 4 -- LANL Comprehensive Ground Water Monitoring Evaluation Report

APPENDIX C

TA-22, BUILDING 91 WASTEWATER TREATMENT SLUDGE CHEMICAL WASTE DISPOSAL REQUEST AND HIGH SPEED CIRCUIT ETCH WASTE ANALYSES

EM-7 USE ONLY
CWDR Identification Number 100207C

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

RECEIVED MAR 0 9 1992

CHEMICAL WASTE DISPOSAL REQUEST

Provide all information requested on both sides of this form in black or blue ink, inadequate information will result in processing delays.
Send completed form to ATTN: CWDR, MS J593. Any telephone inquiries should be directed to 5-4000.

1. Div/Group	2. Telephone	3. Mail Stop	4. Tech Area	5. Building	6. Room
M-7	7-4141	P950	22	91	B-111

7. Type of Accumulation Area
☐ Satellite ☑ Less than 90 days (Start date 2/27/92) ☐ Non RCRA Only

8. Area designation
Is the waste generated or accumulated in a radiological material management area? ☐ YES ☒ NO
Is waste accumulated or stored in a security area? ☒ YES ☐ NO

- **THE WASTE MANAGEMENT GROUP (EM-7) WILL NOT PROCESS THIS FORM UNLESS ALL APPLICABLE BOXES HAVE BEEN COMPLETED, INCLUDING THE REQUIRED SIGNATURE.**

- For SPENT CHEMICALS or PROCESS WASTES, provide the information required in box 9. Attach original copy of approved WPRF if this is the first time this waste is being submitted for disposal.
- For DISCARDED NEW or UNUSED CHEMICALS, provide the information required in box 10 (page 2). For all trade name products, attach manufacturer's MSDS.
- Send this form to the Waste Management Group (EM-7) at MS J593. Send original to EM-7; keep photocopy for your records.
- For RADIOACTIVE or RAD-CONTAMINATED CHEMICALS, provide a Radioactive Solid Waste Disposal (RSWD) Record form (10-2A).

Indicate the unit of measure used for both the volume of containers and gross weight in the following manner:
G = Gallons L = Liters F = Cubic Feet P = Pounds K = Kilograms
Indicate type of storage container in the following manner:
DM = Metal Drums DF = Fiber or Plastic Drums (TP = Portable Tanks) DT = Dump Truck CY = Cylinders CW = Wooden Boxes CF = Fiber or Plastic Boxes

9. Indicate waste(s) requested for pickup below:

	CONTAINER							
	Number	Volume	UNIT	Gross Weight	UNIT	Type	Brief Description of Waste	WPRF Number
A	7	~~330~~	~~G~~	~~1500~~	~~P~~	TP	30% Ferric Chloride - 2% Calcium	03017
B	7	55	G	400	P		Hydroxide - 60% water "Copper Etchant"	
C							(Sludge Left after Treatment)	
D								
E								
F								
G								
H								
I								

GENERATOR CERTIFICATION: To the best of my knowledge, I certify that the information provided above is correct. I also understand that I may be liable for state and federal prosecution by intentionally providing false information.

Generator's Name (last, first, mi)	Z Number	Signature	Date
Fresquez, Robert	083019	Robert Fresquez	3-9-92

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional)	Group Waste Coordinator (last,first,mi)	Mail Stop
		P950

NAME: ROBERT F FRESQUEZ	GROUP: M7	MS: P950

CHEMICAL WASTE DISPOSAL REQUEST

EM-7 HAS RECEIVED YOUR CHEMICAL WASTE DISPOSAL REQUEST. IF CLARIFICATION ON ANY DOCUMENTATION IS NEEDED, EM-7 WILL CONTACT YOU OR YOUR WASTE MANAGEMENT COORDINATOR.

THE FOLLOWING CWDR REFERENCE NUMBER HAS BEEN ASSIGNED TO YOUR WASTE DISPOSAL REQUEST. ANY QUESTIONS TO EM-7 REGARDING THIS REQUEST SHOULD REFERENCE THIS NUMBER. INQUIRIES CAN BE MADE AT **665-4000.**

CWDR REFRENCE NUMBER: *** 1002070 *****

TA: 22	**BUILDING:** 91	**ROOM:** B111
WASTE COORDINATOR Z#:	**CWDR LOGGED IN:**	02-APR-92

ITEMS:

30% FECL3,2% CA(OH)2,60% H2O
30% FECL3,2% CA(OH)2,60% H2O
30% FECL3,2% CA(OH)2,60% H2O
30% FECL3,2% CA(OH)2,60% H2O
30% FECL3,2% CA(OH)2,60% H2O
30% FECL3,2% CA(OH)2,60% H2O
30% FECL3,2% CA(OH)2,60% H2O

[illegible] ID #: NMU89[illegible]	[illegible] #: [illegible]
S H I P T O	S H I P F R O M
[illegible] PHONE 667-7579	Requestor: [illegible]
MICAL AND MIXED WASTE OPERATIONS	[illegible] #: 383019
ALAMOS NATIONAL LABORATORY	Group: [illegible]
ATION	[illegible]: [illegible]
A-54 X AREA C X AREA G	Building: [illegible]
A-90 ___ BLDG 1 ___ BLDG 5[illegible]	Room: [illegible]
	Phone: [illegible]
TRANSPORTER EM 7	

CUT DESCRIPTION	CONTAINERS NO	TYPE	TOTAL QUANTITY
"NQ" WASTE CORROSIVE LIQUID, N.O.S. (FERRIC CHLORIDE), CORROSIVE MATERIAL UN1760 D002	7	DM	385-gal 55 gal

ADDITIONAL DESCRIPTIONS FOR MATERIALS LISTED ABOVE

SPECIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION

Picked up

I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT AND THAT THIS TRAN[illegible] CONTAINS NO HAZARDOUS MATERIALS OTHER THAN THOSE LISTED

PRINTED/TYPED NAME	SIGNATURE	DATE
Manuel R. Lujan	Manuel R. Lujan	5-21-[illegible]

THIS IS TO CERTIFY THAT THE ABOVE-NAMED MATERIALS ARE PROPERLY DESCRIBED, PACKAGED, MA[illegible], AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DOT.

TRANSPORTATION

TRANSPORTER ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

PRINTED/TYPED NAME	SIGNATURE	DATE
Billy Romero	Billy Romero	5/21/[illegible]

LOS ALAMOS
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE FORM

EM-8 USE ONLY
Reference Number
05654

Complete both sides of this form using a black or blue pen. Incomplete forms will be rejected. Send form to ATTN: WPF, MS K490.

Division/Group	Telephone	Mail Stop	Technical Area	Building	Room
M-7	7-4141	P950	22	91	B111

Method of Characterization
- [x] *Knowledge of Process* (KOP)
- [x] MSDS attached (optional)
- OR -
- [ ] *Chemical/Physical Analysis* (specify below)
- [ ] Request for analysis
- [ ] Analysis attached

Waste Category *(Choose one or more of the categories below that most accurately describe your waste)*

[ ] Flammable	[ ] Pesticide	[ ] Photographic	[ ] Spent coolant	[ ] Plastics
[ ] Combustible	[ ] Beryllium	[ ] Sanitary	[ ] Aerosol cans	[ ] Filter media
[ ] High explosive	[ ] Asbestos	[ ] Radiochemistry	[ ] Motor oil	[ ] Vacuum filter media
[ ] DOT oxidizer	[ ] Solvent	[ ] Paint waste	[ ] Pump oil	[ ] Cement paste
[ ] Pyrophoric	[ ] Waste rags	[ ] Laboratory trash	[ ] Capacitor oil	[ ] Nonsalvageable
[ ] Cyanide	[ ] Glass	[ ] Metallurgic	[ ] UST remediation	[ ] Nonrecycleable
[ ] Heavy metal	[ ] Plating solution	[ ] Scrap metal	[ ] Contaminated soils	[ ] Building debris
[x] Corrosive	[x] Etchant	[ ] Medical/Biological	[ ] Environmental/SWMU	[ ] Firing site debris

General Description *(provide a general description of the waste and/or waste-generating process below)*

High Speed Circuit Etch (Ferric chloride). Has some traces of Hydrochloric Acid, Some Cadmium ~ 6.1 PPM, Also chrome 22.7 PPM. *(See additional comments on BA

Waste Description

Form	Ignitability (F)	Corrosivity (pH)	Reactivity	PCBs
[ ] Solid	[ ] < 100°	[x] 2.0 or less	[ ] Unstable	[ ] < 50 ppm
[ ] Semisolid/sludge	[ ] 100° to 139°	[ ] 2.1 to 12.4	[ ] Water reactive	[ ] 50 to 500 ppm
[ ] Absorbed liquid	[ ] 140° to 200°	[ ] 12.5 or greater	[ ] Cyanides	[ ] > 500 ppm
[x] Liquid	[ ] > 200°	[ ] Not aqueous	[ ] Sulfides	[x] None
[ ] Gas cylinder or vessel	[x] Not ignitable		[ ] Shock sensitive	
[ ] Multilayered			[ ] Class A or B explosive	
[x] Suspended solids			[x] Nonreactive	
[ ] Powder or ash				

Waste Origination

A. Is this waste generated in a radiation controlled area? [ ] Yes [x] No

B. If yes, is the waste generated or accumulated in a properly defined, registered radioactive materials management area (RMMA)? (RMMA # _____) [ ] Yes [ ] No

C. If A is yes and you have determined that your waste is nonradioactive, provide justification in the additional comments section on the reverse side of this form.

Radioactivity

[x] Nonradioactive [ ] Suspect [ ] Radioactive

Activity Measure	Radiation Type	Half-life
[ ] ≤ 2.0 nC/g	[ ] alpha	[ ] t½ < 20 yr
[ ] > 2.0 nC/g	[ ] beta	[ ] t½ ≥ 20 yr
[ ] > 10.0 nC/g	[ ] gamma	
[ ] > 100 nC/g	[ ] tritium	

WASTE GENERATOR CERTIFICATION: *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Waste Generator's Name (last, first, middle)	Z Number	Signature	Date
Fresquez Robert F.	083019	Robert Fresquez	4/23/93

If your waste management coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional). —>	Name (last, first, middle)	Mail Stop
	Vasilik, Gerald D.	P950

Form 1346 (6/92) *Complete Reverse Side* ☛ Page 1 of 2

RECEIVED APR 26 1993

Toxic Metals *(Indicate if each of the following heavy metals exists in your waste at the posted concentrations)*

	None	< 5.0 ppm	≥ 5.0 ppm	TCLP	Other
arsenic	☑	☐	☐	☐	☐
barium	☑	☐	☐	☐	☐
cadmium	☑	☐	☑	☐	☐
chromium	☑	☑	☐	☐	☐
lead	☑	☐	☐	☐	☐
mercury	☑	☐	☐	☐	☐
nickel	☑	☐	☐	☐	☐
selenium	☑	☐	☐	☐	☐
silver	☑	☐	☐	☐	☐
thallium	☑	☐	☐	☐	☐

	None	< 100.0 ppm	≥ 100.0 ppm	TCLP	Other
arsenic	☑	☐	☐	☐	☐
barium	☑	☐	☐	☐	☐
cadmium	☑	☐	☑	☐	☐
chromium	☑	☑	☐	☐	☐
lead	☑	☐	☐	☐	☐
mercury	☑	☐	☐	☐	☐
nickel	☑	☐	☐	☐	☐
selenium	☑	☐	☐	☐	☐
silver	☑	☐	☐	☐	☐
thallium	☑	☐	☐	☐	☐

Organic Compounds *(Indicate if each of the following organic compounds exists in your waste at the posted concentrations)*

	None	< 0.5 ppm	≥ 0.5 ppm	TCLP	Other
benzene	☑	☐	☐	☐	☐
carbon tetrachloride	☑	☐	☐	☐	☐
chlorobenzene	☑	☐	☐	☐	☐
chloroform	☑	☐	☐	☐	☐
cresol	☑	☐	☐	☐	☐
1,4-dichlorobenzene	☑	☐	☐	☐	☐
1,2-dichloroethane	☑	☐	☐	☐	☐
1,1-dichloroethylene	☑	☐	☐	☐	☐
2,4-dinitrotoluene	☑	☐	☐	☐	☐
hexachlorobenzene	☑	☐	☐	☐	☐
hexachlorobutadiene	☑	☐	☐	☐	☐
hexachloroethane	☑	☐	☐	☐	☐
methyl ethyl ketone	☑	☐	☐	☐	☐
nitrobenzene	☑	☐	☐	☐	☐
pentachlorophenol	☑	☐	☐	☐	☐
pyridine	☑	☐	☐	☐	☐
tetrachloroethylene/perchloroethylene	☑	☐	☐	☐	☐
trichloroethylene	☑	☐	☐	☐	☐
2,4,5-trichlorophenol	☑	☐	☐	☐	☐
2,4,6-trichlorophenol	☑	☐	☐	☐	☐
vinyl chloride	☑	☐	☐	☐	☐

	None	< 0.5 ppm	≥ 0.5 ppm	TCLP	Other
benzene	☑	☐	☐	☐	☐
carbon tetrachloride	☑	☐	☐	☐	☐
chlorobenzene	☑	☐	☐	☐	☐
chloroform	☑	☐	☐	☐	☐
cresol	☑	☐	☐	☐	☐
1,4-dichlorobenzene	☑	☐	☐	☐	☐
1,2-dichloroethane	☑	☐	☐	☐	☐
1,1-dichloroethylene	☑	☐	☐	☐	☐
2,4-dinitrotoluene	☑	☐	☐	☐	☐
hexachlorobenzene	☑	☐	☐	☐	☐
hexachlorobutadiene	☑	☐	☐	☐	☐
hexachloroethane	☑	☐	☐	☐	☐
methyl ethyl ketone	☑	☐	☐	☐	☐
nitrobenzene	☑	☐	☐	☐	☐
pentachlorophenol	☑	☐	☐	☐	☐
pyridine	☑	☐	☐	☐	☐
tetrachloroethylene/perchloroethylene	☑	☐	☐	☐	☐
trichloroethylene	☑	☐	☐	☐	☐
2,4,5-trichlorophenol	☑	☐	☐	☐	☐
2,4,6-trichlorophenol	☑	☐	☐	☐	☐
vinyl chloride	☑	☐	☐	☐	☐

Hazardous Constituents *(Identify hazardous constituents for F- and K-listed wastes and substances causing waste to exhibit a characteristic)*

Additional Comments *(Provide comments regarding the chemical or radiological nature of the waste)*

* Attach is a memo From Ray Thuma, EM-7. He requested that we resubmit a W.P.F. - so we could include Cadmium and Chrome To The Profile. This New Profile will replace "(00293)" profile That is currently on file.

Do not write in this box - EM-8 use only

Waste Classification

- ☐ Non-RCRA waste
- ☐ RCRA-regulated solid waste
- ☑ RCRA-regulated hazardous waste
- ☐ Radioactive only
- ☐ PCB
- ☐ non-PCB TSCA waste
- ☐ asbestos
- ☐ municipal refuse
- ☐ nonhazardous chemical waste
- ☐ administratively controlled waste
- ☐ sanitary/industrial sludges
- ☑ hazardous waste
- ☐ mixed low-level waste
- ☐ mixed transuranic waste
- ☐ low-level waste
- ☐ transuranic waste

RCRA Code 1	RCRA Code 2	RCRA Code 3	RCRA Code 4	RCRA Code 5	RCRA Code 6	RCRA Code 7	RCRA Code 8
D006							

EM-8 Reviewer's Signature	Date	Cost Center/Program Code for Analysis	Reference Number
[illegible]	[illegible]		05[illegible]

Form 1346 (6/92)

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Robert Fresquez, M-7, MS P950

DATE: March 24, 1993

FROM: Ray Thuma, EM-7 CMWO RPT

MAIL STOP/TELEPHONE: J593/7-7579

SYMBOL: EM-7L-93-162

SUBJECT: **UPDATE TO WASTE PROFILE NUMBER 00293**

The results of analysis at the disposal facility indicated that the waste disposed of under profile number 00293 contained cadmium and chrome. The following results were obtained:

Cadmium	6.1 ppm
Chrome	22.7 ppm

These levels are high enough to require that the additional waste codes D006 (Cadmium) and D007 (Chrome) be applied to this waste. Please update your profile to reflect these additions.

RT:sc

Cy: Manifest File DTID #93102, w/att.
John Kelly, EM-7, MS J593, w/o att.
Juan Corpion, EM-8, MS K490, w/att.
EM-7 Group Office Files, MS E517, w/o att.
EM-7L Office Files, MS J593, w/o att.

APPENDIX D

JULY 6, 1992 MEMORANDUM - RECLASSIFICATION OF TREATMENT SLUDGES

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Anthony Drypolcher, EM-7, MS E517 — DATE: July 6, 1992

THRU: Ken Hargis, EM-8, MS K490 — MAIL STOP/TELEPHONE: K490/5-0455

FROM: Juan Corpion, EM-8 — SYMBOL: EM-8:92-1797

SUBJECT: **EFFORT IN RECLASSIFICATION OF TA-50-1 TREATMENT SLUDGES**

The installation of a self-contained, positive displacement refrigerated sampler at the headworks of the TA-50 Low-Level Wastewater Treatment Facility (LLWTF) has proven very successful in demonstrating the facility no longer generates mixed wastes. Since May 4, 1992, analytical results from the influent have demonstrated that hazardous waste constituents have been detected below exclusion levels for solvents in 40 CFR 261.3. In addition, this effort has been able to show that only trace concentrations of U-listed hazardous waste constituents (i.e., no K- or P-) have been detected demonstrating that such contaminants are either the result of chemical processes or *de minimus* losses consistent with 40 CFR 261.3(a)(2)(iv). I recognize that the Waste Management Group's (EM-7) efforts were the result of extensive planning and coordination with the Environmental Protection Group since November 1991 and are coincident with our recent difficulties involving mixed wastes.

I believe that, as a result of the Laboratory Administrative Requirements and increased awareness of waste generators and line management, a *process change* has occurred and hazardous wastes are not being discharged to the LLWTF. However, because of evidence that listed hazardous wastes were discharged historically to the facility, the Laboratory decided in 1986 that the sludges should be classified as solvent-contaminated (i.e., F001, F002, and F005) mixed wastes. The sampling procedures and analytical protocols employed since May 4, 1992 provide defensible data able to determine whether the facility generates a mixed waste. Until the Environmental Protection Agency (EPA) finalizes the proposed *mixture* and *derived-from* rules (expected by April 1993), I recommend that EM-7 manage treatment sludges generated prior to May 4, 1992 as mixed wastes and begin gathering data for a delisting demonstration.

There are two *points of compliance* to be considered at the LLWTF: 1) headworks to the facility (i.e., the Grit Chamber); and 2) low-level treatment sludges (i.e., filter press). The EPA recognized during promulgation of 40 CFR 261 that trace contamination by listed solvents in wastewaters would occur in rinse waters from routine maintenance and cleaning operations. EPA set concentration limits of 1 and 25 parts per million for many of these solvents based on minimal risk to groundwater contamination [40 CFR 261.3(a)(iv)(2)(A) and (B)] (see table 1). EPA allows for *de minimus* losses of P- and U-listed chemical products (i.e., 40 CFR 261.33) in Laboratory operations from routine operations such as washing of glassware [(40 CFR 261.3(a)(2) (iv)(D)]. Hence, any solid waste generated from the treatment of wastewaters containing solvents below posted concentration levels or

contaminants resulting from *de minimus* losses are excluded from the *mixture* and *derived-from* rules and would not be a hazardous waste.

The EPA allows a wastewater treatment facility to demonstrate that sludges are not hazardous waste by calculating the concentration of contaminants based on the total weekly flow of influent into the headworks [40 CFR 261.3(a)(2)(iv)]. This is a mass balance calculation involving no sampling and analysis. However, because LLWTF sludges were determined to be mixed wastes in 1986, the Laboratory had to demonstrate by detailed analysis that a process change had occurred and that influent contaminants did not cause the treatment sludges be subject to RCRA as a result of the *mixture* or *derived-from* rule. To be able to defend our findings, sampling procedures and analytical protocols had to be consistent with SW-846 (40 CFR 265.35). Group EM-7 agreed and began procuring new sampling equipment in December 1991. The results have been promising. Since May 4 there have been no solvents found to exceed posted concentrations and only trace U-listed compounds have been detected within the scope of *de minimus* losses.

Because the potential exists for concentration of Toxicity Characteristic (TC) metals and organics in the treatment sludge (i.e., LLWTF is a generator of solid waste), I have also recommended that an extract by the Toxicity Characteristic Leaching Procedure (40 CFR 261 Appendix II) be analyzed to ensure that no toxic metals or organics exceed the posted regulatory level (see table 2). These analyses will allow the Laboratory to show that the treatment sludges are neither characteristic nor listed mixed wastes.

LANL requires continued treatment for low-level radioactive wastewaters during DOE negotiations with EPA on a mixed waste Compliance Agreement, therefore, I recommend that you continue daily sampling of low-level influent and that you submit batch sludge samples for analysis of TC toxic metals and organics. Once a large database of analytical data, based on the new sampling procedure, is established and no hazardous waste constituents are detected above exclusion or regulated levels, I anticipate a decreased sampling frequency (e.g., weekly or monthly).

If you have any questions regarding this matter, please do not hesitate to call.

JC:KH/gr

Enc. a/s

Cy: L. Gritzo, ADO, w/enc., MS A120
S. Brown, LC/GL, w/enc., MS A187
T. Gunderson, EM-DO, w/enc., MS K491
C. Leasure, EM-9, w/enc., MS K484
S. Hansen, EM-7, w/enc., MS E518
W. Midkiff, EM-7, w/enc., MS E517
Circ. File, w/o enc.

Table 1. Exclusionary Concentration for Listed Wastes in the Influent

Chemical Name	Exclusion Level
carbon tetrachloride	1 ppm
tetrachloroethylene	1 ppm
trichloroethylene	1 ppm
methylene chloride	25 ppm
1,1,1-trichloroethane	25 ppm
chlorobenzene	25 ppm
o-dichlorobenzene	25 ppm
cresols	25 ppm
cresylic acid	25 ppm
nitrobenzene	25 ppm
toluene	25 ppm
methyl ethyl ketone	25 ppm
carbon disulfide	25 ppm
isobutanol	25 ppm
pyridine	25 ppm
chlorofluorocarbons	25 ppm
other listed process wastes or chemical products	1 ppm

Table 2. Maximum Concentration of TCLP Contaminants (D018 through D043 were promulgated on March 29, 1990 and are not currently subject to the Land Disposal Restrictions unless they were derived from listed processes in 40 CFR 261 Subpart D and exceed the exclusionary concentrations in table 1.)

EPA Code	Chemical Name	Regulated Level (mg/L)
D004	arsenic	5.0
D005	barium	100.0
D006	cadmium	1.0
D007	chromium	5.0
D008	lead	5.0
D009	mercury	0.2
D010	selenium	1.0
D011	silver	5.0
D012	endrin	0.02
D013	lindane	0.4
D014	methoxychlor	10.0
D015	toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5-TP	1.0
D018	benzene	0.5
D019	carbon tetrachloride	0.5
D020	chlordane	0.03
D021	chlorobenzene	100.0
D022	chloroform	6.0
D023	o-cresol	200.0
D024	m-cresol	200.0
D025	p-cresol	200.0
D026	cresol	200.0
D027	1,4-dichlorobenzene	7.5
D028	1,2-dichloroethane	0.5
D029	1,1-dichloroethylene	0.7
D030	2,4-dinitrotoluene	0.13
D031	heptachlor	0.008
D032	hexachlorobenzene	0.13
D033	hexachlorobutadiene	0.5
D034	hexachloroethane	3.0
D035	methyl ethyl ketone	200.0
D036	nitrobenzene	2.0
D037	pentachlorophenol	100.0
D038	pyridine	5.0
D039	tetrachloroethylene or perchloroethylene	0.7
D040	trichloroethylene	0.5
D041	2,4,5-trichlorophenol	400.0
D042	2,4,6-trichlorophenol	2.0
D043	vinyl chloride	0.2

APPENDIX E

RECORDS OF SLUDGE DISPOSED IN TA-54 LANDFILL

RSWD

L92000802

1. Waste Originator Information

Date (MM,DD,YY)	Group	TA	Building	Wing	Mail Stop	Phone	Fax
10 06 92	EM-7	50	1	N/A	E-518	7-4301	

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09 19 73	E M C 5 2	4607	M359	EMWCC

2. Waste Characterization and Packaging Information

Waste Profile Request No. 0 4 5 4 1

Hazardous Material Transfer Form No. HM 50713

Waste Code A 7 5

☒ Actual Rad ☐ Mixed Waste ☐ Suspect Rad ☐ Non-Rad

Total Load Volume 1 1 0 0 ☐ Meter3 ☐ Foot3 ☒ Gallons

Estimated Weight 9 1 2 2 ☐ Kilograms ☒ Pounds ☐ Tons

MW Serial No. n/a

TRU Serial No. n/a

Is this a dumpster? ☒ No ☐ Yes If yes, ☐ Compactible ☐ Non-Compactible Dumpster No.

Waste Description: Dewatered Vacuum filter sludge

Radiation Data ~~0.0~~ 0.3 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: TAG # 1251 thru 1270

Package Codes*: 01 - Bulk (Unpackaged); 02 - Wooden Crate; 03 - Drum; 04 - Cardboard Box; 05 - Plastic Bag; 06 - Steel Box; 07 - Shield Cask; 08 - Other (Specify Below)

Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkg.s)	Volume Units**
03	55	G	20	1100	G

Volume Units**: M = Cubic Meters; F = Cubic Feet; G = Gallons

Radionuclide	Amount			Units*	Error			Method**	SS Acct.	Proj. Code
35U	7.38	E	+06	C	0.0	E	+/-	A		
238PU	1.79	E	-02	C	2.1	E	+03	A		
39PU	3.27	E	+03	C	4.2	E	+03	A		
241AM	1.58	E	+02	C	1.1	E	+03	A		
		E	+/-			E	+/-			
		E	+/-			E	+/-			
		E	+/-			E	+/-			
		E	+/-			E	+/-			

Units: C = Curies M = Grams

Methods: A = Analysis M = Measurement C = Calculated E = Estimate

3. WASTE CERTIFICATION

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request Form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-level Radioactive Waste Disposal at TA-54, Area G."

Generator Name (Print)	Signature	Z Number	Date
WM DAVID MOSS	WM David Moss	91973	10-6-92

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Coordinator Name (Print)	Signature	Mail Stop	Phone	Date
~~WM DAVID MOSS~~ LPW	~~WM David Moss~~ LPW	E-518	7-4301	10-6-92

RSWD

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4. HSE-7 APPROVAL (No Waste Can Be Accepted Without Approval Signature)

HSE-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by HSE-7.

HSE-7 Approver (Print or Stamp)	Approver Signature	Date Approved	Date Returned to Generator
J. Minton-Hughes	[signature]	10-8-92	10-8-92

DISPOSITION

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [ ] MW Storage Dome
- [ ] Certified TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received (MM,DD,YY): 1 1 0 2 0 9 2 96

Gross Weight (lbs)	2 0 4 2 0
Tare Weight (-)	1 1 5 0 0
Net Weight	1 8 9 2 0

Vehicle Code

- [ ] Dumpster (01)
- [ ] Dump Truck (02)
- [x] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield Cask (05)
- [ ] HSE-7 Truck (06)
- [ ] Other (Specify Below) (07)

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact: 0 mR/h

Exposure Rate at 1' Meter: <0 mR/h

Driver Signature	HSE-1 Monitor Signature (TA-54)	Non-Conformances?	Non-Conformance Report No.
[signature]	[signature]	[x] No [ ] Yes	

6. Compaction Information

Bale No.	Compaction Date	Bale Volume (m^3)	Pit	Posts	Layer	Pad	Transit Seq. No.	Date Disposed

7. Disposal Location Information

Disposal Date	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
1 0 2 0 9 2	G	N/A	37	N/A	27	8	C

8. Storage Location Information

Storage Date	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director Of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal Operations (Print Name)	Signature	Date
PETER J HERRERA	[signature]	10-21-92

10. Data Management Information

Date Entered in Logbook	Date Entered in Database	Date Entry Verified
1 0 2 1 9 2	1 0 2 8 9 2	1 0 2 8 9 2
Initial [illegible]	[illegible]	Initial [illegible]

RSWD

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1. Waste Originator Information

Date (MM,DD,YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
10 06 92	EM-7	50	1	N/A	E-518	7-4301	n/a

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
0 9 1 9 7 3	EM052	4607	M359	EMWCCto

2. Waste Characterization and Packaging Information

Waste Profile Request No. 0 4 5 4 1 1

Hazardous Materials Transfer Form HM No. 50712

Waste Code A 7 5

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume 1 1 0 0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight 9 1 9 8 ☐ Kilograms ☒ Pounds ☐ Tons

Serial No. NA

Is this a dumpster? ☐ Yes ☒ No
If yes, ☐ Compactible ☐ Non-Compactible
Dumpster No.

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate 0.3 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: TAG # 1231 thru 1250

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	55	G	20	1100	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount		Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	746	E +06	C	+/- 000 %	A		
238PU	181	E +02	C	+/- 12 %	A		
239PU	330	E +02	C	+/- 13 %	A		
241Am	160	E +02	C	+/- 7 %	A		
		E +/-		+/- %			
		E +/-		+/- %			
		E +/-		+/- %			
		E +/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Wm. DAVID MOSS	William David Moss	91973	10-6-92

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
~~Wm. DAVID MOSS~~	~~William David Moss~~	~~91973~~	~~10-6-92~~
LECVI DAVID WILLIAMS	Levi David Williams	8756	10-7-92

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4. EM-7 Approval *(No waste can be accepted without approval signature)*

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
J. Minton-Hughes		10-8-92

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM,DD,YY) 10 14 92
Actual Volume	1110 ☐ Meters³ ☐ Feet³ ☑ Gallons
Gross Weight (lbs)	118760
Tare Weight (-)	11510
Net Weight	72600

Number of RSWDs on this load 1

Vehicle Code

- [ ] Dumpster (01)
- [x] Dump truck (02)
- [ ] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (*specify below*) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact 0 mR/hr 2

Exposure Rate at 1 Meter 0 mR/hr 1

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
		[x] No [ ] Yes	

6. Compaction Information

Bale No.	Compaction Date (MM,DD,YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
10 15 92	G		37		29 30	8	C

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
CHARLES A. LEHMAN JR		10-15-92

Screened Paperwork	Supervised Disposal
CAL 10/15/92 (*Initial*)	CAL 10/15/92 (*Initial*)

10. Data Management Information

Date Entered in Logbook (MM,DD,YY)	Date Entered in Database (MM,DD,YY)	Date Entry Verified (MM,DD,YY)
10 15 92	10 29 92	10 27 92
Initial CAL	Initial	Initial CZ

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1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No.
11.17.92	EM-7	50	1	N/A	E-518	7-4301	N/A

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09193	EM 052	4607	M-359	EMWL06

2. Waste Characterization and Packaging Information

Waste Profile Request No.: 04541

Hazardous Materials Transfer Form: HM No. 50905

Waste Code: 75

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume: 1100.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 3918.8 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No
If yes, ☐ Compactible ☐ Non-Compactible
Dumpster No.:

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate: 0.4 ☐ R/hr ☒ mR/hr

C & D Form Numbers:

Comments: TAG #'s 1311 – 1330

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
Bulk (unpackaged)						
02 - Wooden crate	C3	550.0	G	20	1100.0	G
03 - Drum						
Cardboard box						
05 - Plastic bag						
Steel box						
Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
U235	5.25	E	+06	C	+/- Ø.Ø %	A		
Pu238	2.31	E	+01	C	+/- 13.6 %	A		
Pu239	2.42	E	+02	C	+/- 13.Ø %	A		
Am241	6.93	E	+03	C	+/- 21.2 %	A		
	.	E	+/-		+/- . %			
	.	E	+/-		+/- . %			
	.	E	+/-		+/- . %			
	.	E	+/-		+/- . %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

ORIGINATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Originator's Name (Print)	Signature	Z Number	Date
Wm. David Moss	Wm David Moss	091973	11-17-92

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Levi D. Williams	Levi David Williams	073824	11-17-92

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4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
J. Minton-Hughes	[signature]	11-18-92

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM,DD,YY) 12 10 92
Actual Volume	1000 [ ] Meters³ [ ] Feet³ [x] Gallons
Gross Weight (lbs)	9300
Tare Weight (-)	1300
Net Weight	8000

Vehicle Code
- [ ] Dumpster (01)
- [ ] Dump truck (02)
- [x] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (*specify below*) (07) _____

Treatment Code
- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact: 0.3 mR/hr

Exposure Rate at 1 Meter: 0 /mR/hr

Number of RSWDs on this load: 1

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
[signature]	[signature]	[x] No [ ] Yes	

6. Compaction Information

Bale No.	Compaction Date (MM,DD,YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
12 10 92	G		37		57 58	9	C

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Robert A. Roybal	[signature]	12-10-92

10. Data Management Information

	Date Entered in Logbook (MM,DD,YY)	Date Entered in Database (MM,DD,YY)	Date Entry Verified (MM,DD,YY)
Screened Paperwork (*Initial*) R.A.R.	12 10 92	12 22 92	12 23 92
Supervised Disposal (*Initial*) R.A.R.	Initial R.A.R.	Initial [signature]	Initial CJ

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1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
11/17/92	EM-7	50	1	N/A	E-518	7-4301	N/A

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09/1913	EM052	4607	M-359	EMWC06

2. Waste Characterization and Packaging Information

Waste Profile Request No. 04541

Hazardous Materials Transfer Form HM No. 50904

Waste Code 175

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume 11000 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight 39800 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No. N/A

Is this a dumpster? ☐ Yes ☒ No
If yes, ☐ Compactible ☐ Non-Compactible
Dumpster No.

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate 0.6 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: THG #'s 1291-1310

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	550	G	20	11000	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty		Method++	SS Acct.	Proj. Code
235U	2.38	E	+05	C	+/- 48.0	%	A		
238PU	1.90	E	+02	C	+/- 50.0	%	A		
239PU	4.08	E	+02	C	+/- 14.0	%	A		
241AM	1.14	E	+02	C	+/- 8.3	%	A		
		E	+/-		+/-	%			
		E	+/-		+/-	%			
		E	+/-		+/-	%			
		E	+/-		+/-	%			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Wm David Moss	Wm David Moss	091973	11-17-92

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Leon D. Williams	Leon David Williams	073824	11-17-92

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4. EM-7 Approval (No waste can be accepted without approval signature)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (Print or Stamp)	Signature	Date Approved
J. Minton-Hughes	[signature]	11-18-92

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	12/10/92 (MM.DD.YY)
Actual Volume	0.0 ☐ Meters³ ☐ Feet³ ☒ Gallons
Gross Weight (lbs)	6500
Tare Weight (-)	5000
Net Weight	1500

Vehicle Code

- [ ] Dumpster (01)
- [ ] Dump truck (02)
- [x] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (specify below) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact: 0.2 mR/hr

Exposure Rate at 1 Meter: 0 mR/hr

Number of RSWDs on this load _____

Driver's Signature	HS-1 Monitor's Signature (TA-54)	Non-Conformance?	Non-Conformance Report No.
Edward Freer	[signature]	☒ No ☐ Yes	

6. Compaction Information

Bale No	Compaction Date (MM.DD.YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM.DD.YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
12/10/92	G		37		5960	9	C

8. Storage Location Information

Storage Date (MM.DD.YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (Print)	Signature	Date
Robert A. Roybal	[signature]	12-10-92

10. Data Management Information

	Date Entered in Logbook (MM.DD.YY)	Date Entered in Database (MM.DD.YY)	Date Entry Verified (MM.DD.YY)
Screened Paperwork (Initial) R.A.R.	12/10/92	12/22/92	01/05/93
Supervised Disposal (Initial) R.A.R.	Initial R.A.R.	Initial [signature]	Initial CJ

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1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No.
11/17/92	EM-7	50	1	N/A	E-518	7-4301	N/A

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09/9/73	EM 052	4607	M-359	EM WC 06

2. Waste Characterization and Packaging Information

Waste Profile Request No.: 04541

Hazardous Materials Transfer Form: HM No. 50903

Waste Code: 75

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume: 1100.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 4396.8 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No
If yes, ☐ Compactible ☐ Non-Compactible
Dumpster No.:

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate: 0.4 ☐ R/hr ☒ mR/hr

C & D Form Numbers:

Comments: TAG #'s 1331-1350

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	550	G	20	1100	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	5.90	E	+-06	C	+/- 00.0 %	A		
238PU	2.50	E	+-01	C	+/- 130.6 %	A		
239PU	2.70	E	+-02	C	+/- 130.0 %	A		
241AM	7.70	E	+-03	C	+/- 212 %	A		
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Wm David Moss	Wm David Moss	91973	11-17-92

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Leeri D. Williams	Leeri David Williams	073824	11-17-92

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4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
J. Minton-Hughes	[signature]	11-18-92

Disposition

☐ MAP Shaft	☐ Low-Level H3 Shaft	☐ Source Shaft	☑ LLW Pit
☐ Be Shaft	☐ High-Level H3 Shaft	☐ Powder Shaft	☐ Asbestos Pit
☐ PCB Shaft	☐ Animal Tissue Shaft	☐ Holding Shed	☐ MW Storage Dome
☐ MW Storage Shaft	☐ MFP Shaft	☐ MW H3 Shed	☐ Certifiable TRU Dome
☐ Other _____	☐ HEPA Filter Shaft	☐ Compactor	☐ Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM,DD,YY) 12 16
Actual Volume	1100 ☐ Meters³ ☐ Feet³ ☑ Gallons
Gross Weight (lbs)	17510
Tare Weight (-)	4810
Net Weight	13100

Number of RSWDs on this load 1

Vehicle Code
- ☐ Dumpster (01)
- ☐ Dump truck (02)
- ☑ Flatbed (03)
- ☐ Pickup (04)
- ☐ Shield cask (05)
- ☐ EM-7 truck (06)
- ☐ Other (*specify below*) (07) _____

Treatment Code
- ☐ Compaction (01)
- ☐ Incineration (02)
- ☐ Other (03)
- ☒ None (04)

Exposure Rate Contact 0 mR/hr

Exposure Rate at 1 Meter 0 mR/hr

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
[signature]	[signature]	☒ No ☐ Yes	

6. Compaction Information

Bale No	Compaction Date (MM,DD,YY)	Bale Volume (M^3)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
12 10 92	G		37		5859	9	C

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Robert A. Roybal	[signature]	12-10-92

10. Data Management Information

	Date Entered in Logbook (MM,DD,YY)	Date Entered in Database (MM,DD,YY)	Date Entry Verified (MM,DD,YY)
Screened Paperwork (*Initial*) R.A.R.	12 10 92	12 29 92	01 05 93
Supervised Disposal (*Initial*) R.A.R.	Initial R.A.R.	Initial [signature]	Initial CZ

RSWD

L92000892

INFORMATION

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
11/19/92	EM-7	50	1	N/A	E-518	7-4301	N/A

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
091973	EM052	4607	M 359	EMW006

2. Waste Characterization and Packaging Information

Waste Profile Request No.: 045411

Hazardous Materials Transfer Form HM No. 50907

Waste Code: 75

☒ Actual Rad ☐ Mixed Waste ☐ Suspect Rad ☐ Non-Rad

Total Waste Volume: 1100.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 4311.4 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No

If yes, ☐ Compactible ☐ Non-Compactible

Dumpster No.:

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate: 0.4 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: TAG #5 1351—1370

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	55.0	G	20	1100.0	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	1.22	E	+/-0.05	C	+/- 80.0 %	A		
238PU	1.18	E	+/-0.11	C	+/- 11.3 %	A		
239PU	2.30	E	+/-0.02	C	+/- 10.5 %	A		
241AM	0.12	E	+/-0.02	C	+/- 0.0 %	A		
		E	+/-		+/-	%		
		E	+/-		+/-	%		
		E	+/-		+/-	%		
		E	+/-		+/-	%		

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Moss William David	William D. Moss	091973	11-19-92

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Lewis D. Williams	Lewis David Williams	073824	11-19-92

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4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
J. Minton-Hughes	[signature]	11-20-92

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM,DD,YY) 110192
Actual Volume	1100 [ ] Meters³ [ ] Feet [ ] Gallons
Gross Weight (lbs)	18300
Tare Weight (-)	12020
Net Weight	6280

Vehicle Code

- [ ] Dumpster (01)
- [ ] Dump truck (02)
- [ ] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (*specify below*) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact: 0 mR/hr

Exposure Rate at 1 Meter: 0 mR/hr

Number of RSWDs on this load: 1

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
[signature]	[signature]	[x] No [ ] Yes	

6. Compaction Information

Bale No.	Compaction Date (MM,DD,YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
121092	G		37		58 59	9	C

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Robert A. R. Oyebal	[signature]	12-10-92

Screened Paperwork (*Initial*) R.A.R.

Supervised Disposal (*Initial*) R.A.R.

10. Data Management Information

Date Entered in Logbook (MM,DD,YY)	Date Entered in Database (MM,DD,YY)	Date Entry Verified (MM,DD,YY)
121092	122292	011593
Initial R.A.R.	Initial [illegible]	Initial CJ

RSWD

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1. Waste Originator Information

Date (MM,DD,YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No.
01 22 93	EM7	50	1	N/A	E-518	7-4301	~~N/A~~ yes

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09 1 9 7 3	EM052	4607	M-359	EMWC06

2. Waste Characterization and Packaging Information

Waste Profile Request No. 04541

Hazardous Materials Transfer Form HM No. 50912

Waste Code 75

☒ Actual Rad ☐ Mixed Waste ☐ Suspect Rad ☐ Non-Rad

Total Waste Volume 100.00 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight 4.4 ☐ Kilograms ☐ Pounds ☒ Tons

Serial No. N/A

Is this a dumpster? ☐ Yes ☒ No

If yes, ☐ Compactible ☐ Non-Compactible

Dumpster No.

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate 0.5 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: TAG #'s 1391 - 1410

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	55.0	G	20	1100.0	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount		Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	6.20	E +06	C	+/- 00.0 %	A		
238PU	3.00	E +02	C	+/- 127.7 %	A		
239PU	8.83	E +03	C	+/- 151.1 %	A		
241AM	4.01	E +03	C	+/- 286.6 %	A		
		E +/-		+/- %			
		E +/-		+/- %			
		E +/-		+/- %			
		E +/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Perry Castillo	Perry Castillo	005102	1/25/93

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Leevi D. Williams	Leevi D. Williams	073824	1-25-93

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RSWD

L93000036

4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
Diana Keller	Diana Keller	1-25-93

Disposition

☐ MAP Shaft	☐ Low-Level H3 Shaft	☐ Source Shaft	☑ LLW Pit
☐ Be Shaft	☐ High-Level H3 Shaft	☐ Powder Shaft	☐ Asbestos Pit
☐ PCB Shaft	☐ Animal Tissue Shaft	☐ Holding Shed	☐ MW Storage Dome
☐ MW Storage Shaft	☐ MFP Shaft	☐ MW H3 Shed	☐ Certifiable TRU Dome
☐ Other _____	☐ HEPA Filter Shaft	☐ Compactor	☐ Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM,DD,YY) 012693
Actual Volume	110100 ☐ Meters³ ☐ Feet³ ☑ Gallons
Gross Weight (lbs)	20360
Tare Weight (-)	11150
Net Weight	9210

Vehicle Code
- ☐ Dumpster (01)
- ☑ Dump truck (02)
- ☐ Flatbed (03)
- ☐ Pickup (04)
- ☐ Shield cask (05)
- ☐ EM-7 truck (06)
- ☐ Other (*specify below*) (07) _____

Treatment Code
- ☐ Compaction (01)
- ☐ Incineration (02)
- ☐ Other (03)
- ☐ None (04)

Exposure Rate Contact: 0.4 mR/hr

Exposure Rate at 1 Meter: 0.0 mR/hr

Number of RSWDs on this load: 1

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
Tracy M. Trent	Byron Dery	☒ No ☐ Yes	

6. Compaction Information

Bale No.	Compaction Date (MM,DD,YY)	Bale Volume (M^3)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
012693	G		37		57 58	9	5

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Robert A. Roybal	Robert A. Roybal	1-26-93

10. Data Management Information

Screened Paperwork	Date Entered in Logbook	Date Entered in Database	Date Entry Verified
(*Initial*) T.R.E.	(MM,DD,YY)	(MM,DD,YY) 020393	(MM,DD,YY) 020493
Supervised Disposal (*Initial*) T.R.E.	Initial	Initial K.W.	Initial CJ

RSWD

L93000267

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No.
05.03.93	Em-7	50	1	N/A	E-518	7-4301	~~N/A~~ Y/N

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09119173	EM052	4607	M359	EMWC06

2. Waste Characterization and Packaging Information

Waste Profile Request No.: 104541

Hazardous Materials Transfer Form HM No.: 010742

Waste Code: 1715

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume: 110.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 3980.0 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No

If yes, ☐ Compactible ☐ Non-Compactible

Dumpster No.:

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate: ☐ R/hr ☐ mR/hr

C & D Form Numbers:

Comments: Tag # 1411 - 1430

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	55.0	G	20	1100.0	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	5.99	E	+-06	C	+/- 00.0 %	A		
238PU	4.99	E	+-02	C	+/- 120 %	A		
239PU	2.79	E	+-02	C	+/- 100 %	A		
241Am	1.59	E	+-02	C	+/- 125 %	A		
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Moss Wm. David	Wm David Moss	9973	5-3-93

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Levi D. Williams	for Levi D. Williams	73842	5-3-93

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RSWD

L93000267

4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
Dianne Keller	Dianne Keller	5-3-93

Disposition

☐ MAP Shaft	☐ Low-Level H3 Shaft	☐ Source Shaft	☑ LLW Pit
☐ Be Shaft	☐ High-Level H3 Shaft	☐ Powder Shaft	☐ Asbestos Pit
☐ PCB Shaft	☐ Animal Tissue Shaft	☐ Holding Shed	☐ MW Storage Dome
☐ MW Storage Shaft	☐ MFP Shaft	☐ MW H3 Shed	☐ Certifiable TRU Dome
☐ Other _____	☐ HEPA Filter Shaft	☐ Compactor	☐ Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	05/06/93 (MM.DD.YY)
Actual Volume	1100 ☐ Meters³ ☐ Feet³ ☑ Gallons
Gross Weight (lbs)	22620.
Tare Weight (-)	12040.
Net Weight	10580.

Vehicle Code: ☐ Dumpster (01) ☐ Dump truck (02) ☑ Flatbed (03) ☐ Pickup (04) ☐ Shield cask (05) ☐ EM-7 truck (06) ☐ Other (*specify below*) (07) _____

Treatment Code: ☐ Compaction (01) ☐ Incineration (02) ☐ Other (03) ☑ None (04)

Exposure Rate Contact: .5 mR/hr

Exposure Rate at 1 Meter: <.1 mR/hr

Number of RSWDs on this load: 1

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
Thomas J Frazier	R. Ball	☑ No ☐ Yes	

6. Compaction Information

Bale No.	Compaction Date (MM.DD.YY)	Bale Volume (M^3)	Comments

7. Disposal Location Information

Disposal Date (MM.DD.YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
05/06/93	G	NA	37	N/A	4 3 4 4	8	~~A~~-C

8. Storage Location Information

Storage Date (MM.DD.YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Rudy Archuleta	Rudy Archuleta	5-6-93

10. Data Management Information

Screened Paperwork (*Initial*)	Date Entered in Logbook (MM.DD.YY)	Date Entered in Database (MM.DD.YY)	Date Entry Verified (MM.DD.YY)
R.a.	05/07/93	05/11/93	05/14/93
Supervised Disposal (*Initial*) DJH	Initial R.a.	Initial KW	Initial CJ

DJH 5/10/93

5-13-9

RSWD

L93000275

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
05.04.93	ZM-7	50	1	NA	E518	7-4301	~~NA~~

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09117113	EM052	4607	M359	EMW006

2. Waste Characterization and Packaging Information

Waste Profile Request No. 014541

Hazardous Materials Transfer Form HM No. C 1105

Waste Code A715

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume 110.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight 3453.0 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No. N/A

Is this a dumpster? ☐ Yes ☒ No

If yes, ☐ Compactible ☐ Non-Compactible

Dumpster No.

Waste Description: Dewatered Vacuum filter sludge

Radiation Exposure Rate 0.3 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: Tag # 1431 - 1450

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	55.0	G	20	1100.0	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	6.28	E	+/- 0.06	C	+/- 0.00 %	A		
238Pu	5.23	E	+/- 0.02	C	+/- 12.0 %	A		
239Pu	2.93	E	+/- 0.02	C	+/- 10.0 %	A		
241Am	1.67	E	+/- 0.02	C	+/- 12.5 %	A		
	.	E	+/-		+/- . %			
	.	E	+/-		+/- . %			
	.	E	+/-		+/- . %			
	.	E	+/-		+/- . %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Moss, William DAVID	William David Moss	091973	05-04-93

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Moss, William DAVID	William David Moss	091973	05-04-93

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RSWD

L93000275

4. EM-7 Approval (No waste can be accepted without approval signature.)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (Print or Stamp)	Signature	Date Approved
Maurice E. Fabian	Maurice E. Fabian	5/4/93

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM.DD.YY) 050693
Actual Volume	1100 [ ] Meters³ [ ] Feet³ [x] Gallons
Gross Weight (lbs)	19660.0
Tare Weight (-)	10800.0
Net Weight	8860.0

Vehicle Code

- [ ] Dumpster (01)
- [ ] Dump truck (02)
- [x] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (specify below) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact: 0.5 mR/hr

Exposure Rate at 1 Meter: 1.1 mR/hr

Number of RSWDs on this load: 1

Driver's Signature	HS-1 Monitor's Signature (TA-54)	Non-Conformance?	Non-Conformance Report No.
Paul Montoya - Driver Hauler for Sierra Co.	[signature]	[x] No [ ] Yes	

6. Compaction Information

Bale No.	Compaction Date (MM.DD.YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM.DD.YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
050793	G	N/A	37	N/A	4243	8	C

8. Storage Location Information

Storage Date (MM.DD.YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (Print)	Signature	Date
Rudy Archuleta	[signature]	5-7-93

10. Data Management Information

Screened Paperwork (Initial) GJH

Supervised Disposal (Initial) R.A.

Date Entered in Logbook (MM.DD.YY)	Date Entered in Database (MM.DD.YY)	Date Entry Verified (MM.DD.YY)
050793	051193	051493
Initial R.A.	Initial [signature]	Initial CJ

ok GJH 5/10/93

5-13-93

RSWD

L93000276

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
05.04.93	EM-7	50	1	N/A	3578	7-4301	N/A YES

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09.19.73	EM052	4307	M359	EMWC06

2. Waste Characterization and Packaging Information

Waste Profile Request No.: 04.54.11

Hazardous Materials Transfer Form: HM No. 01107

Waste Code: A.7.5

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume: 110.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 3681.3 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No

If yes, ☐ Compactible ☐ Non-Compactible

Dumpster No.:

Waste Description: Dewatered Vacuum Filter sludge

Radiation Exposure Rate: 0.2 ☐ R/hr ☒ mR/hr

C & D Form Numbers:

Comments: TAG # 1471 - 1490

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	55.0	G	20	110.0	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount		Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	6.69	E +/- 0.06	C	+/- 0.0 %	A		
238PU	5.57	E +/- 0.02	C	+/- 12.0 %	A		
239PU	3.12	E +/- 0.02	C	+/- 10.0 %	A		
241AM	1.78	E +/- 0.02	C	+/- 12.5 %	A		
		E +/-		+/- %			
		E +/-		+/- %			
		E +/-		+/- %			
		E +/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
Moss Wm. David	William David Moss	091973	05-05-93

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Levi D. Williams	Levi Williams		

Coordinator Follow Z # + Date

This Page For EM-7 Use Only

RSWD

L93000276

4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
MARTIN T. [illegible]	[illegible]	5/4/93

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received (MM,DD,YY)	06 06 93
Actual Volume	1100 [ ] Meters³ [ ] Feet³ [x] Gallons
Gross Weight (lbs)	29660.0
Tare Weight (-)	20200.0
Net Weight	9460.0

Number of RSWDs on this load _____

Vehicle Code

- [ ] Dumpster (01)
- [ ] Dump truck (02)
- [x] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (*specify below*) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact	0.5 mR/hr
Exposure Rate at 1 Meter	<0.1 mR/hr

Driver's Signature	HS-1 Monitor's Signature (TA-54)	Non-Conformance?	Non-Conformance Report No.
[illegible]	[illegible]	[x] No [ ] Yes	

6. Compaction Information

Bale No	Compaction Date (MM,DD,YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
05 06 93	G	N/A	37	N/A	44	8	N-C

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
PETER J HERRERA	[illegible]	5/6/93

Screened Paperwork (*Initial*) BJR

Supervised Disposal (*Initial*) [illegible]

10. Data Management Information

Date Entered in Logbook (MM,DD,YY)	Date Entered in Database (MM,DD,YY)	Date Entry Verified (MM,DD,YY)
05 07 93	05 11 93	05 14 93
Initial [illegible]	Initial [illegible]	Initial CZ

5-13-93

RSWD

L93000277

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
05 04 93	ES7-7	50	1	N/A	E518	7-4301	~~N/A~~ YES

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
09 1 9 7 3	EM052	4607	M359	EMWG06

2. Waste Characterization and Packaging Information

Waste Profile Request No.: 104514 11

Hazardous Materials Transfer Form HM No.: 2106

Waste Code: A 7 1 5

☒ Actual Rad ☐ Mixed Waste ☐ Suspect Rad ☐ Non-Rad

Total Waste Volume: 110 0 0 0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 3 4 9 0 9 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No
If yes, ☐ Compactible ☐ Non-Compactible
Dumpster No.:

Waste Description: Dewatered vacuum filter sludge

Radiation Exposure Rate: 0 2 ☐ R/hr ☒ mR/hr

C & D Form Numbers:

Comments: TAG # 1491 - 1510

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	03	550	G	20	1100	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	635	E	+/- 06	C	+/- 00 %	A		
238PU	529	E	+/- 02	C	+/- 120 %	A		
239PU	296	E	+/- 02	C	+/- 100 %	A		
241Am	169	E	+/- 02	C	+/- 125 %	A		
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
William DAVID Moss	William David Moss	091973	05-04-93

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
William DAVID Moss	William David Moss	091973	05-04-93

This Page For EM-7 Use Only

RSWM

L93000277

4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
M. E. Fischer	[signature]	5/4/93

Disposition

☐ MAP Shaft	☐ Low-Level H3 Shaft	☐ Source Shaft	☒ LLW Pit
☐ Be Shaft	☐ High-Level H3 Shaft	☐ Powder Shaft	☐ Asbestos Pit
☐ PCB Shaft	☐ Animal Tissue Shaft	☐ Holding Shed	☐ MW Storage Dome
☐ MW Storage Shaft	☐ MFP Shaft	☐ MW H3 Shed	☐ Certifiable TRU Dome
☐ Other _____	☐ HEPA Filter Shaft	☐ Compactor	☐ Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM.DD.YY) 0 5 0 6 9 3
Actual Volume	1 1 0 0 ☐ Meters³ ☐ Feet³ ☒ Gallons
Gross Weight (lbs)	1 9 2 0 0 . 0
Tare Weight (-)	9 8 2 0 . 0
Net Weight	9 2 8 0 . 0

Number of RSWDs on this load 1

Vehicle Code: ☐ Dumpster (01) ☐ Dump truck (02) ☒ Flatbed (03) ☐ Pickup (04) ☐ Shield cask (05) ☐ EM-7 truck (06) ☐ Other (*specify below*) (07) _____

Treatment Code: ☐ Compaction (01) ☐ Incineration (02) ☐ Other (03) ☒ None (04)

Exposure Rate Contact: 0.5 mR/hr

Exposure Rate at 1 Meter: 1.0 mR/hr

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
[signature]	R. Bath	☒ No ☐ Yes	

6. Compaction Information

Bale No	Compaction Date (MM.DD.YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM.DD.YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
0 5 0 6 9 3	G	N/A	37	N/A	4 5 4 4	8	C [illegible]

8. Storage Location Information

Storage Date (MM.DD.YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
PETER S. HENRIKSEN	[signature]	5/6/93

10. Data Management Information

Screened Paperwork	Date Entered in Logbook (MM.DD.YY)	Date Entered in Database (MM.DD.YY)	Date Entry Verified (MM.DD.YY)
(Initial) [illegible]	0 5 0 6 9 3	0 5 1 4 9 3	0 6 0 3 9 3
Supervised Disposal (Initial) [illegible]	Initial [illegible]	Initial [illegible]	Initial CJ

5-17-93 CJ

INFORMATION COPY

RSWD

L93000358

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
06 04 93	EM-7	50	1	N/A	E-518	7-4301	YES

Generator No.	Waste Stream No	Cost Code	Program Code	WMC No.
09 19 7B	EMC52	4607	M359	EMWCC6

2. Waste Characterization and Packaging Information

Waste Profile Request No: 04541

Hazardous Materials Transfer Form HM No. 01583

Waste Code: 75

☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume: 440.0 ☐ Meters³ ☐ Feet³ ☒ Gallons

Estimated Weight: 15709 ☒ Kilograms ☐ Pounds ☐ Tons

Serial No.: N/A

Is this a dumpster? ☐ Yes ☒ No

If yes, ☐ Compactible ☐ Non-Compactible

Dumpster No.:

Waste Description: Dewatered Vacuum Filter Sludge

Radiation Exposure Rate: 0.3 ☐ R/hr ☒ mR/hr

C & D Form Numbers:

Comments: TRD #5 1531 – 1538

Package Codes*: 01 - Bulk (unpackaged); 02 - Wooden crate; 03 - Drum; 04 - Cardboard box; 05 - Plastic bag; 06 - Steel box; 07 - Shield cask; 08 - Other (specify below)

Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
03	55.0	G	8	440.0	G

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
235U	1.69	E	+E5	C	+/- 50.0 %	A		
238Pu	1.18	E	+E2	C	+/- 143 %	A		
239Pu	8.04	E	+E3	C	+/- 158 %	A		
241Am	3.34	E	+E3	C	+/- 177 %	A		
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			

+Units C = Curies M = Grams

++Methods A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at A-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
L.D. Williams	Lloyd Williams	073824	6-4-93

This Page For EM-7 Use Only

RSWD

This is Class C - hr 6-8-93

L93000358

4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
J Minton-Hughes	[signature]	6-8-93

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	(MM.DD.YY) 06 15 93
Actual Volume	440 [ ] Meters³ [ ] Feet³ [x] Gallons
Gross Weight (lbs)	15060
Tare Weight (-)	11500
Net Weight	3560

Vehicle Code

- [ ] Dumpster (01)
- [x] Dump truck (02) unloaded
- [x] Flatbed (03) w/CRANE
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (*specify below*) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact: 0.2 mR/hr

Exposure Rate at 1 Meter: 0.0 mR/hr

Number of RSWDs on this load: 1 R.G.

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
[signature]	J.T. Miller	[x] No [ ] Yes	

6. Compaction Information

Bale No	Compaction Date (MM.DD.YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM.DD.YY)	Area	Shaft	Pit	Transit Sequence No	Post(s)	Layer	Position
06 15 93	G	N/A	37	N/A	41	8	N

8. Storage Location Information

Storage Date (MM.DD.YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Rudy Archuleta	[signature]	6-15-93

10. Data Management Information

Screened Paperwork	Date Entered in Logbook (MM.DD.YY)	Date Entered in Database (MM.DD.YY)	Date Entry Verified (MM.DD.YY)
Initial: R.G.	06 15 93	06 21 93	06 23 93
Supervised Disposal Initial: R.G.	Initial: R.G.	Initial: RW	Initial: CZ

RSWD

L93000311

1. Waste Originator Information

Date (MM.DD.YY)	Group	TA	Building	Wing	Mail Stop	Telephone	Certified WS No
05 13	EM-52	55	1	N/A	E 515	[illegible]	[illegible]

Generator No.	Waste Stream No.	Cost Code	Program Code	WMC No.
CR 1 9 7 P	EM552	4607	111 359	EM-52

2. Waste Characterization and Packaging Information

Waste Profile Request No.	Hazardous Materials Transfer Form	Waste Code	
1 3 4 5 6 1	HM No. 01324	7 1 5	☒ Actual Rad ☐ Suspect Rad ☐ Mixed Waste ☐ Non-Rad

Total Waste Volume		Estimated Weight		Serial No.	Is this a dumpster?
1 1 0 0.0	☐ Meters³ ☐ Feet³ ☒ Gallons	4 2 2 7.0	☐ Kilograms ☐ Pounds ☐ Tons	N/A	☐ Yes ☐ No If yes, ☐ Compactible ☐ Non-Compactible Dumpster No.

Waste Description: Dewatered Uranium Fire Sludge

Radiation Exposure Rate: 0.4 ☐ R/hr ☒ mR/hr

C & D Form Numbers

Comments: [illegible] 1511 Jan 1530

Package Codes*	Package Code*	Package Volume (Individual Package)	Volume Units**	Number of Packages	Total Vol. of Package Type (Pkg. Vol. X No. of Pkgs.)	Volume Units**
01 - Bulk (unpackaged)						
02 - Wooden crate	C3	55.4	G	20	1100.0	G
03 - Drum						
04 - Cardboard box						
05 - Plastic bag						
06 - Steel box						
07 - Shield cask						
08 - Other (specify below)						

Volume Units**: M = Meters³, F = Feet³, G = Gallons

Radionuclide	Amount			Units+	Uncertainty	Method++	SS Acct.	Proj. Code
U235	5.16	E	+/- 0.5	C	+/- 50.0 %	A		
U238	3.6	E	+/- 0.2	C	+/- 14.3 %	A		
U3O8	2.45 ~~2.5~~	E	+/-	C	+/- 5.5 %	A		
[illegible]	1.02	E	+/-	C	+/- 0.7 %	A		
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			
		E	+/-		+/- %			

+Units: C = Curies M = Grams

++Methods: A = Analysis M = Measurement C = Calculation E = Estimation

3. Waste Certification

GENERATOR CERTIFICATION STATEMENT: My signature certifies that the waste is as described here and on the attached Waste Profile Request form. Waste meets all applicable acceptance and storage or disposal criteria listed in Administrative Requirement 10-2, "Low-Level Radioactive Solid Waste," and in "Waste Acceptance Criteria for Low-Level Radioactive Waste Disposal at TA-54, Area G."

Generator's Name (Print)	Signature	Z Number	Date
[illegible]	William D. Moore	E91973	5/19/93

WASTE MANAGEMENT COORDINATOR STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

Waste Management Coordinator's Name (Print)	Signature	Z Number	Date
Williams Leavi	Leavi Williams		5/19/93

Julie says Z # not

This Page For EM-7 Use Only

RSWD

This is Class C!

L93000311

4. EM-7 Approval (*No waste can be accepted without approval signature*)

EM-7 APPROVAL STATEMENT: My signature certifies that the waste described on this application is acceptable, AS DESCRIBED, for storage or disposal by EM-7.

EM-7 Approver's Name (*Print or Stamp*)	Signature	Date Approved
Susan C. Fahey	Susan C. Fahey	5-19-93

Disposition

- [ ] MAP Shaft
- [ ] Be Shaft
- [ ] PCB Shaft
- [ ] MW Storage Shaft
- [ ] Other _____
- [ ] Low-Level H3 Shaft
- [ ] High-Level H3 Shaft
- [ ] Animal Tissue Shaft
- [ ] MFP Shaft
- [ ] HEPA Filter Shaft
- [ ] Source Shaft
- [ ] Powder Shaft
- [ ] Holding Shed
- [ ] MW H3 Shed
- [ ] Compactor
- [x] LLW Pit R.G.
- [ ] Asbestos Pit
- [ ] MW Storage Dome
- [ ] Certifiable TRU Dome
- [ ] Uncertified TRU Storage

5. Receiving Site Information

Date Waste Received	R.G. 06 02 93 (MM,DD,YY)
Actual Volume	1100 [ ] Meters³ [ ] Feet³ [x] Gallons
Gross Weight (lbs)	19580
Tare Weight (-)	9820
Net Weight	9760

Number of RSWDs on this load 1 R.A.

Vehicle Code

- [ ] Dumpster (01)
- [ ] Dump truck (02)
- [x] Flatbed (03)
- [ ] Pickup (04)
- [ ] Shield cask (05)
- [ ] EM-7 truck (06)
- [ ] Other (*specify below*) (07) _____

Treatment Code

- [ ] Compaction (01)
- [ ] Incineration (02)
- [ ] Other (03)
- [x] None (04)

Exposure Rate Contact 0.0 mR/hr

Exposure Rate at 1 Meter 0.0 mR/hr

Driver's Signature	HS-1 Monitor's Signature (*TA-54*)	Non-Conformance?	Non-Conformance Report No.
[illegible]	G. T. Miller	[x] No [ ] Yes	

6. Compaction Information

Bale No	Compaction Date (MM,DD,YY)	Bale Volume (M³)	Comments

7. Disposal Location Information

Disposal Date (MM,DD,YY)	Area	Shaft	Pit	Transit Sequence No.	Post(s)	Layer	Position
06 02 93	G	N/A	37		4142	8	N

8. Storage Location Information

Storage Date (MM,DD,YY)	Area	Shaft	Building	Column	Layer	Row	Pad	Post(s)	Layer	Position

9. Director of Disposal Operations

DIRECTOR OF DISPOSAL OPERATIONS CERTIFICATION: My signature certifies that all waste receiving, storage, and/or disposal requirements were met.

Director of Disposal or Storage Operations (*Print*)	Signature	Date
Rudy Archuleta	Rudy Archuleta	6-2-93

10. Data Management Information

	Date Entered in Logbook (MM,DD,YY)	Date Entered in Database (MM,DD,YY)	Date Entry Verified (MM,DD,YY)
Screened Paperwork (*Initial*) R.G.	06 02 93	06 07 93	06 11 93
Supervised Disposal (*Initial*) R.G.	Initial R.G.	Initial [illegible]	Initial CJ

OK'D BY CAL 6-3-93

6-8-93 CJ

APPENDIX F

ALUMINUM ANODIZING DYE MSDSS

MATERIAL SAFETY DATA SHEET

SANDOZ CHEMICALS
4000 MONROE ROAD
CHARLOTTE N.C. 28205

ALUMINUM BORDEAUX RL
1-0520-0-100

REVISED DATE: 04/01/86
PAGE: 1

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300

LOS ALAMOS NATIONAL LABS.
JAN CLEMENTSMS G770
GROUP MST-7
LOS ALAMOS, NM 87545

H M I S

HEALTH	3 *
FLAMMABILITY	1
REACTIVITY	1
PERSONAL PROTECTION	J

A. PRODUCT IDENTIFICATION

TRADE NAME: ALUMINUM BORDEAUX RL
CAS NO: PROPRIETARY
SYNONYMS: C.I. MORDANT RED 81
CHEMICAL FAMILY: COBALT METALLIZED AZO DYE
FORMULA: PROPRIETARY

B. HAZARDOUS COMPONENTS

COMPONENT	CAS NO.	%	TLV
FORMIC ACID	64-18-6	1-2	5 PPM OSHA
CHROMIUM AS AN INTEGRAL PART OF DYE MOLECULE	7440-47-3	8-10	0.5 MG/M3 OSHA
HEXYLENE GLYCOL	107-41-5	4-5	25 PPM ACGIH

C. PHYSICAL PROPERTIES

BOILING POINT (°F): NOT AVAILABLE
SPECIFIC GRAVITY: NOT AVAILABLE
VAPOR PRESSURE (MM HG): NOT AVAILABLE
PERCENT VOLATILE (BY WEIGHT): NOT AVAILABLE
VAPOR DENSITY (AIR = 1): NOT AVAILABLE
EVAPORATION RATE: NOT AVAILABLE
SOLUBILITY IN WATER: 35 G/L @20C
PH (5 % IN WATER): 3.5-4.5
APPEARANCE AND ODOR: RED POWDER, MILD ODOR

D. FIRE & EXPLOSION HAZARD DATA

FLASH POINT (°F): NOT AVAILABLE FLAMMABLE LIMITS: LEL UNKNOWN UEL UNKNOWN
EXTINGUISHING MEDIA: WATER X ALCOHOL FOAM X CO2 X DRY CHEMICAL X
SPECIAL FIRE FIGHTING PROCEDURES:
PREVENT RUNOFF TO SEWERS AND BODIES OF WATER FROM FIRE FIGHTING INVOLVING THIS PRODUCT AS THIS PRODUCT CONTAINS CLEAN WATER ACT PRIORITY POLLUTANTS AND WILL ALSO BE A RCRA HAZARDOUS WASTE MATERIAL.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
ORGANIC DUSTS HAVE POTENTIAL TO BE EXPLOSIVE WITH STATIC SPARK OR FLAME INITIATION. MAINTAIN GOOD HOUSEKEEPING FOR CONTROL OF DUST.

E. REACTIVITY DATA

STABILITY: STABLE CONDITIONS TO AVOID: NONE KNOWN

HAZARDOUS POLYMERIZATION : WILL NOT OCCUR
CONDITIONS TO AVOID: NONE KNOWN

INCOMPATABILTY:
STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS :
THERMAL DECOMPOSITION MAY PRODUCE OXIDES OF CARBON, NITROGEN, AND SULFUR. ASH WILL CONTAIN CHROMIUM.

F. PERSONAL PROTECTIVE EQUIPMENT INFORMATION

RESPIRATORY PROTECTION:
NONE REQUIRED IN NORMAL USE. IF DUSTY CONDITIONS ARE PRESENT USE A NIOSH APPROVED RESPIRATOR OR DUST MASK.

PROTECTIVE GLOVES:
BUTYL RUBBER, PVC OR NEOPRENE

EYE PROTECTION:
DUST GOGGLES

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300

VENTILATION:
LOCAL VENTILATION RECOMMENDED - MECHANICAL VENTILATION MAY BE USED.

OTHER PROTECTIVE EQUIPMENT:
NONE KNOWN

G. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: NOT ESTABLISHED LD50 (ORAL-RAT) >5000 MG/KG BODY WEIGHT
DERMAL IRRITATION-RABBIT: NON-IRRITATING EYE IRRITATION-RABBIT: STRONGLY IRRITATING

EFFECTS OF OVEREXPOSURE:
OVER EXPOSURE CHROMIUM (III) CAN PRODUCE AN ALLERGIC DERMATITIS RESPONSE ON EXPOSED SKIN AND MAY PRODUCE PULMONARY SENSTIZATION. INHALATION OF CHROMIUM (III) MAY CAUSE COUGHING AND SNEEZING HEADACHE PAIN ON DEEP INSPIRATION AND FEVER. IT IS A SUSPECT ANIMAL CARCINOGEN.
FORMIC ACID MAY CAUSE LOCALIZED EYE IRRITATION. NASAL DISCHARGE. THROAT IRRITATION. COUGH. DYSPENEA. NAUSEA. SKIN BURNS AND DERMATITIS. INGESTION MAY AFFECT THE KIDNEYS AND LIVER.
EXPOSURE TO HEXALENE GLYCOL MAY CAUSE EYE NOSE AND THROAT IRRITATION.
EXPOSURE TO HEXALENE GLYCOL AT HIGH CONCENTRATIONS MAY CAUSE ARESTHESIA.
CAUSES SEVERE EYE IRRITATION.

KNOWN EFFECTS ON OTHER ILLNESSES
NO KNOWN EFFECTS ON OTHER ILLNESSES.

LISTED CARCINOGEN: NONE OSHA NTP X IARC X OTHER

H. EMERGENCY AND FIRST AID PROCEDURES

SKIN:
WASH THOROUGHLY WITH SOAP AND WATER FOR FIFTEEN MINUTES.

EYES
FLUSH IMMEDIATELY UNDER RUNNING WATER FOR FIFTEEN MINUTES. SEEK MEDICAL ATTENTION.

INHALATION:
REMOVE SUBJECT TO FRESH AIR. SEEK MEDICAL AID IF LUNG IRRITATION PERSISTS OR IF BREATHING BECOMES DIFFICULT.

INGESTION:
IF INGESTED. SEEK MEDICAL ASSISTANCE.

NOTE TO PHYSICIAN:
NONE KNOWN

I. SPILL AND DISPOSAL INFORMATION

STEPS TO BE TAKEN IN CASE OF SPILL:
CONTAINS HEAVY METALS. SPILLS SHOULD BE SWEPT OR SHOVELED UP AND COLLECTED FOR DISPOSAL. CLEAN UP BY REMOVAL OF CONTAMINATED SOIL OR BY FLUSHING WITH A LIMITED QUANTITY OF WATER IF APPROPRIATE. PLACE MATERIAL OR COMTAMINATED SOILS IN AN SUITABLE DISPOSAL CONTAINER.

WASTE DISPOSAL INFORMATION:
THIS PRODUCT BECOMES A RCRA HAZARDOUS WASTE WHEN IT BECOMES A WASTE MATERIAL DUE TO CHROMIUM CONTENT. RECOMMENDED DISPOSAL IS BY INCINERATION WITH PROPER AIR SCRUBBING DEVICES AT APPROVED FACILITIES. MAY ALSO BE LANDFILLED IN APPROVED FACILITIES.

RCRA HAZARDOUS WASTE: NO YES X RCRA # D007 CERCLA: NO YES X RQ NONE

FOLLOW ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300

J. OTHER REGULATORY INFORMATION

TSCA: WE CERTIFY THAT ALL COMPONENTS OF THIS PRODUCT ARE REGISTERED UNDER THE REGULATIONS OF THE TOXIC SUBTANCES CONTROL ACT.

CWA: THIS PRODUCT CONTAINS THE FOLLOWING PRIORITY POLLUTANTS AND THEIR CONCENTRATION:
CONTAINS PRIORITY POLLUTANT CHROMIUM AT GREATER THAN 0.1%.
FDA / USDA: THIS PRODUCT IS REGISTERED WITH FDA / USDA NO X YES FOR USE PER SECTIONS
NONE

DOT: REGULATED YES NO X RQ NONE UN/NA NO. NONE

SHIPPING NAME: TEXTILE DYEING OR PRINTING, PIGMENTED, OR REDUCERS OR EXTENDERS, TEXTILE DYEING OR PRINTING PASTE, NMFC 154800.

HAZARD CLASSIFICATION: NOT D.O.T. REGULATED

K. SPECIAL PRECAUTIONS

HANDLING AND STORAGE INFORMATION:
KEEP CONTAINERS CLOSED. AVOID GETTING ON SKIN OR IN EYES WHEN HANDLING PRODUCT.

OTHER PRECAUTIONS:
CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

IN ACCORDANCE WITH GOOD PRACTICES OF PERSONAL CLEANLINESS AND HYGIENE, HANDLE WITH DUE CARE AND AVOID ANY UNNECESSARY CONTACT WITH THIS PRODUCT.

THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER OSHA "RIGHT TO KNOW" REGULATION 29 CFR 1910.1200 AND IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARDS CONNECTED WITH THE USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, IS MADE. SANDOZ CHEMICALS CORPORATION ASSUMES NO RESPONSIBILITY FOR DAMAGE OR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SANDOZ CHEMICALS CORPORATION

MATERIAL SAFETY DATA SHEET

SANDOZCHEMICALS
4000 MONROE ROAD
CHARLOTTE NC 28205

ALUMINUM YELLOW 4A POWDER 133 01
137631 **REVISED DATE:** 02/22/91

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300
FOR MSDS INFORMATION: (704) 547-5600

LOS ALAMOS NAT'L LAB
MS-G770
RANDY EDWARDS
LOS ALAMOS NAT'L LAB
LOS ALAMOS NM 875450000

H M I S

HEALTH	1 *
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	E

A. PRODUCT IDENTIFICATION

TRADE NAME: ALUMINUM YELLOW 4A POWDER 133
CAS NUMBER: 10343-58-5
SYNONYMS: C.I. ACID YELLOW 99, C.I. 13900
CHEMICAL FAMILY: METAL COMPLEX OF AZO DYE
FORMULA: C16H11CRN408S.NA
PRIMARY PRODUCT USE: DATA NOT YET AVAILABLE

B. HAZARDOUS COMPONENTS

COMPONENT	CAS NO.	%	PEL/TLV
CHROMIUM (AS AN INTEGRAL PART OF DYE MOLECULE)	7440-47-3	<8	0.5 MG/M3 OSHA ACGIH
CHROMIUM COMPOUND	CRCMPD	<90	

C. PHYSICAL PROPERTIES

BOILING POINT ('F):	NOT AVAILABLE	SPECIFIC GRAVITY:	NOT AVAILABLE
MELTING POINT ('F):	NOT AVAILABLE	FREEZING POINT ('F):	NOT AVAILABLE
VAPOR PRESSURE (MM HG):	NOT AVAILABLE	PERCENT VOLATILE (BY WEIGHT):	NOT AVAILABLE
VAPOR DENSITY (AIR = 1):	NOT AVAILABLE	EVAPORATION RATE:	NOT AVAILABLE
SOLUBILITY IN WATER:	SOLUBLE	PH (% IN WATER):	NOT AVAILABLE

COEFFICIENT OF WATER/OIL DISTRIBUTION: NO DATA AVAILABLE
ODOR THRESHOLD: NO DATA AVAILABLE
APPEARANCE AND ODOR: YELLOW POWDER, NO ODOR

D. FIRE & EXPLOSION DATA

FLASH POINT ('F): NOT AVAILABLE
FLAMMABLE LIMITS: LEL UNKNOWN UEL UNKNOWN AUTO IGNITION TEMPERATURE ('F): UNKNOWN
EXTINGUISHING MEDIA: WATER X ALCOHOL FOAM X CO2 X DRY CHEMICAL X WATER FOG SPRAY
NO EXTINGUISHING MEDIA
SPECIAL FIRE FIGHTING PROCEDURES:
PREVENT RUNOFF TO SEWERS AND BODIES OF WATER FROM FIRE FIGHTING INVOLVING THIS PRODUCT AS THIS PRODUCT CONTAINS CLEAN WATER ACT PRIORITY POLLUTANTS.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
ORGANIC DUSTS HAVE POTENTIAL TO BE EXPLOSIVE WITH STATIC SPARK OR FLAME INITIATION. MAINTAIN GOOD HOUSEKEEPING FOR CONTROL OF DUST.

E. REACTIVITY DATA

STABILITY: **STABLE**
CONDITIONS TO AVOID:
NONE
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:
NONE KNOWN
INCOMPATABILITY:
STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS:
THERMAL DECOMPOSITION MAY PRODUCE OXIDES OF CARBON, NITROGEN, AND SULFUR.

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CHEMTREC: (800) 424-9300
FOR MSDS INFORMATION: (704) 547-5600

ASH WILL CONTAIN CHROMIUM.

F. PERSONAL PROTECTIVE EQUIPMENT INFORMATION

RESPIRATORY PROTECTION:
USE NIOSH APPROVED RESPIRATOR OR DUST MASK.

PROTECTIVE GLOVES:
BUTYL RUBBER, PVC OR NEOPRENE

EYE PROTECTION:
SAFETY GLASSES OR CHEMICAL SPLASH GOGGLES

VENTILATION:
LOCAL VENTILATION RECOMMENDED - MECHANICAL VENTILATION MAY BE USED.

OTHER PROTECTIVE EQUIPMENT:
NONE KNOWN

G. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: NONE ON PRODUCT
LD50 (ORAL-RAT): 5700 MG/KG BODY WEIGHT
DERMAL IRRITATION-RABBIT: NON-IRRITATING EYE IRRITATION-RABBIT: NON-IRRITATING

EXPECTED ROUTE OF ENTRY: SKIN CONTACT X SKIN ABSORPTION EYE CONTACT X
INHALATION X INGESTION X

EFFECTS OF EXPOSURE:
CHROMIUM: CHROMIUM AND CERTAIN COMPOUNDS OF CHROMIUM HAVE BEEN REPORTED TO CAUSE DAMAGE TO THE LUNGS RESULTING IN CUMULATIVE DAMAGE TO THE LUNGS. FROM RESULTS OF TESTING WITH LABORATORY ANIMALS, ARE SUSPECTED OF CAUSING CANCER. DERMATITIS HAS BEEN REPORTED FROM REPEATED, PROLONGED CONTACT WITH CHROMIUM COMPOUNDS. SENSITIZATION MAY OCCUR ON REPEATED CONTACT. THERE HAVE BEEN NO REPORTS OF ANY OF THESE EFFECTS FROM THE USE OF THIS PRODUCT.
CHROMIUM COMPOUND: NOTE EFFECTS LISTED ABOVE.

KNOWN EFFECTS ON OTHER ILLNESSES:
NO KNOWN EFFECTS ON OTHER ILLNESSES FOR THIS PRODUCT.

LISTED CARCINOGEN: NONE OSHA NTP X IARC X OTHER

H. EMERGENCY AND FIRST AID PROCEDURES

SKIN:
WASH THOROUGHLY WITH SOAP AND WATER FOR 15 MINUTES. IF SKIN IRRITATION OCCURS, SEEK MEDICAL ATTENTION.

EYES:
FLUSH IMMEDIATELY UNDER RUNNING WATER FOR FIFTEEN MINUTES. IF REDNESS OR IRRITATION OCCURS, SEEK MEDICAL ATTENTION.

INHALATION:
REMOVE SUBJECT TO FRESH AIR. SEEK MEDICAL AID IF LUNG IRRITATION PERSISTS OR IF BREATHING BECOMES DIFFICULT.

INGESTION:
IF INGESTED, SEEK MEDICAL ASSISTANCE.

NOTE TO PHYSICIAN:
NONE KNOWN

I. SPILL AND DISPOSAL INFORMATION

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300
FOR MSDS INFORMATION: (704) 547-5600

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:
CONTAINS HEAVY METALS. SPILLS SHOULD BE SWEPT OR SHOVELED UP AND COLLECTED FOR DISPOSAL. CLEAN UP BY REMOVAL OF CONTAMINATED SOIL OR BY FLUSHING WITH A LIMITED QUANTITY OF WATER IF APPROPRIATE. PLACE MATERIAL OR CONTAMINATED SOILS IN A SUITABLE DISPOSAL CONTAINER.

WASTE DISPOSAL INFORMATION:
THIS PRODUCT CONTAINS CHROMIUM PREDOMINANTLY IN THE TRIVALENT STATE. UNDER CERTAIN CONDITIONS, THE CHROMIUM CAN BE OXIDIZED TO THE HEXAVALENT STATE. WASTES CONTAINING HEXAVALENT CHROMIUM MAY BE D007 RCRA HAZARDOUS WASTES PER 40 CFR 261.24. WASTES CONTAINING EXCLUSIVELY OR NEARLY EXCLUSIVELY TRIVALENT CHROMIUM ARE NOT HAZARDOUS WASTES PER 40 CFR 261.4(6)(I)(4).

RCRA HAZARDOUS WASTE: NO X YES RCRA# NONE CERCLA: NO YES X RQ NONE

FOLLOW ALL LOCAL, STATE, AND FEDERAL INFORMATION

J. OTHER REGULATORY INFORMATION

TSCA: WE CERTIFY THAT ALL COMPONENTS OF THIS PRODUCT ARE REGISTERED UNDER THE REGULATIONS OF THE TOXIC SUBSTANCES CONTROL ACT.

SARA: REACTIVE HAZARD: NO X YES PRESSURE HAZARD: NO X YES FIRE HAZARD: NO X YES
IMMEDIATE/ACUTE: NO X YES DELAYED/CHRONIC: NO YES X
CONTAINS AN EXTREMELY HAZARDOUS SUBSTANCE: NO X YES

TOXIC CHEMICAL:
THIS PRODUCT CONTAINS TOXIC CHEMICAL(S) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 AND 40 CFR 372. ANY SUCH TOXIC CHEMICAL(S) ARE SHOWN IN SECTION B OF THIS MSDS. THIS INFORMATION MUST BE INCLUDED IN ALL MSDS'S THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.

CWA: THIS PRODUCT CONTAINS THE FOLLOWING PRIORITY POLLUTANTS AND THEIR CONCENTRATION:
CONTAINS PRIORITY POLLUTANT CHROMIUM AT CONCENTRATIONS GREATER THAN 0.1%.

FDA/USDA: THIS PRODUCT IS REGISTERED WITH THE FDA/USDA NO X YES FOR USE PER SECTIONS:
NONE

CEPA PRIORITY CHEMICAL:
PRODUCT NOT YET EVALUATED

DOT: REGULATED YES NO X RQ NONE UN/NA NO. NONE

SHIPPING NAME:
TEXTILE DYEING OR PRINTING, PIGMENTED, OR REDUCERS OR EXTENDERS, TEXTILE DYEING OR PRINTING PASTE. NMFC 154800.

HAZARD CLASSIFICATION:
NOT D.O.T. REGULATED

K. SPECIAL PRECAUTIONS

HANDLING AND STORAGE INFORMATION:
KEEP CONTAINERS CLOSED. AVOID GETTING ON SKIN OR IN EYES WHEN HANDLING PRODUCT.

OTHER PRECAUTIONS:
NONE KNOWN

L. STATE REGULATORY INFORMATION

PENNSYLVANIA: AS NOTED PER SECTION B.
MASSACHUSETTS: ANY COMPONENT OF THIS PRODUCT WHICH IS A HAZARDOUS CHEMICAL AS

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CHEMTREC: (800) 424-9300
FOR MSDS INFORMATION: (704) 547-5600

LISTED IN THE MASSACHUSETTS SUBSTANCE LIST IS SHOWN ABOVE IN SECTION B OF THIS MSDS. NON-HAZARDOUS COMPONENTS ARE BEING WITHHELD AS TRADE SECRET INFORMATION.

M. LABEL INFORMATION

LABEL HAZARDS:

CAUTION!
MAY CAUSE EYE AND SKIN IRRITATION.

CAUTION!
INHALATION OF DUST MAY IRRITATE LUNGS AND CAUSE DELAYED LUNG DAMAGE.

CAUTION!
ORGANIC DUSTS HAVE POTENTIAL TO BE EXPLOSIVE WITH STATIC SPARK OR FLAME INITIATION.

CAUTION!
POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS EXPOSED TO COMPOUNDS OF CHROMIUM.

LABEL PRECAUTIONS:

AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING. WEAR PROPER PROTECTIVE EQUIPMENT.

AVOID BREATHING DUST. WEAR NIOSH APPROVED RESPIRATORY PROTECTION.

MAINTAIN GOOD HOUSEKEEPING FOR DUST CONTROL. KEEP CONTAINER CLOSED WHEN NOT IN USE.

AVOID BREATHING DUST. WEAR NIOSH APPROVED RESPIRATORY PROTECTION WHEN USING THIS PRODUCT.

****

IN ACCORDANCE WITH GOOD PRACTICES OF PERSONAL CLEANLINESS AND HYGIENE, HANDLE WITH DUE CARE AND AVOID ANY UNNECESSARY CONTACT WITH THIS PRODUCT.

THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER OSHA "RIGHT TO KNOW" REGULATION 29 CFR 1910.1200 AND IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. THE INFORMATION IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARDS CONNECTED WITH THE USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEROF, IS MADE. SANDOZ CHEMICALS ASSUMES NO RESPONSIBILITY FOR DAMAGE OR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SANDOZ CHEMICALS CORPORATION

MATERIAL SAFETY DATA SHEET

SANDOZ CHEMICALS
4000 MONROE ROAD
CHARLOTTE N.C. 28205

ALUMINUM OLIVE DRAB NO 9
1-0494-0-100

REVISED DATE: 04/01/86
PAGE: 1

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300

LOS ALAMOS NATIONAL LABS.
JAN CLEMENTSMS G770
GROUP MST-7
LOS ALAMOS, NM 87545

H M I S

HEALTH	1 *
FLAMMABILITY	1
REACTIVITY	1
PERSONAL PROTECTION	E

A. PRODUCT IDENTIFICATION

TRADE NAME: ALUMINUM OLIVE DRAB NO 9 CAS NO: MIXTURE
SYNONYMS: PRODUCT HAS NO SYNONYMS
CHEMICAL FAMILY: MIXTURE OF DYES
FORMULA: MIXTURE

B. HAZARDOUS COMPONENTS

COMPONENT	CAS NO.	%	TLV
CHROMIUM AS AN INTEGRAL PART OF DYE MOLECULE	7440-47-3	3-4	0.5 MG/M3 OSHA

C. PHYSICAL PROPERTIES

BOILING POINT (°F): NOT AVAILABLE
VAPOR PRESSURE (MM HG): NOT AVAILABLE
VAPOR DENSITY (AIR = 1): NOT AVAILABLE
SOLUBILITY IN WATER: SOLUBLE
APPEARANCE AND ODOR: GREENISH POWDER, MILD ODOR
SPECIFIC GRAVITY: NOT AVAILABLE
PERCENT VOLATILE (BY WEIGHT): NOT AVAILABLE
EVAPORATION RATE: NOT AVAILABLE
PH (-- % IN WATER): NOT AVAILABLE

D. FIRE & EXPLOSION HAZARD DATA

FLASH POINT (°F): NOT AVAILABLE FLAMMABLE LIMITS: LEL UNKNOWN UEL UNKNOWN
EXTINGUISHING MEDIA: WATER X ALCOHOL FOAM X CO2 X DRY CHEMICAL X
SPECIAL FIRE FIGHTING PROCEDURES:
PREVENT RUN OFF TO SEWERS AND BODIES OF WATER FROM FIRE FIGHTING INVOLVING THIS PRODUCT AS PRODUCT CONTAINS CLEAN WATER ACT PRIORITY POLLUTANTS.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
ORGANIC DUSTS HAVE POTENTIAL TO BE EXPLOSIVE WITH STATIC SPARK OR FLAME INITIATION. MAINTAIN GOOD HOUSEKEEPING FOR CONTROL OF DUST.

E. REACTIVITY DATA

STABILITY: STABLE CONDITIONS TO AVOID: NONE KNOWN

HAZARDOUS POLYMERIZATION : WILL NOT OCCUR
CONDITIONS TO AVOID: NONE KNOWN

INCOMPATABILTY:
STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS :
THERMAL DECOMPOSITION MAY PRODUCE OXIDES OF CARBON, NITROGEN, AND SULFUR. COMPOUNDS OF CHLORINE MAY ALSO BE RELEASED.

F. PERSONAL PROTECTIVE EQUIPMENT INFORMATION

RESPIRATORY PROTECTION:
USE NIOSH APPROVED RESPIRATOR OR DUST MASK.

PROTECTIVE GLOVES:
BUTYL RUBBER, PVC OR NEOPRENE

EYE PROTECTION:
SAFETY GLASSES OR CHEMICAL SPLASH GOGGLES

VENTILATION:
LOCAL VENTILATION RECOMMENDED - MECHANICAL VENTILATION MAY BE USED.

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300

OTHER PROTECTIVE EQUIPMENT:
NONE KNOWN

G. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: NOT ESTABLISHED LD50 (ORAL-RAT) UNKNOWN MG/KG BODY WEIGHT
DERMAL IRRITATION-RABBIT: NOT DETERMINED EYE IRRITATION-RABBIT: NOT DETERMINED

EFFECTS OF OVEREXPOSURE:
CHROMIUM: CHROMIUM AND CERTAIN COMPOUNDS OF CHROMIUM HAVE BEEN REPORTED TO CAUSE DAMAGE TO THE LUNGS RESULTING IN CUMULATIVE DAMAGE TO THE LUNGS AND FROM RESULTS OF TESTING WITH LABORATORY ANIMALS ARE SUSPECTED OF CAUSING CANCER. DERMATITIS HAS BEEN REPORTED FROM REPEATED PROLONGED CONTACT WITH CHROMIUM COMPOUNDS. SENSITIZATION MAY OCCUR ON REPEATED CONTACT. THERE HAVE BEEN NO REPORTS OF ANY OF THESE EFFECTS FROM THE USE OF THIS PRODUCT.

KNOWN EFFECTS ON OTHER ILLNESSES:
NO KNOWN EFFECTS ON OTHER ILLNESSES.

LISTED CARCINOGEN: NONE X OSHA NTP IARC OTHER

H. EMERGENCY AND FIRST AID PROCEDURES

SKIN:
WASH THOROUGHLY WITH SOAP AND WATER FOR 15 MINUTES. IF SKIN IRRITATION OCCURS, SEEK MEDICAL ATTENTION.

EYES:
FLUSH IMMEDIATELY UNDER RUNNING WATER FOR FIFTEEN MINUTES. SEEK MEDICAL ATTENTION.

INHALATION:
REMOVE SUBJECT TO FRESH AIR. SEEK MEDICAL AID IF LUNG IRRITATION PERSISTS OR IF BREATHING BECOMES DIFFICULT.

INGESTION:
IF INGESTED, SEEK MEDICAL ASSISTANCE.

NOTE TO PHYSICIAN:
NONE KNOWN

I. SPILL AND DISPOSAL INFORMATION

STEPS TO BE TAKEN IN CASE OF SPILL:
CONTAIN SPILL. CONTAINS COMPLEXED CHROMIUM. AVOID RUNOFF TO SEWERS AND BODIES OF WATER. WEAR PROPER PROTECTIVE EQUIPMENT. ABSORB ON SUITABLE ABSORBANT MATERIALS. CLEAN UP BY SCRUBBING WITH SOAP AND WATER. COLLECT CLEANING WASTES, OR REMOVE CONTAMINATED SOILS. PLACE IN PROPER CONTAINERS.

WASTE DISPOSAL INFORMATION:
THIS PRODUCT BECOMES A RCRA HAZARDOUS WASTE WHEN IT BECOMES A WASTE MATERIAL DUE TO CHROMIUM CONTENT. RECOMMENDED DISPOSAL IS BY INCINERATION WITH PROPER AIR SCRUBBING DEVICES AT APPROVED FACILITIES. MAY ALSO BE LANDFILLED IN APPROVED FACILITIES.

RCRA HAZARDOUS WASTE: NO YES X RCRA # D007 CERCLA: NO YES X RQ NONE

FOLLOW ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

J. OTHER REGULATORY INFORMATION

TSCA: WE CERTIFY THAT ALL COMPONENTS OF THIS PRODUCT ARE REGISTERED UNDER THE REGULATIONS OF THE TOXIC SUBTANCES CONTROL ACT.

CWA: THIS PRODUCT CONTAINS THE FOLLOWING PRIORITY POLLUTANTS AND THEIR CONCENTRATION:
CONTAINS PRIORITY POLLUTANT CHROMIUM AT GREATER THAN 0.1%.
FDA / USDA: THIS PRODUCT IS REGISTERED WITH FDA / USDA NO X YES FOR USE PER SECTIONS:
NONE

DOT: REGULATED YES NO X RQ NONE UN/NA NO. NONE

EMERGENCY TELEPHONE: (704) 827-9651
CHEMTREC: (800) 424-9300

SHIPPING NAME: TEXTILE DYEING OR PRINTING, PIGMENTED, OR REDUCERS OR EXTENDERS, TEXTILE DYEING OR PRINTING PASTE, NMFC 154800.

HAZARD CLASSIFICATION: NOT D.O.T. REGULATED

K. SPECIAL PRECAUTIONS

HANDLING AND STORAGE INFORMATION:
KEEP CONTAINER CLOSED WHEN NOT IN USE. AVOID GETTING ON SKIN OR IN EYES WHEN HANDLING PRODUCT.

OTHER PRECAUTIONS:
NONE KNOWN

IN ACCORDANCE WITH GOOD PRACTICES OF PERSONAL CLEANLINESS AND HYGIENE, HANDLE WITH DUE CARE AND AVOID ANY UNNECESSARY CONTACT WITH THIS PRODUCT.

THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER OSHA "RIGHT TO KNOW" REGULATION 29 CFR 1910.1200 AND IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARDS CONNECTED WITH THE USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, IS MADE. SANDOZ CHEMICALS CORPORATION ASSUMES NO RESPONSIBILITY FOR DAMAGE OR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SANDOZ CHEMICALS CORPORATION

APPENDIX G

WASTE ANALYSIS PLAN FOR TREATMENT IN CONTAINERS

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Manny Gonzales, EM-7, J593

DATE: September 14, 1993

FROM: Guy Lussiez, EM-7 Chd.

MAIL STOP/TELEPHONE: E517/7-7391

SYMBOL: EM-7A-93-305

SUBJECT: **SOLIDIFICATION OF A LEAD SLURRY AT BENCH SCALE**

We have investigated solidification of minus 325 mesh lead at bench scale, in cement, with various additives. About five dozen tests were run. A TCLP was run for each test. Figure 1 shows that most additives did not significantly decrease leaching of lead during the TCLP. Latex addition somewhat decreased leaching, but further tests at higher latex loading were disappointing as seen in Table 1.

Table 1. Latex additive. TCLP results in ppm lead.

	Latex Loading, %(2)	
Lead loading(1)	3.7	22/23
1	1.9	0.7
3	0.5	7.3
4	15	36
5.6	50	
7		155

(1) Lead to total weight of ingredients.
(2) Latex to total weight of ingredients.

Encapsulation with latex only was also tested and showed no improvement. Tests were also run by IC Technologies on solidification with two polymers: polyester xylene and melamine formaldehyde. The xylene was better, but figure 2 shows that the TCLP results were worse than in cement. Although these polymers are not leached by the acetic acid used for the TCLP, calculations show that in a perfectly dispersed mixture, there are enough particles of lead exposed on the outer surface. This probably happens also with cement, but cement is basic and must partially neutralize the acid. This is substantiated by the fact that the TCLP on cement with no additive levels off at high lead loading (Figure 1) while the TCLP on pure lead would be about 100 times higher.

A series of tests was also run with addition of sodium silicate which showed substantial improvements (Figure 3). Although results at about 1% sodium silicate (ratio of silicate to total weight of ingredients) are somewhat erratic, it is clear that the lead loading of cement can be more than doubled compared to cement without additive.

Based on information from Ron Nakaoka, we went one step further and prepared samples of lead solidified in cement with sodium silicate plus polyvinyl alcohol (PVA).

In these tests, a dilute solution of PVA replaced water, while lead and silicate loadings varied. The TCLP results are shown in Table 2. All are below detection limit of 0.05 ppm lead. This is lower than the natural concentration of lead in pure cement. This was truly impressive considering the high lead loading, and it was verified on two samples that lead had effectively been added to the concrete.

Table 2. TCLP results for cement with PVA plus sodium silicate additives. ppm of lead.
PVA solution at 5%.
PVA solution/cement powder by weight: 20%
Sodium silicate solution: 40°Be

Lead/cement powder, % by wt.		Sodium silicate/cement powder, % by wt.	
Experimental	**Analytical (*)**	**0.6**	**1.2/1.3**
5.0	**4.5**	**<0.05**	**<0.05**
9.0	**8.1**	**<0.05**	**<0.05**

* **Analytical is the percentage in the solidified mass which includes the weight of lead and additives. Therefore it is lower than the experimental number which is the ratio to cement powder added to the mix.**

The MSDS's for these two additives are attached. Although PVA is noted as moderate flammability, the 5% solution is not flammable. Except for some causticity of sodium silicate, and moderate health hazard, these chemicals are quite innocuous. Note that sodium silicate mentions possibility of generation of hydrogen gas in presence of lead. However, no gas generation was found with the solution used. The improvement of TCLP results at bench scale are sufficiently drastic that we recommend use of these additives for solidification in the trailer. PVA and sodium silicates can be mixed before adding the sump slurry and the cement.

GWL:mav

Attachments

Cy: Stan Zygmunt, EM-7, E516
Ray Garde, EM-7, E517
Jacek Dziewinski, EM-7, E516
Krystyna Dziewinska, EM-7, E516
Ron Nakaoka, EM-7, E517
Seledon Martinez, EM-7, E520
Myrna Romero, EM-7, E520
EM-7A file

Figure 1 **Solidification of -325 Mesh Lead**

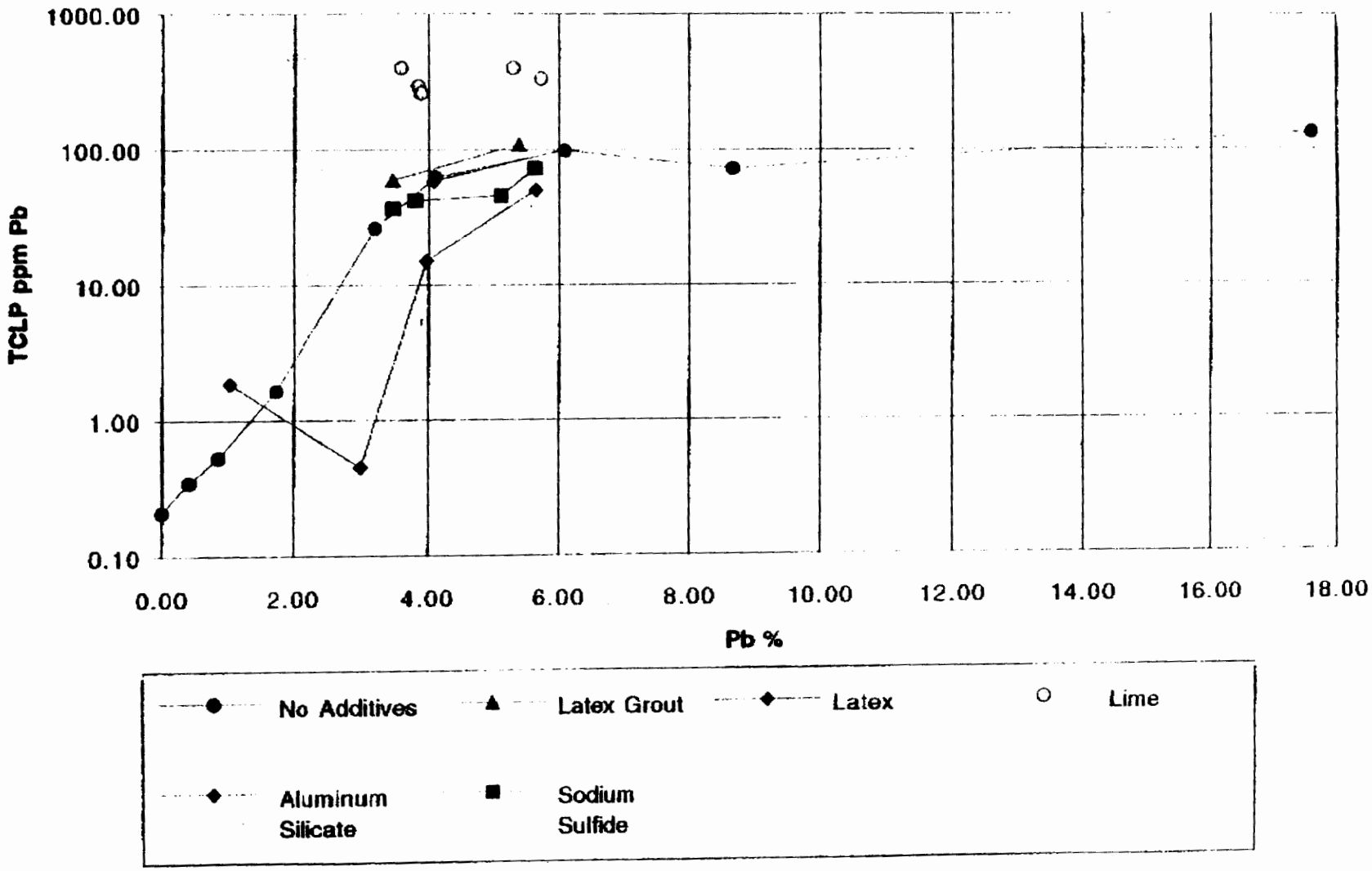


Chart 2

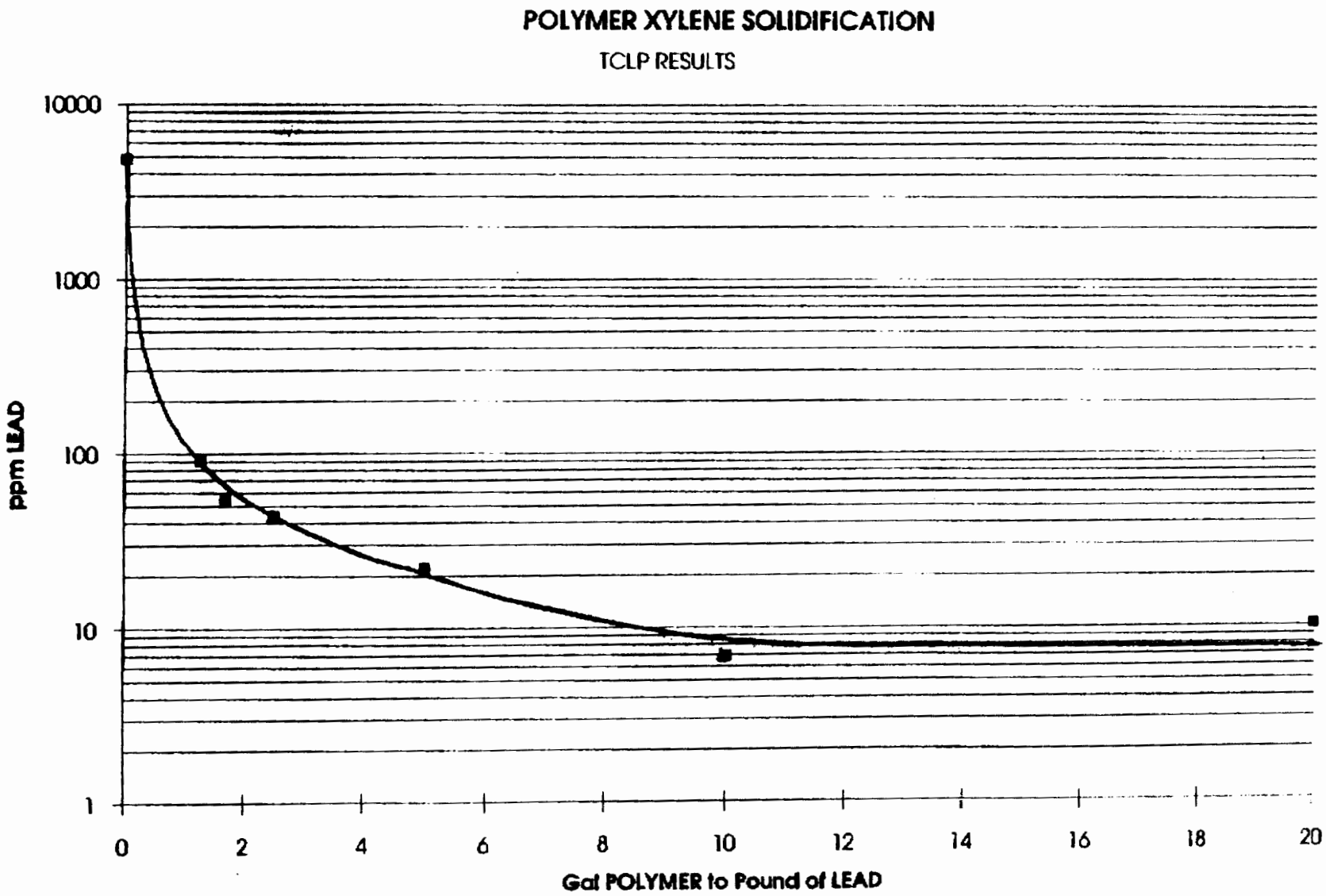
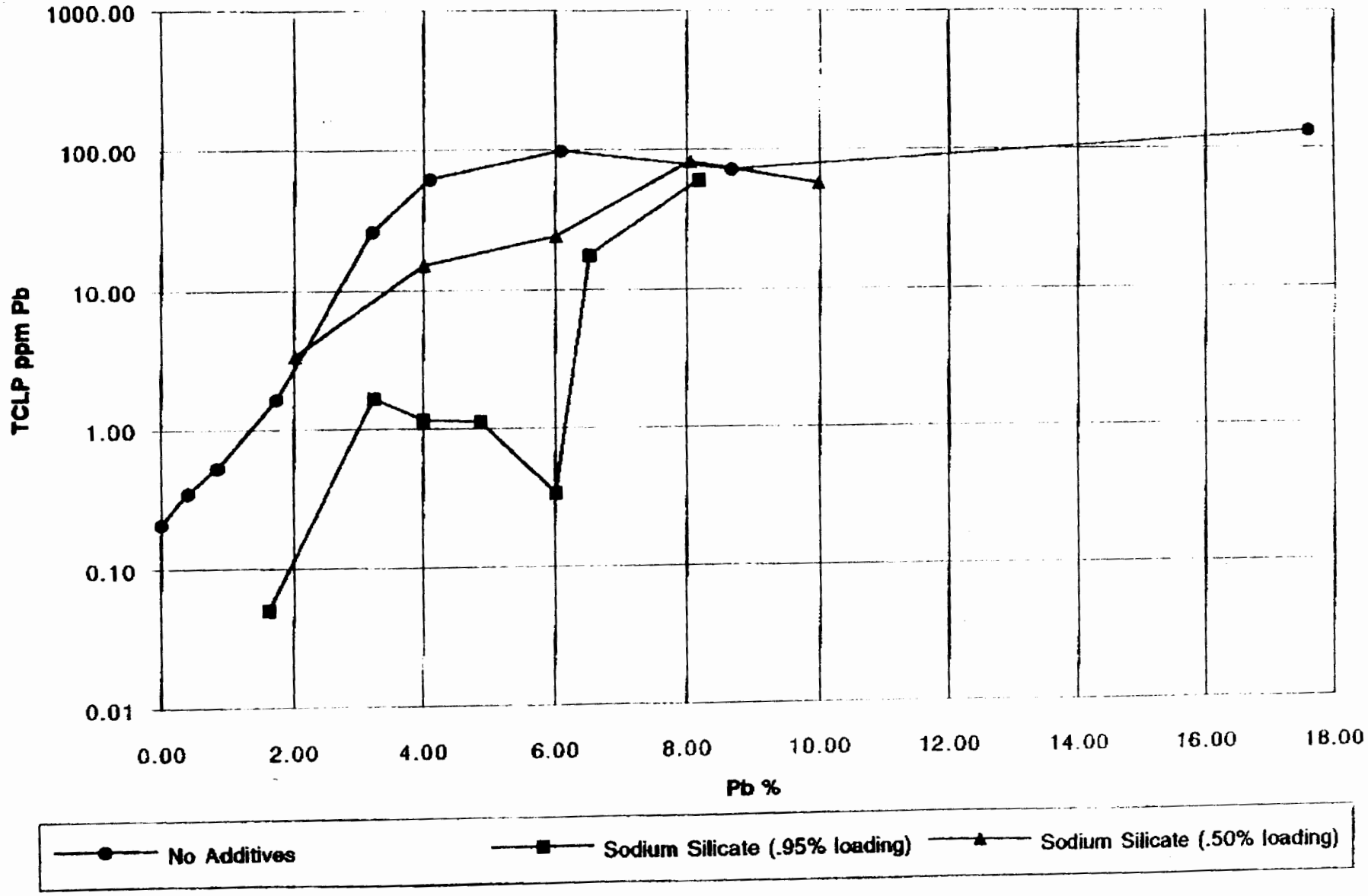

POLYMER XYLENE SOLIDIFICATION
TCLP RESULTS
10000
1000
100
10
1
ppm LEAD
0
2
4
6
8
10
12
14
16
18
20
Gal POLYMER to Pound of LEAD

Figure 3 **Solidification of -325 Mesh Lead**



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SUBSTANCE IDENTIFICATION

CAS NUMBER: 9002-89-5
RTECS NUMBER: TR8100000

'BSTANCE: POLYVINYL ALCOHOL

ADE NAMES/SYNONYMS:
VINYL ALCOHOL, POLYMERS; ETHENOL, HOMOPOLYMER; PVAL; PVA;
POLY(VINYL ALCOHOL); STCC 4941154; OHS19153

:EMICAL FAMILY:
)LYMER

'DROXYL, ALIPHATIC

)LECULAR FORMULA: (-C-H2-C-(H)-(O-H)-)X

)LECULAR WEIGHT: (44.05)X

:RCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=2 REACTIVITY=0 PERSISTENCE=3
PA RATINGS (SCALE 0-4): HEALTH=0 FIRE=2 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

MPONENT: POLYVINYL ALCOHOL PERCENT: 100.0
CAS# 9002-89-5

HER CONTAMINANTS: NONE

'POSURE LIMITS:
OCCUPATIONAL EXPOSURE LIMITS ESTABLISHED BY OSHA, ACGIH, OR NIOSH.

PHYSICAL DATA

SCRIPTION: WHITE TO CREAM COLORED AMORPHOUS POWDER OR GRANULES.

LTING POINT: 392 F (200 C) (DECOMPOSES) SPECIFIC GRAVITY: 1.27-1.31

LUBILITY IN WATER: SOLUBLE

.VENT SOLUBILITY: SOLUBLE IN PHENOL, ACETIC ACID, FORMAMIDE, AND
:ETHYL SULFOXIDE. INSOLUBLE IN PETROLEUM SOLVENTS AND MOST ORGANIC SOLVENTS,
.ORINATED HYDROCARBONS.

: MILDLY ACIDIC IN SOLUTION

FIRE AND EXPLOSION DATA

RE AND EXPLOSION HAZARD:
DERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

ST-AIR MIXTURES MAY IGNITE OR EXPLODE.

ASH POINT: 175 F (79 C) (OC)

REFIGHTING MEDIA:
/ CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
90 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

R LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
90 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

COHOL FOAM
PA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE
IDS, 1991).

REFIGHTING:
E CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER
LLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE-CONTROL WATER FOR
TER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE
E 31).

'AGENTS SUITABLE FOR TYPE OF SURROUNDING FIRE. AVOID BREATHING HAZARDOUS
PORS, KEEP UPWIND.

TOXICITY

VINYL ALCOHOL:
XICITY DATA: >20 GM/KG ORAL-RAT LD50; 14700 MG/KG ORAL-MOUSE LD50;
TUMORIGENIC DATA (RTECS).
R INOGEN STATUS: ANIMAL INADEQUATE EVIDENCE (IARC GROUP-3).
TE TOXICITY LEVEL: RELATIVELY-NON TOXIC BY INGESTION.
RGET EFFECTS: NO DATA AVAILABLE.

HEALTH EFFECTS AND FIRST AID

ATION:
YVINYL ALCOHOL:
ACUTE EXPOSURE- SHORT-TERM INHALATION OF POLYVINYL ALCOHOL DUST HAS NO
NOWN HEALTH SIGNIFICANCE, BUT HIGH CONCENTRATIONS MAY CAUSE DISCOMFORT.
CHRONIC EXPOSURE- REDUCED GROWTH RATE WAS OBSERVED IN RATS REPEATEDLY
EXPOSED.

RS AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING
HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST.
TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

N CONTACT:
YVINYL ALCOHOL:
ACUTE EXPOSURE- MAY CAUSE IRRITATION. POLYVINYL IS NOT A SENSITIZER BUT

CERTAIN ADDITIVES MAY CAUSE SENSITIZATION DERMATITIS.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
POLYVINYL ALCOHOL:
ACUTE EXPOSURE- CONCENTRATIONS AS HIGH AS 10% WERE FOUND TO BE NON-IRRITATING.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
POLYVINYL ALCOHOL:
ACUTE EXPOSURE- THE LETHAL DOSE REPORTED IN MICE WAS 14,700 MG/KG.
CHRONIC EXPOSURE- MICROSCOPIC TISSUE DAMAGE IN RAT LIVER, STOMACH AND STERNUM WAS OBSERVED IN RATS FED A DIETARY LEVEL OF 29 PERCENT.

FIRST AID- TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
POLYVINYL ALCOHOL:
ACIDS (STRONG): MAY ATTACK POLYMER.
ALKALIES (STRONG): MAY ATTACK POLYMER.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. AVOID CONTACT WITH STRONG OXIDIZERS, EXCESSIVE HEAT, SPARKS, OR OPEN FLAME.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SWEEP UP AND PLACE IN SUITABLE CLEAN, DRY CONTAINERS FOR RECLAMATION OR LATER DISPOSAL. DO NOT FLUSH SPILLED MATERIAL INTO SEWER. KEEP UNNECESSARY PEOPLE AWAY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION. VENTILATION EQUIPMENT MUST BE EXPLOSION PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY DUST AND MIST RESPIRATOR.

ANY AIR-PURIFYING RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY POWERED AIR-PURIFYING RESPIRATOR WITH A DUST AND MIST FILTER.

ANY POWERED AIR-PURIFYING RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY TYPE 'C' SUPPLIED-AIR RESPIRATOR OPERATED IN THE PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE OR CONTINUOUS-FLOW MODE.

ANY SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
PROTECTIVE CLOTHING NOT REQUIRED. AVOID REPEATED OR PROLONGED CONTACT WITH

THIS SUBSTANCE.

GLOVES:

PROTECTIVE GLOVES ARE NOT REQUIRED BUT RECOMMENDED.

EYE PROTECTION:
EYE PROTECTION NOT REQUIRED, BUT ADVISABLE.

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CREATION DATE: 07/08/85 REVISION DATE: 03/24/93

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FOR EMERGENCY SOURCE INFORMATION
CONTACT: 1-615-366-2000

SUBSTANCE IDENTIFICATION

CAS NUMBER: 1344-09-8

SUBSTANCE: SODIUM SILICATE

TRADE NAMES/SYNONYMS:
SILICIC ACID, SODIUM SALT; WATER GLASS; SOLUBLE GLASS; SILICON SODIUM OXIDE; SODIUM BETA-SILICATE; OHS21610

CHEMICAL FAMILY:
SILICATE

MOLECULAR FORMULA: VARIES

MOLECULAR WEIGHT: VARIES

CERCLA RATINGS (SCALE 0-3): HEALTH=2 FIRE=0 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: SODIUM SILICATE PERCENT: 100.0
CAS# 1344-09-8

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
NO OCCUPATIONAL EXPOSURE LIMITS ESTABLISHED BY OSHA, ACGIH, OR NIOSH.

PHYSICAL DATA

DESCRIPTION: COLORLESS, WHITE, GRAYISH-WHITE OR GREEN AMORPHOUS, DELIQUESCENT, MONOCLINIC CRYSTAL LUMPS OR POWDER. MELTING POINT: NOT AVAILABLE

SPECIFIC GRAVITY: NOT AVAILABLE PH: 11-12 SOLUBILITY IN WATER: SOLUBLE

SOLVENT SOLUBILITY: SOLUBLE IN SOME POLYHYDRIC ALCOHOLS; SLIGHTLY SOLUBLE IN PRIMARY ALCOHOLS AND KETONES; INSOLUBLE IN SOME ALCOHOLS, POTASSIUM SALTS, AND SODIUM SALTS.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 60).

EXTINGUISH USING AGENTS INDICATED; DO NOT USE WATER DIRECTLY ON MATERIAL. IF LARGE AMOUNTS OF COMBUSTIBLE MATERIALS ARE INVOLVED, USE WATER SPRAY OR FOG IN FLOODING AMOUNTS. USE WATER SPRAY TO ABSORB CORROSIVE VAPORS. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS; KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.245B
EXCEPTIONS: 49-CFR 173.244

TOXICITY

SODIUM SILICATE:
IRRITATION DATA: 250 MG/24 HOURS SKIN-HUMAN SEVERE (VAN WATERS & ROGERS MSDS).
TOXICITY DATA: 1280 MG/KG ORAL-RAT LD50 (VAN WATERS & ROGERS MSDS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE, INGESTION.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
SODIUM SILICATE:
CORROSIVE.
MAY DESTROY MUCOUS MEMBRANES AND LUNGS AND CAUSE CHEMICAL PNEUMONITIS. EXPOSURE MAY INCREASE SUSCEPTIBILITY TO RESPIRATORY ILLNESS. SEE INFORMATION ON CORROSIVE SUBSTANCES.

CORROSIVE SUBSTANCES:

ACUTE EXPOSURE- MAY CAUSE SEVERE IRRITATION OF THE RESPIRATORY TRACT WITH COUGHING, CHOKING, PAIN AND POSSIBLY BURNS OF THE MUCOUS MEMBRANES. IN SOME CASES, PULMONARY EDEMA MAY DEVELOP, EITHER IMMEDIATELY OR MORE OFTEN WITH A PERIOD OF 5-72 HOURS. THE SYMPTOMS MAY INCLUDE TIGHTNESS IN

THE CHEST, DYSPNEA, FROTHY SPUTUM, CYANOSIS, AND DIZZINESS. PHYSICAL FINDINGS MAY INCLUDE MOIST RALES, LOW BLOOD PRESSURE AND HIGH PULSE PRESSURE. SEVERE CASES MAY BE FATAL.

CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, REPEATED OR PROLONGED EXPOSURE MAY CAUSE INFLAMMATORY AND ULCERATIVE CHANGES IN THE MOUTH AND POSSIBLY BRONCHIAL AND GASTROINTESTINAL DISTURBANCES.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
SODIUM SILICATE:
CORROSIVE.

ALLERGIC CONTACT URTICARIA AND THE PRODUCTION OF ULCERATIVE CONTACT DERMATITIS HAVE BEEN REPORTED FOLLOWING REPEATED EXPOSURE. SEE INFORMATION ON CORROSIVE SUBSTANCES.

CORROSIVE SUBSTANCES:

ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE SEVERE IRRITATION, PAIN AND POSSIBLY BURNS.

CHRONIC EXPOSURE- EFFECTS DEPEND ON CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT MAY RESULT IN DERMATITIS OR EFFECTS SIMILAR TO ACUTE EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
SODIUM SILICATE:
CORROSIVE.

ACCIDENTAL SPLASHES INTO THE EYE AS A 40% SOLUTION HAVE PRODUCED CORNEAL EPITHELIAL DAMAGE EVEN AFTER IMMEDIATE RINSING OF THE EYE. SEE INFORMATION ON CORROSIVE SUBSTANCES.

CORROSIVE SUBSTANCES:

ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE SEVERE IRRITATION, PAIN AND BURNS, POSSIBLY SEVERE. THE DEGREE OF INJURY DEPENDS ON THE CONCENTRATION AND DURATION OF CONTACT. THE FULL EXTENT OF THE INJURY MAY NOT BE IMMEDIATELY APPARENT.

CHRONIC EXPOSURE- EFFECTS DEPEND ON CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT MAY RESULT IN CONJUNCTIVITIS OR EFFECTS AS IN ACUTE EXPOSURE.

IRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET

MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
SODIUM SILICATE:
CORROSIVE.
DOGS FED 2.4 GM/KG PER DAY FOR 4 WEEKS EXPERIENCED POLYDIPSIA, POLYURIA, A RENAL TUBULE DAMAGE. IN ANOTHER STUDY, SOME ANIMALS RECEIVING 8 MG/KG PER DAY FOR 4 WEEKS EXPERIENCED SOFT STOOLS IN ADDITION TO SOME OF THE ABOVE REPORTED EFFECTS. DOGS ADMINISTERED A 10% AQUEOUS SOLUTION EXPERIENCED VOMITING WITHIN 6 MINUTES WHICH CONTINUED UP TO 33 MINUTES. SEE INFORMATIO ON CORROSIVE SUBSTANCES.

CORROSIVE SUBSTANCES:
ACUTE EXPOSURE- MAY CAUSE IMMEDIATE PAIN AND SEVERE BURNS OF THE MUCOUS MEMBRANES. THERE MAY BE DISCOLORATION OF THE TISSUES. SWALLOWING AND SPEECH MAY BE DIFFICULT AT FIRST AND THEN ALMOST IMPOSSIBLE. THE EFFECTS ON THE ESOPHAGUS AND GASTROINTESTINAL TRACT MAY RANGE FROM IRRITATION TO SEVERE CORROSION. EDEMA OF THE EPIGLOTTIS AND SHOCK MAY OCCUR.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION, REPEATED INGESTION MAY RESULT IN EFFECTS AS WITH ACUTE INGESTION.

FIRST AID- DILUTE THE ALKALI BY GIVING WATER OR MILK IMMEDIATELY AND ALLOW VOMITING TO OCCUR. AVOID GASTRIC LAVAGE OR EMETICS. ESOPHAGOSCOPY IS THE ONLY WAY TO EXCLUDE THE POSSIBILITY OF CORROSION IN THE UPPER GASTROINTESTINAL TRACT; IF CORROSION IS SUSPECTED, ESOPHAGOSCOPY SHOULD USUALLY BE PERFORMED WITHIN 24 HOURS (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). MAINTAIN AIRWAY AND TREAT SHOCK. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
SODIUM SILICATE:
ACIDS: MAY CAUSE VIOLENT REACTION.
ALUMINUM: MAY LIBERATE FLAMMABLE HYDROGEN GAS.
COPPER: MAY LIBERATE FLAMMABLE HYDROGEN GAS.
FLUORINE: BURNS.
LEAD: MAY LIBERATE FLAMMABLE HYDROGEN GAS.
TIN: MAY LIBERATE FLAMMABLE HYDROGEN GAS.
ZINC: MAY LIBERATE FLAMMABLE HYDROGEN GAS.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC SODIUM OXIDE AND TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

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ERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING

THIS SUBSTANCE.

STORAGE

RE AWAY FROM INCOMPATIBLE SUBSTANCES.

CONDITIONS TO AVOID

BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY UMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, , ETC.).

SPILL AND LEAK PROCEDURES

UPATIONAL SPILL:
NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR LL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO TAINERS FOR LATER DISPOSAL. FOR SMALL DRY SPILLS, WITH CLEAN SHOVEL PLACE ERIAL INTO CLEAN, DRY CONTAINER AND COVER. MOVE CONTAINERS FROM SPILL A. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP ECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

TILATION:
VIDE LOCAL EXHAUST VENTILATION SYSTEM.

PIRATOR:
FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE HYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN RDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND N THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED HE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE ATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY ND HEALTH ADMINISTRATION (NIOSH-MSHA).

NY DUST AND MIST RESPIRATOR WITH A FULL FACEPIECE.

NY AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

NY POWERED AIR-PURIFYING RESPIRATOR WITH A TIGHT-FITTING FACEPIECE AND HIGH-EFFICIENCY PARTICULATE FILTER.

Y TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

Y SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

IREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

APPENDIX H

DOCUMENTATION FOR OVER 1 YEAR STORAGE OF MERCURY AND DIOXIN WASTES

ROLLINS **CHEMPAK** INC.
2801 BROADBENT PARKWAY NE
BUILDING 5 SUITE B
ALBUQUERQUE NM 87107
505-345-1515
FAX 505-345-3905

Mercury Waste Reclaimers

(1) Mercury Refining - Albany, NY (518) 785-1703

(2) Bethlehem Apparatus Co. - Hellertown, Pa (215) 838-7034

(3) Quicksilver products - San Francisco, Ca

(4) Pure Lab Co. - Horwood Ma (617) 326-3442 (Larry Hyborn)

(5) D.F. Goldsmith - Evanston, Il (708) 869-7800

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To Andy Montoya	From TERRY Stady
Co.	Co.
Dept.	Phone #
Fax #	Fax #

Bethlehem Apparatus Company, Inc.
890 Front St., P.O. Box Y, Hellertown, PA 18055 • 215-838-7034 • FAX 215-838-6333 • TELEX 494-9195

February 17, 1992

MERCURY RECOVERY/RECYCLING CUSTOMERS

Enclosed are three new forms that are required for all future shipments of mercury waste for recycling.

1. The Land Disposal Notification and Material Certification form is required by Federal EPA to accompany each manifested shipment. Please note that prior to May 8, 1992 certification "B" applies to both the high and low mercury subcategories. After May 8, 1992, High Mercury subcategory (Greater than or equal to 260 mg/kg total mercury) will require the RMERC treatment code.

2. The Mercury Recovery/Recycling Agreement shows our new pricing that will take effect on April 1, 1992. Please note that there is a 5% increase due the the May 8, 1992 Land Disposal requirements. Also there is an additional paragraph E.1. that we now require.

3. The Waste Profile form also has one additional change, Side B *Hazardous Characteristics (Other Than Mercury).* Please resubmit all existing profiles on the new form.

Please let us know if you have any special requirements. Bethlehem currently has special pricing for crushed Fluorescent Lamps, Mercury Vapor Absorption Charcoal, and Muds from chlorine-caustic soda operations. If you have a large volume (greater than 5 drums per shipment) of a similar type material we can process at special rates.

Thank You,

BETHLEHEM APPARATUS COMPANY, INC.

Bruce J. Lawrence

Bruce J. Lawrence
President

Encl

COST PROPOSAL

UNIVERSITY OF CALIFORNIA

LOS ALAMOS NATIONAL LABORATORY

REQUEST FOR PROPOSAL NUMBER 9-XTI-Q9808

Submitted by:

Rollins CHEMPAK Inc.

August 3, 1991

ROLLINS **CHEMPAK** INC.

ROLLINS
ENVIRONMENTAL SERVICES

NATURALLY OCCURRING RADIOACTIVE MATERIALS

Rollins will generally not accept any package of waste material or bulk load of waste which displays a gamma ray activity greater than 25 microRoentgens/hour.

Some materials are exempt from this limitation -- such as non-enhanced naturally occurring Potassium 40, Brazil nuts, and products and by-products of bauxite. You should check with your Sales Account Executive if you believe that such an exception may apply to your waste material.

OTHER RADIOACTIVE MATERIALS

Rollins will not accept wastes containing radioactive materials in concentrations in excess of those for which licensing is required to own, use, transfer, or dispose of the radioactive material under the regulations of the Nuclear Regulatory Commission or the regulations of an agreement state.

The health of the public and the integrity of the environment are of paramount concern to Rollins. In this regard, Rollins wishes to assure that it continues to meet all of the radiological health standards set forth by the Nuclear Regulatory Commission and reflected in the regulations of agreement states including those provisions of Table II of Appendix A of Chapter 4 of Part XV of Title 33 of the Louisiana Administrative Code.

Rollins will not accept wastes containing radioactive materials with quantities of radioisotopes which are inconsistent with meeting the radiological health standards set forth in Table II of Appendix A of Chapter 4 of Part XV of Title 33 of the Louisiana Administrative Code.

CHEMPAK

MEMO

DATE: SEPTEMBER 4, 1991

TO: ANNE-MARIE GUSTAVSSON
LANL

FROM: JOHN KELLY JCK
BRANCH MANAGER, ALBUQUERQUE

SUBJ: UNACCEPTABLE WASTE STREAMS

Rollins' incinerators in Deer Park, Texas and Baton Rouge, Louisiana are not permitted to burn dioxin waste (e.g., pentachlorophenol) at this time.

Likewise, because of constraints caused by our water treatment and scrubber systems, our plants are extremely limited on the amount of heavy metals that we can incinerate. Rollins cannot incinerate **any** amount of **mercury** (either free or compounded) and we are **limited to 12.5 lbs of cadmium per shipment.** Because of these limitations, it is our company policy not to accept nickel-cadmium batteries for incineration.

If you have any further questions concerning problem waste streams, please feel free to call me at (505) 345-1515.

Anne-Marie,

John did not specify that the 12.5 lbs limit applies only to Baton Rouge not Deer Park which is 1/10 of a pound Cadmium. Please Feel Free to ask me any questions that you might have.

Thank you,

Chemical Waste Management, Inc.

Technical Services Division
4227 Technology Drive
Fremont, California 94536-6337
415/770-0575

March 5, 1990

Annemarie Gustavsson
Los Alamos National Laboratories
P.O. Box 1663 Mail Stop J-593
TA-54, Area L
Los Alamos, New Mexico 87545

RE: Unused Pentachlorophenol Waste Product

Dear Annemarie,

Dioxin

I have discussed the referenced waste material with our Regional Environmental Manager, Richard Gurske, to assure that this response is up-to-date. Commerical product pentachlorophenol is classified under RCRA as F027, a Dioxin containing waste. No Chemical Waste Management, Inc. facility is permitted to accept, treat or dispose of this material. To our knowledge, the EPA has not permitted any commercial facility to treat and dispose of this material.

Please call me if you have any further questions.

Sales Manager
CHEMICAL WASTE MANAGEMENT, INC.

Bill Van Dyke
Technical Services Division
Sales Manager

cc: Richard Gurske

Chemical Waste Management, Inc.
Technical Services Division
9131 East 96th Avenue
Henderson, CO 80640
303 289-4827 FAX 303 289-3520

Date Aug 5, 1993

To John Kelly

From Tim Reese

Subject Materials that can't currently be handled.

C92031097 Mercuric Chloride
C92030519 Mercuric Chloride
Currently there is not a facility that can handle mercuric chloride. CWMI is working with the State of New Mexico to be able to pretreat these items, but this permit will take some time to complete

C92030377 Silver Amalgamating
Currently there is not a facility that can handle mercury and silver in an acid solution. The company Bethlehem can handle mercury but not in acid.

C92030417 Dry silver Recording Paper containing mercury and silver.
Currently there is not a facility that can handle mercury in the paper

C92030498 High voltage power supply
Currently there is not a facility that can handle this power supply due to the mercury content

C92028745 2,4,6-Trichlorophenol until recently there was not a facility permitted to take F027. A facility has become available and CWMI is currently working to get a profile approved at the facility.

Any questions please call 505 667-7579

Tim Reese
Project Supervisor

Chemical Waste Management, Inc.

9131 East 96th Avenue
Henderson Colorado 80640
303/289-4827

May 18, 1992

Ms. Anne Marie Gustavsson
LOS ALAMOS NATIONAL LABS
Los Alamos, NM

Dear Ms. Gustavsson:

I am writing this letter in response to your request about disposing of F-listed, K-listed, or D-coded dioxins. Chemical Waste Management, a leader in the hazardous waste industry has no disposal outlets that can handle these wastes in a regulatory manner, at this time. We are aware of companies that are willing to store this waste, ie IMETCO, however these companies have no way of disposing of these dioxins.

In review, we at Chemical Waste Management cannot store or treat these dioxins, at this time.

Thank you for inquiring and we will update you should this situation change.

Sincerely,

Brian Hulyk
Technical Representative

TABLE TBD.
Unacceptables Wastes Under the CWM Contract

Rejected Waste	Comment
unknown wastes whose contents cannot be analyzed because the bottle or other container can't be opened merely by turning the cap by hand	
radioactive waste (uranyl or thorium), including radioactive lithium hydride	CWM must repack LiH; haven't shipped LiH to TWI
dioxins, their precursors, or derivatives (e.g., pentachlorophenol or silvex)	
Class A, B, and C explosives or DOT-forbidden materials, including crystallized ether and organic peroxides that are old or crystal-forming	
pressurized containers (compressed gas cylinders)	does not include aerosols
spray cans of Freon-11 and -12	one 30-gallon drum is stored at Area L
biological/etiological waste	CWM has outlets for such waste but does handle them
arsenic acid, arsenic oxide, arsenic trioxide, vanadium pentoxide, and osmium pentoxide	soft-hammer wastes; can be landfilled if the Laboratory submits documentation showing good cause
wastes that are restricted from being landfilled by first-third land-ban regulations and that are not appreciably treated by incineration	
reactives and other identifiable wastes that cannot be handled by CWM	CWM may accept if the wastes are in small quantities

gel cell batteries	CWM can handle them in small quantities; they can be incinerated, but not much happens; CWM landfills large batteries
labpacked nickel-cadmium batteries	CWM can handle them in small quantities
mixed waste	rejected if geiger counter shows activity or if label on container indicates that the contents are radioactive; CWM uses geiger counters to ensure that its employees are protected, not to monitor the wastes
oxidizers	CWM may accept oxidizers if they are in small quantities
strong mineral acids	can be treated and disposed of in HSE-7
elemental mercury	CWM has an outlet for elemental Hg
mercuric compounds	CWM will accept in labpack quantities
large pieces of machinery, including mercury-contaminated vacuum pumps	can be landfilled or cleaned
bulk oil	mercury limit is 1000 ppm
large quantities of vermiculite	
PCBs	accepted at SCA

CHEMPAK

ROLLINS **CHEMPAK** INC.

Revision: March 3, 1992
RFS

QUALITY CONTROL PROCEDURE-LAMBRIGHT

INTRODUCTION

These procedures covers the CHEMPAK QC activities at Lambright involving the handling of CHEMPAK waste streams, as well as the Generator-Pak Program (non-CHEMPAK lab packs). The activities at this facility are limited to transporter related functions and waste will only be accepted for transport by CET to an outside facility.

Waste will be accepted only after all approvals have been verified. It is the responsibility of the QC Supervisor to ensure adequate plant capacity exist prior to approving incoming waste shipments.

There are three separate QC activities performed at Lambright:

1. **Consolidation of CHEMPAK Waste Shipments.** All waste streams will undergo a manifest and LDR form review in addition to count verification. Stream numbers will be verified. Incoming loads may be separated for transport to the appropriate disposal facility.

2. **Generator-Pak Program.** Non-CHEMPAK prepared lab packs will be processed through the Lambright facility to ensure the safety of the receiving disposal facility. All generator prepared lab packs will undergo an technical review for compliance with RES Lab Pack Guidelines. Each outer container will be opened and the contents verified against the drum inventory sheet (100% QC check).

3. **CHEMPAK Performance Audits.** (To be developed).

GENERAL REQUIREMENT-ALL SHIPMENT

1. All shipments must be scheduled and approved by the QC Supervisor prior to transport date.

2. All streams must be approved prior to shipment.

3. Waste must be packaged and marked per US DOT/EPA requirements.

4. Lab packs must comply with RES policy and meet facility specifications.

5. Waste received not meeting facility specifications is subject to rejected.

6. All waste must be palletized.

7. A hold will be placed on any waste which fails to meet all facility requirements.

8. No waste will held longer than 10 days. Any waste which can not be facility approved within this time frame will be returned to the generator.

9. All arriving trailers will be inspected prior to receipt to ensure:

   o. No visible leaks
   o. Waste does not pose a storage problem, i.e. explosives, radioactives, etc.
   o. Waste is accompanied by the appropriate hazardous waste manifest

   If any of the above conditions are found to exist, the Lambright facility manager and the CHEMPAK Director, Quality Assurance must be contacted to determine corrective action.

SECTION I-CHEMPAK Shipments

A. SCHEDULING

1. All CHEMPAK shipments will be coordinated by the CHEMPAK QC Supervisor (at Lambright) and the CHEMPAK Operation Manager. All CHEMPAK plant slots will be requested by the above individuals.

2. A load delivery schedule will be prepared for each CHEMPAK location, based on the office requests and the availability on plant dates. All dates unless otherwise indicated are for delivery to Lambright.

3. A separate monthly schedule for Lambright shipments to RES facilities will be prepared and forwarded to the receiving facility. Any direct CHEMPAK shipments will be indicated on this schedule.

4. All CHEMPAK offices must submit a Load Order Form (LOF) directly to the QC Supervisor at Lambright at least 24 hours prior to shipment.

B. RECEIPT OF WASTE

1. If load is found to be acceptable, CET will sign the manifest as the second transporter.

2. Trailer number, transporter, RES stream number(s) and the date shall be entered on a daily gatelog to ensure compliance with the 10 day rule.

3. The trailer will be received into the PIMS system. The QC chemist will verify that an order (BOL) has been issued for each received waste stream.

C. QC REVIEW

1. The QC Chemist will review all manifests and documentation to identify and eliminate any potential safety or compliance problem. The shipment will not be unloaded until all safety concerns are addressed.

2. Copies of the Generic Safety Sheets for lab pack type waste will be given to the Warehouse Technician. Safety sheets for other material will be requested from the receiving facility and copies given to the Warehouse Technician.

3. After reviewing the safety sheets, the QC chemist will authorized the Warehouse Technician to unload the trailer.

4. While the trailer is being unloaded, the QC Chemist will verify the accuracy of the following documents:

   a. Manifest
   b. LDR Notification
   c. Tracking Document
   d. Drum Inventory Sheets
   e. PCB Continuation Sheet, if required
   f. Bill of Lading (BOL)

5. All materials unloaded will be single stacked within the warehouse. The pallets will be arranged in rows. The aisle space between rows will be a minimum of 24" . Each pallet within a row will be separated by a minimum space of 12".

6. The Warehouse Technician will do an initial total count of all drums received on each truck.

7. The Warehouse Technician will next inventory the shipment by drum size.

8. The QC Chemist will prepare a count worksheet for each generator/stream from the manifest. The Warehouse Technician will then count each individual stream to verify count.

9. The worksheets will be totalled by the QC Chemist. If the total numbers of drums counted by the Warehouse Technician per stream does not match the total drums received, both the QC Chemist and Warehouse Technician will recount the load.

10. The QC Chemist will then verify the individual counts against the individual tracking documents. If discrepancies are found the load will be recounted. If unable to reconcile the error at this point, all individual drum numbers will be checked against the tracking documents.

11. After the counts have been verified and any problems have been identified, the QC Chemist will prepare a summary listing stream numbers and any problems found.

12. The QC Chemist will notify the appropriate CHEMPAK office by FAX of any problems found on the shipment. Multiple, major documentation problems will trigger a mandatory physical inventory to verify contents.

13. If the applicable CHEMPAK office does not resolve the problem within 24 hours of notice, the CET facility manager will be notified. If the problem is still unresolved within 48 hours of the initial notification, the Director of Quality Assurance will be contacted. All problems must be corrected prior to plant delivery.

14. If problems are found with "industrial" loads, The RES(TX) Customer Service Manager will be notified as per step 12 for corrective action. The waste will not be delivered without corrective action or facility approval.

15. Any leaking containers or containers judged to be unshipable will be overpacked. Pallets will be checked for integrity and re-wrapped or banded, as necessary.

16. Each pallet will be labeled with a colored circle, containing the pallet number. This is to assist plant personnel in count verification at the receiving facility.

17. After all QC checks are complete, the load will be placed back on the trailer.

18. A copy of the Count Verification Work Sheet will be forwarded to the QC personnel at the receiving facility. This will be given to plant personnel for facility receipt verification.

19. The trailer will be transported to the disposal facility per Lambright-RES Facility

SECTION II GENERATOR-PAK PROGRAM

A. SCHEDULING

1. All Generator-Pak Program shipments (GPP) will be coordinated directly by the QC Supervisor at Lambright.

2. GPP generators will provide CHEMPAK with a three month disposal request.

3. GPP waste shipments will be incorporated into the monthly Lambright plant slot requests. GPP customers will not directly schedule shipments with the disposal facility.

4. All GPP customers will be given Lambright delivery dates.

B. GENERAL-RECEIPT OF GENERATOR-PAK WASTE

1. All lab packs must be easily accessible and palletized.

2. All lab packs must meet the conditions and specifications contained in the RES Lab Pack Procedure.

3. Only GPP waste packaged as lab packs shall be accepted, unless prior arrangements are made.

4. CET will sign the manifest as the second transporter.

5. Waste will be off-loaded into the QC area and segregated from other waste streams.

6. Trailer number, transporter, RES stream number(s) and the date shall be entered on a daily gatelog to ensure compliance with the 10 day rule.

C. QC REVIEW OF GENERATOR-PAK WASTE STREAMS

1. All GPP (customer prepared) lab packs will follow the same procedural handling steps listed in Section I of this procedure, with the additional mandatory physical audit.

2. Each lab pack will be opened and the contents compared against the drum inventory sheet. Any discrepancies in count, type or amount shall be noted.

3. Final disposition of all lab packs will be based on the outcome of the physical audit and nature of any discrepancies. Discrepancies may result in the rejection of waste.

4. A summary report will be submitted to the CHEMPAK Director, Quality Assurance.

5. Drum inventory sheets are subject to a final technical review by CHEMPAK QC personnel at the disposal facility.

20. A Shipment Summary Report will be forwarded to the CHEMPAK, Director of Quality Assurance.

D. DOCUMENTATION/STREAM VERIFICATION CHECK LIST

1. Stream Verification

   i. Is a stream number listed for each line item on the manifest.
   ii. Do the shipping descriptions match the stream number? (e.g. oxidizer shipped incorrectly as - 60)
   iii. Has a BOL been dispatched for each stream.

2. Land Disposal Restriction Form

   i. Is an LDR present for each stream?
   ii. Are all manifest numbers on the LDR?
   iii. Are all waste codes listed?
   iv. Is the LDR form completed correctly, does the treatment match as required for each waste code?

3. Manifest review

   i. Are all sections completed?
   ii. Are proper DOT shipping names used?
   iii. Are all required signatures present?
   iv. Does the received container count match the tracking documents?

4. Tracking Document

   i. Is the Tracking Document complete and legible?
   ii. Were drums properly identified?
   iii. Were industrial/PCB materials segregated?

5. Drum Inventory Sheets

   i. Are packing lists available for each drum?
   ii. Do these sheets match the tracking documents?
   iii. Are sheets attached to the outside of each drum?

6. PCB Continuation Sheet

   i. Has a continuation sheet been completed with all required information; i.e. stream number, out-of-service date, unique ID, weight of each item, etc?

Note: If deficiencies are found, the applicable CHEMPAK office or generator will be contacted immediately for corrective action. If these deficiencies are not corrected to the satisfaction of the QC Supervisor within 5 calendar days, the CHEMPAK Director, Quality Assurance will be notified immediately.

SECTION III-CHEMPAK Performance Audits

To be determined

B2. Unacceptable Wastes

Wastes which are unacceptable for management by Rollins CHEMPAK, Inc. fall into the following classifications:

- o Explosives
- o Poison A
- o Dioxin - bearing wastes F020, F021, F022, F023, F026, F027
- o Radioactive Compounds

B3. **Waste Characterization Procedures**

Rollins CHEMPAK, Inc. proposes to use the Waste Data Sheet (Attachment 1, Appendix) to record detailed waste descriptions for communication to Rollins disposal facilities. For "Clean-up Waste" and "Waste Paint/Organic Solids" waste materials, parameters required are constituent compound percentage ranges various standard gravimetric procedures, plus:

Analytical Parameter	Standard Method
BTU	ASTM D-240
pH	EPA Method 150.0
Flash Point	EPA Method 101.0
Viscosity	ASTM D-88
Specific Gravity	ASTM D-287; D-1289
EP Toxicity Metals	EPA Method 6001/4-79-020
Total Digestion for Metals Analysis	EPA Method 3010, 3030, 3050
Total PCB's (if required)	EPA Method 600/4-81-045

Additionally, certifications regarding dioxin arsenics, radioactivity, absence of infectious agents, EPA regulated pesticides, OSHA listed compounds and air and water reactivity are requested.

For materials to be labpacked, a generic waste data sheet (Aattachment 2, Appendix) is used which references the packing lists prepared as each labpack is assembled, thereby using the label information on each container to define its contents.

B4. **Fingerprint Analysis Procedures**

For labeled labpack wastes, the waste is visually inspected to ensure that the physical characteristics are indicative of the material indicated on the label. Physical characteristics include physical state, color, apparent viscosity, apparent density and miscibility. In the event that the physical characteristics do not match the waste as indicated, further testing wi'l be required as outlined in Section C.3, Unknown Testing Procedures.

B5. **Personnel Who Classify the Waste**

Each CHEMPAK field employee goes through a rigorous training program. As a prerequisite, each must have a degree in chemistry or in a very closely related discipline, having taken all the required chemistry courses. On joining the CHEMPAK organization

Chemical Waste Management, Inc.

9131 East 96th Avenue
Henderson, Colorado 80640
303/289-4827

July 29, 1992

Mr. Andy Montoya
LOS ALAMOS NATIONAL LABS
Los Alamos, NM

Dear Mr. Montoya:

Per your request I'm providing the following information.

Dioxins and radioactive materials cannot be accepted at the following Chemical Waste Management facilities:

- Kettleman Hills California Facility
- Oil & Solvent Process CO. - California and Colorado
- Lake Charles Louisiana Facility
- Emelle Alabama Facility
- Trade Waste Incinerator in Sauget Il.
- Port Arthur Texas Facility

If you have any further questions or need assistance please do not hesitate to call (303) 289-4827.

Sincerely,

Brian Hulyk

Brian Hulyk
Technical Representative

ROLLINS
ENVIRONMENTAL SERVICES (SALES) INC.

P.O. Box 609, Deer Park, TX 77536, 713/930-2300, FAX 713/930-2334

ROLLINS ENVIRONMENTAL SERVICES (LA) INC.

RADIOLOGICAL ACCEPTANCE CRITERIA

Rollins Environmental Services (LA) Inc. resides within the State of Louisiana and therefore must comply with all applicable Louisiana statutes and regulations regarding the disposal of wastes. Among these laws are those regarding the licensing of radioactive materials. Both Louisiana and Federal law require licensing in order to possess, transfer, or dispose of radioactive materials. Rollins is neither licensed to handle radioactive wastes nor does it seek to dispose of such materials.

In order to maintain compliance with State and Federal law and regulations and, most importantly, to assure that the health and safety of the public and the integrity of the environment is not compromised, Rollins has adopted the following radiological acceptance criteria to be applied to all incoming waste materials.

Where more than one criteria appear to apply to a single waste, all of the criteria must be met. Thus, being exempt from one of the following sections does not act as an exemption from the remaining criteria, all of which must be met before Rollins will accept any waste stream.

SPECIAL NUCLEAR MATERIAL

Special Nuclear Materials are plutonium, uranium-233, and uranium enriched in the isotope U-233 or U-235.

Rollins will not accept any special nuclear material in any quantity whatsoever.

SOURCE MATERIAL

Source materials are materials which are not special nuclear materials and which contain uranium or thorium or any combinations thereof, in any physical or chemical form.

Rollins will only accept source material if it constitutes, by weight, less than 1/20 or 1 percent (0.05 percent) of the waste material.

Certain very limited exceptions to the above general rule exist. You should check with your Sales Account Executive if you believe that such an exception may apply.

RADIUM

The radioactive isotopes, Radium-226 and Radium-228, are of particular concern from a radiological health standpoint. Out of concern for the health of the general public and the integrity of the environment, Rollins has chosen to apply self imposed restrictions on the quantity of Radium 226 and 228 that it receives

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Annemarie Gustavsson, EM-7L

DATE: June 24, 1992

FROM: John Kelly, EM-7L JK.

MAIL STOP/TELEPHONE: J593/7-7579

SYMBOL: EM-7L-92-302

SUBJECT: UNACCEPTABLE GAS CYLINDERS AT ROLLINS

The following is a list of gases which are currently not being accepted at Rollins Environmental Services in Deer Park, Texas:

Gas	Reason for Rejection
Butyllithium	Unstable
Cyanogen Mixtures (>10%)	Cyanide content exceeds permit
Diethyl Sulfide Borane	Sulfide content exceeds permit
Hydrogen Sulfide	Sulfide content exceeds permit
Nitric Oxide	Cannot meet treatment standard
Nitrogen Dioxide	Cannot meet treatment standard
Nickel Carbonyl	Explodes at 60 degrees C
Pentaborane	Unstable
Pinanyl Mercaptan	Sulfide content exceeds permit
Trifluoromethyl Iodide	Banned by permit

This list only includes gases that are relatively common. Research gases and other exotic materials are accepted on a case by case basis.

JK:dg

Cy: A. Montoya, EM-7L, MS J593
EM-7L Office Files, MS J593

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO Annemarie Gustavsson, EM-7 DATE July 10, 1992

FROM John Kelly, EM-7L JK MAIL STOP/TELEPHONE J593/7-7579

SYMBOL EM-7L-92-342

SUBJECT PLAN OF ACTION FOR DISPOSING OF GAS CYLINDERS GOVERNED UNDER THE LAND BAN RESTRICTIONS

In order to dispose of gas cylinders currently stored at Area L, which are governed under the EPA Land Ban Restrictions (see complete list attached), it will be necessary to use two disposal outlets. Because of permit limitations, no one facility can handle the large inventory of cylinders that we possess at TA-54. Below, I have separated the cylinders into three groups based on their chemical content. I preface each list with some comments concerning our best available disposal option.

This first group of gas cylinders can be sent to Rollins Environmental Services in Deer Park, Texas (for a complete list of gases approved by Rollins, please see attached list). Pre-approval has already been granted for these cylinders. At Rollins, each cylinder will be aspirated into an incinerator, purged with an appropriate gas, devalved, and landfilled (or we may request that it be returned to the Laboratory).

CONTENTS	NUMBER	EPA CODE(S)
Butadiene	6	D001
Propylene	9	D001
Difluoroethane	2	D001
Hydrogen	10	D001
Isobutane	4	D001
Ethylene	3	D001
Methane	4	D001
Fluorotrifluoroethane	1	D001
Isobutylene	1	D001
Tetrafluoroethylene	2	D001
Chlorodifluorothane	1	D001
Ethane	7	D001
Propane	5	D001
Carbon Monoxide	6	D001
Silane	6	D001,D003
H/HF/HCL	15	D001,D002

(cont.)CONTENTS	NUMBER	EPA CODE(S)
Dichlorodifluoromethane	1	D001
Hydrogen Fluoride	1	U134,D002
Methyl Chloride	2	D001,U045
Acetylene	2	D001
HCL/HF	3	U134,D002
Boron Trichloride	13	D002
Fluorine	2	P056
Methyl Bromide	5	U029
Arsine	3	D004
Hydrogen/Arsine	1	D001,D004
Phosphine	2	P096,D003

The next group of cylinders have been approved at MG Industries in Morrisville, Pa. These cylinders cannot be handled by Rollins because of permit restrictions (eg. hydrogen sulfide) or because of the reactive nature of the gas (eg. nickel carbonyl). MG Industries has a contractual agreement with Chemical Waste Management, Inc., our current subcontractor at Area L. The main objective at MG Industries, is clean, effective removal of the gas phase followed by the recycling of the cylinder carcass. The cylinders will be evacuated inside a gas cabinet through a complex scrubber system. The empty cylinders are hydrostatically tested, revalved, and sent out for reuse. Some background information on MG Industries is attached.

CONTENTS	NUMBER	EPA CODE(S)
Nitric Oxide (residue)	46	P076
Nitric Oxide	6	P076
Hydrogen Sulfide	7	D001,D003
Hydrogen Sulfide/Argon	2	D001,D003
Hydrogen Sulfide/HCL	1	D001,D002,D003
Nitrogen Dioxide	8	P078
Nitrogen/Silane	1	D001,D003
Nitrogen Dioxide/Nitric Oxide	2	P078,P076
Nitrogen Dioxide/Nitrous Oxide	2	P078
Phosgene	6	P095
Cyanogen	3	P031
Carbonyl Sulfide	1	D001
Nickel Carbonyl	1	D001
Methyl Mercaptan	1	D001

For the last group of gas cylinders, the contents are unknown. In some cases there is a label present on the cylinder, but the accuracy of the label is questionable. In order to transport these cylinders legally and have them accepted by an off-site disposal facility we must arrange to have these cylinders analyzed for their contents. To perform the analytical, we have two options. First, Adrian Lovell with CLS-1 has informed me that they are experimenting with a dilution technique (probably using neon) that will increase their ability to analyze true unknowns considerably. Currently, corrosive gases have been causing problems for their mass spectrometer. To alleviate the problem, they will start diluting each unknown gas down to a 10% mixture which will reduce the corrosivity of the gas and increase the safety factor. Adrian wants to put a team together to come down to Area L and draw samples from our unknown bottles. Under DOT, the samples could be shipped as a limited quantity material and we may be able to get an exemption from having to arrange a road closure. Our second option is through a company called ETSC. ETSC has a contractual agreement with Rollins Chempak, Inc., our subcontractor at Area L. ETSC has already informed me that they could come to our site and sample all of our unknown gases. They have a DOT exemption for shipping samples to their laboratory in Missouri. They are presently working up a quotation for sampling and analysis based on the list below. One final note, in using either ETSC or CLS-1 to do our sampling, I do not foresee any type of permit modifications or air permit needs. At the very most, we should be able to perform the sampling under a Special Work Permit.

UNKNOWN GAS CYLINDERS

LECTURE BOTTLES	MEDIUM (0.2-1 cu ft)	LARGE (1-1.76 cu ft)
72	45	11

JK/ts

Cy: EM-7L Files, MS J593

Bethlehem Apparatus Company, Inc

890 Front St., P.O. Box Y, Hellertown, PA 18055 • 215-838-7034 • FAX 215-838-6333 • TELEX 494-9

April 1, 1992

MERCURY RECOVERY/RECYCLING AGREEMENT

STANDARD PRICING-TO PROCESS MATERIALS FOR MERCURY RECOVERY/RECYCLING AND DISPOSAL OF RESIDUAL MATERIALS IN A NON-HAZARDOUS WASTE LANDFILL OR SOLD TO SCRAP METAL RECYCLING BUSINESSES .....$1,848.00/55 GAL. DRUM
MAXIMUM WEIGHT 500 LBS.
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5% LAND BAN SURCHARGE*

*TO COVER THE COST OF RETORT PROCESSING AND ANALYSIS OF ALL PACKING MATERIALS.

SPECIAL PRICING - DRUMS OF MATERIALS THAT REQUIRE SPECIAL HANDLING WILL BE PRICED SEPARATELY. SOME TYPES OF MATERIALS THAT REQUIRE SPECIAL PRICING ARE:

1. MERCURY BATTERIES WITH A LARGE PROPORTION OF PLASTIC.
2. WASTE MATERIALS THAT CONTAIN OTHER HAZARDOUS MATERIALS, WHICH MUST BE KEPT SEPARATE AND MUST BE SENT FOR FURTHER HAZARDOUS WASTE TREATMENT.
3. DRUMS WITH A HIGH DENSITY OF QUARTZ BULBS THAT REQUIRE CRUSHING BEFORE RETORT PROCESSING.
4. **DISCOUNT pricing for materials of uniform consistency and in lots of 5 drums or more. Contact our office with descriptions for special price quotes.**

TERMS - NET 30 DAYS FROM INVOICE DATE WITH APPROVED CREDIT AND ACCEPTABLE D & B RATING, ELSE PAYMENT PRIOR TO RECEIPT OF MATERIALS.

*A. **MATERIALS**-MATERIALS ACCEPTABLE FOR PROCESSING INCLUDE, BUT ARE NOT LIMITED TO; THERMOMETERS, SWITCHES (BOTH GLASS AND STEEL), CONTROLS, RELAYS, IGNITRON TUBES, HIGH PRESSURE QUARTZ LAMPS, MERCURY VAPOR LAMPS, MERCURY DENTAL AMALGAMS, MERCURY OIL SLUDGES, MERCURY ENCAPSULATED IN DEVICES OR CONTAINERS, MERCURY SPILL KITS, MERCURY OXIDE, MERCURY BATTERIES, ETC.

B. **SORTING**-MATERIALS WILL ALSO BE ACCEPTED FOR SORTING. THIS INCLUDES THE SEPARATION OF LIQUID MERCURY FROM CONTAMINATED PACKING MATERIALS OR CONTAMINATED HANDLING ITEMS. DISPOSAL OF RESIDUAL MATERIALS WITH NON-VISIBLE MERCURY TRACE CONTAMINATION IS THROUGH A HAZARDOUS WASTE LANDFILL.

C. **MANIFESTS**-ALL MATERIALS SENT FOR RECOVERY/RECYCLING THAT ARE LESS THAN 99% LIQUID.... (YOU MUST BE ABLE TO POUR THE MERCURY), MUST BE SENT USING A CURRENT PENNSYLVANIA HAZARDOUS WASTE MANIFEST. MANIFESTS CAN BE OBTAINED THROUGH OUR OFFICE. ITEM 15 ON THE MANIFEST MUST HAVE THE STATEMENT: **"THIS WASTE IS A CHARACTERISTIC HAZARDOUS WASTE AND IS DESIGNATED FOR USE, REUSE, RECYCLE, OR RECLAIM."**

D. **RETURNS**-BETHLEHEM RESERVES THE RIGHT TO RETURN ANY ITEMS THAT CANNOT BE PROCESSED THROUGH OUR OPERATION. ALL RETURNED ITEMS WILL BE SENT FREIGHT COLLECT, USING THE SAME CARRIER THAT DELIVERED THE MATERIALS.

Inc.
494-9195

Bethlehem Apparatus Company, Inc.

890 Front St., P.O. Box Y, Hellertown, PA 18055 • 215-838-7034 • FAX 215-838-6333 • TELEX 494-9195

f 3

E. **RESTRICTED MATERIALS**-BETHLEHEM'S MERCURY RECYCLING PROCESS INVOLVES THE PLACEMENT OF MERCURY BEARING MATERIALS INSIDE A STAINLESS STEEL CHAMBER. A VACUUM OF APPROXIMATELY 27 INCHES MERCURY IS PULLED ON THE CHAMBER, AFTERWHICH A HEATING CYCLE IS APPLIED. MATERIALS INSIDE THE CHAMBER ARE SUBJECT TO TEMPERATURES IN EXCESS OF 1,300 DEGREES "F".

UNACCEPTABLE MATERIALS FOR RECYCLING INCLUDE ANYTHING THAT WOULD CAUSE DAMAGE (INCLUDING LOSS OF USE) TO, OR DESTRUCTION OF, ANY PROPERTY (PUBLIC OR PRIVATE), CONTAMINATION OF OR ADVERSE EFFECTS ON THE ENVIRONMENT, OR INJURY (INCLUDING DEATH) TO ANY PERSON ARISING OUT OF OR ATTRIBUTABLE TO THE PLACEMENT OF THOSE MATERIALS IN OUR EQUIPMENT. BETHLEHEM REQUIRES NOTIFICATION OF ANY MATERIALS THAT ARE IGNITABLE, CORROSIVE, REACTIVE, OR TCLP TOXIC AS DEFINED BY RCRA HAZARDOUS WASTE REGULATIONS (40 CFR PART 261 ET SEQ), PRIOR TO SHIPMENT. THE PRESHIPMENT NOTIFICATION APPLIES TO MATERIALS THAT MAY BE CLASSIFIED AS HAZARDOUS UNDER RCRA AFTER BEING SUBJECTED TO BETHLEHEM'S MERCURY RECYCLING PROCESS, AS WELL AS THOSE MATERIALS MEETING THE HAZARDOUS CLASSIFICATION PRIOR TO RECYCLING.

MATERIALS THAT CURRENTLY ARE NOT ACCEPTED FOR RECOVERY/RECYCLING INCLUDE, BUT ARE NOT LIMITED TO: MERCURIC CHLORIDE, ORGANIC MERCURIALS, MERCURY SALTS, MERCURY SOLUTIONS, AND ALL MERCURY COMPOUNDS OTHER THAN MERCURIC OXIDE AND SMALL QUANTITIES OF MERCURIC SULFIDE.

E.1. SHOULD ANY HAZARDOUS MATERIALS ACCOMPANY MERCURY WASTE MATERIAL SHIPMENTS OR BE GENERATED DURING THE MERCURY RECOVERY PROCESS, BETHLEHEM WILL NOT RETAIN OWNERSHIP OF SAID HAZARDOUS RESIDUAL MATERIALS AFTER PROCESSING. GENERATOR IS TO ASSUME ALL RESPONSIBILITIES OF LAWFUL DISPOSITION OF ANY NON-MERCURY HAZARDOUS MATERIALS, EITHER ACCOMPANYING THE SHIPMENT OR GENERATED DURING THE MERCURY RECOVERY PROCESS.

F. **CONTAINERS**-MATERIALS MUST BE SENT IN METAL CONTAINERS, EITHER 5 GALLON, 55 GALLON, OR 85 GALLON. LIQUID MERCURY SENT IN BOTTLES WILL BE SUBJECT TO RECOVERY CHARGES DUE TO THE NECESSITY OF PROCESSING EMPTY CONTAINERS. ANY EXCESSIVE PLASTIC OR PACKING MATERIAL WILL CAUSE ADDITIONAL PROCESSING CHARGES.

G. **APPROVAL**-ALL MATERIALS MUST HAVE PRIOR APPROVAL BEFORE SHIPMENT.

H. **INDEMNITY** COMPANY AGREES TO INDEMNIFY, DEFEND AND HOLD BETHLEHEM APPARATUS CO., INC., (BA) (INCLUDING THEIR OFFICERS, DIRECTORS, EMPLOYEES, SUBCONTRACTORS AND AGENTS) HARMLESS FROM AND AGAINST ANY AND ALL LIABILITIES, DAMAGES, FINES, PENALTIES, COSTS, CLAIMS, DEMANDS AND EXPENSES (INCLUDING COSTS OF DEFENSE, SETTLEMENT AND REASONABLE ATTORNEY'S FEES) OF WHATEVER TYPE OR NATURE, ARISING OUT OF A BREACH OF ANY WARRANTIES BY COMPANY OR RESULTING FROM FAILURE OF COMPANY, ITS AGENTS, EMPLOYEES OR
SUBCONTRACTORS TO COMPLY WITH THIS AGREEMENT OR ANY ACTUAL VIOLATION OR ALLEGED VIOLATION OF FEDERAL, STATE OR LOCAL LAW, STATUTE, REGULATIONS, RULE, ORDINANCE, OR GOVERNMENT DIRECTIVE WHICH MAY DIRECTLY OR INDIRECTLY REGULATE OR AFFECT OBLIGATIONS OF COMPANY HEREUNDER, OR RESULTING FROM DAMAGE (INCLUDING LOSS OF USE) TO, OR DESTRUCTION OF, ANY PROPERTY (PUBLIC OR PRIVATE), CONTAMINATION

91-0904-002

CHEMPAK

MEMO

DATE: SEPTEMBER 4, 1991

TO: ANNE-MARIE GUSTAVSSON
LANL

FROM: JOHN KELLY JCK
BRANCH MANAGER, ALBUQUERQUE

SUBJ: UNACCEPTABLE WASTE STREAMS

Rollins' incinerators in Deer Park, Texas and Baton Rouge, Louisiana are not permitted to burn **dioxin** waste (e.g., pentachlorophenol) at this time.

Likewise, because of constraints caused by our water treatment and scrubber systems, our plants are extremely limited on the amount of heavy metals that we can incinerate. Rollins cannot incinerate **any** amount of **mercury** (either free or compounded) and we are **limited to 12.5 lbs of cadmium per shipment.** Because of these limitations, it is our company policy not to accept nickel-cadmium batteries for incineration.

If you have any further questions concerning problem waste streams, please feel free to call me at (505) 345-1515.

Anne-Marie,

John did not specify that the 12.5 lbs limit applies only to Baton Rouge not Deer Park which is 1/10 of a pound Cadmium. Please Feel Free to ask me any questions that you might have.

Thank you,

s/James Nunz

Chemical Waste Management, Inc.

9131 East 96th Avenue
Henderson, Colorado 80640
303/289-1827

May 21, 1992

Ms. Anne Marie Gustavsson
Los Alamos National Labs
Los Alamos, NM.

Dear Ms. Gustavsson:

In response to your request for the handling of certain mercury compounds, the following applies:

1. **Mercury Chloride:** .13 lbs. (D009)
   .19 lbs. (D009)

   We cannot manage these, at this time.

2. **Mercurous Acetate:** .5 lbs. (D009) <260 ppm

   We feel we can manage this waste, at this time.

3. **Mercury Oxi Cyanide:** 1.0 lbs. (D009)

   We cannot manage this, at this time.

4. **Kel-tak Powder Catalyst:** .75 lbs. (D009)

   We can possibly manage at this time, pending further information on the mercury compound.

It would be extremely helpful to acquire additional analytical on these chemicals. A key component for a decision on the management of these wastes would be for the mercury to be <260 ppm.

I hope this helps you in your pursuit of management for your mercury compounds.

Sincerely,

Brian Hulyk

Brian Hulyk
Technical Representative

All of these wastes are >260 ppm Hg
So none can be off-sited

93-0218-001-000

DATA SHEET

FILE OWNER

AMG

DATE DOCUMENT CREATED

NO. OF PAGES

SINGLE-SIDED OR DOUBLE-SIDED

INDEX NO.

NO. OF ATTACHMENTS

(cont.)CONTENTS	NUMBER	EPA CODE(S)
Dichlorodifluoromethane	1	D001
Hydrogen Fluoride	1	U134,D002
Methyl Chloride	2	D001,U045
Acetylene	2	D001
HCL/HF	3	U134,D002
Boron Trichloride	13	D002
Fluorine	2	P056
Methyl Bromide	5	U029
Arsine	3	D004
Hydrogen/Arsine	1	D001,D004
Phosphine	2	P096,D003

The next group of cylinders have been approved at MG Industries in Morrisville, Pa. These cylinders cannot be handled by Rollins because of permit restrictions (eg. hydrogen sulfide) or because of the reactive nature of the gas (eg. nickel carbonyl). MG Industries has a contractual agreement with Chemical Waste Management, Inc., our current subcontractor at Area L. The main objective at MG Industries, is clean, effective removal of the gas phase followed by the recycling of the cylinder carcass. The cylinders will be evacuated inside a gas cabinet through a complex scrubber system. The empty cylinders are hydrostatically tested, revalved, and sent out for reuse. Some background information on MG Industries is attached.

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Nitrogen/Silane	1	D001,D003
Nitrogen Dioxide/Nitric Oxide	2	P078,P076
Nitrogen Dioxide/Nitrous Oxide	2	P078
Phosgene	6	P095
Cyanogen	3	P031
Carbonyl Sulfide	1	D001
Nickel Carbonyl	1	D001
Methyl Mercaptan	1	D001

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO Annemarie Gustavsson, EM-7 DATE July 10, 1992

FROM John Kelly, EM-7L JK MAIL STOP/TELEPHONE J593/7-7579

SYMBOL EM-7L-92-342

SUBJECT PLAN OF ACTION FOR DISPOSING OF GAS CYLINDERS GOVERNED UNDER THE LAND BAN RESTRICTIONS

In order to dispose of gas cylinders currently stored at Area L, which are governed under the EPA Land Ban Restrictions (see complete list attached), it will be necessary to use two disposal outlets. Because of permit limitations, no one facility can handle the large inventory of cylinders that we possess at TA-54. Below, I have separated the cylinders into three groups based on their chemical content. I preface each list with some comments concerning our best available disposal option.

This first group of gas cylinders can be sent to Rollins Environmental Services in Deer Park, Texas (for a complete list of gases approved by Rollins, please see attached list). Pre-approval has already been granted for these cylinders. At Rollins, each cylinder will be aspirated into an incinerator, purged with an appropriate gas, devalved, and landfilled (or we may request that it be returned to the Laboratory).

CONTENTS	NUMBER	EPA CODE(S)
Butadiene	6	D001
Propylene	9	D001
Difluoroethane	2	D001
Hydrogen	10	D001
Isobutane	4	D001
Ethylene	3	D001
Methane	4	D001
Fluorotrifluoroethane	1	D001
Isobutylene	1	D001
Tetrafluoroethylene	2	D001
Chlorodifluorothane	1	D001
Ethane	7	D001
Propane	5	D001
Carbon Monoxide	6	D001
Silane	6	D001,D003
H/HF/HCL	15	D001,D002

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO Annemarie Gustavsson, EM-7L

DATE June 24, 1992

FROM John Kelly, EM-7L JK.

MAIL STOP/TELEPHONE J593/7-7579

SYMBOL EM-7L-92-302

SUBJECT UNACCEPTABLE GAS CYLINDERS AT ROLLINS

The following is a list of gases which are currently not being accepted at Rollins Environmental Services in Deer Park, Texas:

Gas	Reason for Rejection
Butyllithium	Unstable
Cyanogen Mixtures (>10%)	Cyanide content exceeds permit
Diethyl Sulfide Borane	Sulfide content exceeds permit
Hydrogen Sulfide	Sulfide content exceeds permit
Nitric Oxide	Cannot meet treatment standard
Nitrogen Dioxide	Cannot meet treatment standard
Nickel Carbonyl	Explodes at 60 degrees C
Pentaborane	Unstable
Pinanyl Mercaptan	Sulfide content exceeds permit
Trifluoromethyl Iodide	Banned by permit

This list only includes gases that are relatively common. Research gases and other exotic materials are accepted on a case by case basis.

JK:dg

Cy: A. Montoya, EM-7L, MS J593
EM-7L Office Files, MS J593

MERCURY REFINING COMPANY, INC.

OFFICE: 790 Watervliet-Shaker Road • Latham, N.Y. 12110
PLANT: 26 Railroad Avenue • Albany, N.Y. 12205
PHONES 518-785-1703 • 800-833-3505 • FAX 518-785-2623

ACCEPTANCE CRITERIA

The purpose of this listing is assist the customer in determining acceptability of mercury bearing materials or compounds at Mercury Refining Company, Inc. Materials and compounds which may be accepted at this facility may or may not be subject to regulation as RCRA hazardous waste.

I. General Criteria

1. No "F", "K", or "P" listed hazardous waste. (40 CFR 261.31, 261.32, 261.33)

2. No PCB contamination. Any oils or materials contaminated with oil are subject to a PCB screening charge.

3. No radioactive materials.

4. No halogens.

5. Flash point must be 140°F or higher.

6. Lead < 1%

II. Mercury Compounds

The following listings of acceptable and unacceptable mercury compounds are not all-inclusive. Please contact our office for information on any compound not listed here.

1/6/92

A COMMERCIAL TSD FACILITY • COMPLETE MERCURY RECOVERY SERVICES
MUDS • AMALGAMS • HOUSEHOLD BATTERY PROGRAMS

Acceptance Criteria, Continued
Acceptable Mercury Compounds

NAME

MERCURIC ACETATE Syn: bis (acetyloxy) mercury, diacetoxymercury, mercury(ic) diacetate
MERCURIC CYCLOHEXANE BUTYRATE
MERCURIC DINAPTHYLMETHANE DISULPHONATE Syn: 3,3 Methylenedi - 2 - Napthalenesulfonic acid, mercury salt
MERCURIC NITRATE Syn: Mercury (II) nitrate, mercury pernitrate
MERCURIC OXIDE Syn: Red oxide of mercury, yellow oxide of mercury, mercury (I) oxide
MERCURIC SALICYLATE Syn: mercurisalicylic acid, mercury subalicylate
MERCURIC SULFATE Syn: Mercury (II) sulfate, mercury persulfate, mercury bisulfate, sulfuric acid, mercury (2+) salt
MERCUROL Syn: Mercury Nucleate
MERCUROPHEN
MERCUROPHYLLINE Syn: Mercupurin, mercuzanthin
MERCUROUS ACETATE Syn: mercury monoacetate, mercury acetate
MERCUROUS NITRATE Syn: Mercury (I) nitrate
MERCUROUS OXIDE Syn: Mercury (I) oxide
MERCUROUS SULFATE Syn: mercury (I) sulfate
MERCURY (I) GLUTONATE Syn: mercurous gluconate
MERCURY (II) BENZOATE Syn: mercuric benzoate
MERCURY (II) LACTATE Syn: mercuric lactate
MERCURY OLEATE Syn: Mercuric oleate
MERCURY TETRAVANADATE
MERTHIOLATE SODIUM Syn: Thimersol, thiomersalate, SET, elicide, merfamin, o-(ethylmercurithio)benzoic acid sodium salt, ethylmercurithiosalicyclic sodium salt, mertogan, merzonin sodium, thiomersalate
p-HYDROXY MERCURIBENZOATE
PHENYL MERCURIC BENZOATE
PHENYL MERCURIC HYDROXIDE

Acceptance Criteria, Continued
Unacceptable Mercury Compounds

NAME

1 - (4 - CHLOROMERCURIPHENYLAZOL - 2 - NAPTHOL) Syn: Mercury Orange *
MERCURIC ARSENATE Syn: Mercury (II) - o - arsenate
MERCURIC AZIDE Syn: mercury (II) azide
MERCURIC BARIUM CHLORIDE
MERCURIC BROMIDE Syn: Mercury (II) Bromide
MERCURIC CHLORANILATE
MERCURIC CHLORIDE
MERCURIC DIPHENYL CARBAZONE
MERCURIC FLOURIDE
MERCURIC IODIDE Syn: Mercury (II) Iodide
MERCURIC OXALATE Syn: Mercury (II) Oxalate
MERCURIC OXYCYANIDE Syn: Mercury cyanide oxide
MERCURIC PEROXYBENZOATE
MERCURIC POTASSIUM IODIDE
MERCURIC THIOCYANATE Syn: mercuric sulfocyanate, mercuric sulfocyanide
MERCUROCHROME Syn: aseptichrome, flourochrome, gallochrome, gynochrome 2,7 - dibromo - 4 - hydroxymercurifluoresceine disodium salt, flavurol, merbromin, mercuranine, mercurophage, planochrome
MERCUROUS CHLORIDE Syn: calomel
MERCUROUS CHLORITE Syn: mercury dichlorite
MERCUROUS FLOURIDE Syn: mercury(I)flouride
MERCUROUS IODIDE Syn: mercury(I)Iodide
MERCUROUS THIONITROSYLATE Syn: mercury (I) thionitrosylate, phenylmercuric nitrate, basic
MERCURY (I) BROMIDE Syn: Mercurous Bromide
MERCURY (I) CHLORITE
MERCURY (II) CYANIDE
MERCURY (II) FLUORACETATE Syn: Fluoroacetic acid, Mercury (II) salt
MERCURY (II) METHYLNITROLATE
MERCURY (II) NAPHTHALENEDIAZONIUM TRICHLORIDE
MERCURY (III) FORMHYDROXAMATE
MERCURY AMIDE CHLORIDE Syn: amino mercuric chloride, mercuric ammonium chloride, mercury amine chloride, mercury ammoniated, white mercury precipitated, white precipitate
MERCURY FULMINATE - dry or wet Syn: Mercury (II) Fulminate, dry or wet
MERCURY METHYL CHLORIDE Syn: chloromethylmercury, methylmercury chloride, methylmercuric chloride, monomethyl mercury chloride
MERCURY TETRATHIOCYANATOCOBALATE
PHENYL MERCURIC ACETATE Syn: Acetoxyphenylmercury, acetic acid, phenylmercury deriv., (acetato) phenylmercury

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO Waste Management Coordinators

DATE May 12, 1992

FROM Annemarie Gustavsson, EM-7

MAIL STOP/TELEPHONE J593/7-7579

SYMBOL EM-7L-92-128

SUBJECT UNACCEPTABLE WASTE

Due to the May 8, 1992 deadline for the final third of the RCRA Land Disposal Restrictions, the Waste Management Group (EM-7) will no longer be able to pickup, store, or treat a select number of waste streams. Please advise all of your waste generators that the following waste materials will no longer be handled by EM-7 at this time:

(1) Beryllium Dust (P015).

(2) Mercury salts containing greater than 260 ppm elemental mercury. Other organic mercury compounds and solutions or mixtures containing mercury may be a problem as well. Please contact the Waste Management Group for guidance.

(3) Heavy metal cyanides in quantities greater than 2 lbs. (e.g. silver cyanide).

(4) Osmium Tetroxide in quantities greater than 2 lbs.

(5) Mixed Waste, containing a hazardous (as defined by 40 CFR 261) and a low-level radioactive component.

If the above waste materials were generated prior to the May 8th deadline, and the generator is willing to certify that in writing, then EM-7 will process the waste disposal request. For any additional questions, please contact the Waste Management Group, EM-7, at 5-4000.

AMG/dg

Cy: EM-7L Files, MS J593
Group Office Files, EM-7, MS E517

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

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Group Office Files, EM-7, MS E517

Bethlehem Apparatus Company, Inc.
890 Front St., PO Box Y, Hellertown, PA 18055 • 215-838-7034 • FAX 215-838-6333 • TELEX 494-9195

April 1, 1992

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C. MANIFESTS-ALL MATERIALS SENT FOR RECOVERY/RECYCLING THAT ARE LESS THAN 99% LIQUID,... (YOU MUST BE ABLE TO POUR THE MERCURY), MUST BE SENT USING A CURRENT PENNSYLVANIA HAZARDOUS WASTE MANIFEST. MANIFESTS CAN BE OBTAINED THROUGH OUR OFFICE. ITEM 15 ON THE MANIFEST MUST HAVE THE STATEMENT: "THIS WASTE IS A CHARACTERISTIC HAZARDOUS WASTE AND IS DESIGNATED FOR USE, REUSE, RECYCLE, OR RECLAIM."

D. RETURNS-BETHLEHEM RESERVES THE RIGHT TO RETURN ANY ITEMS THAT CANNOT BE

Bethlehem Apparatus Company, Inc.
890 Front St., PO. Box Y, Hellertown, PA 18055 • 215-838-7034 • FAX 215-838-6333 • TELEX 494-9195

E. RESTRICTED MATERIALS-BETHLEHEM'S MERCURY RECYCLING PROCESS INVOLVES THE PLACEMENT OF MERCURY BEARING MATERIALS INSIDE A STAINLESS STEEL CHAMBER. A VACUUM OF APPROXIMATELY 27 INCHES MERCURY IS PULLED ON THE CHAMBER, AFTERWHICH A HEATING CYCLE IS APPLIED. MATERIALS INSIDE THE CHAMBER ARE SUBJECT TO TEMPERATURES IN EXCESS OF 1,300 DEGREES "F".

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MATERIALS THAT CURRENTLY ARE NOT ACCEPTED FOR RECOVERY/RECYCLING INCLUDE, BUT ARE NOT LIMITED TO: MERCURIC CHLORIDE, ORGANIC MERCURIALS, MERCURY SALTS, MERCURY SOLUTIONS, AND ALL MERCURY COMPOUNDS OTHER THAN MERCURIC OXIDE AND SMALL QUANTITIES OF MERCURIC SULFIDE.

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F. CONTAINERS-MATERIALS MUST BE SENT IN METAL CONTAINERS, EITHER 5 GALLON, 55 GALLON, OR 85 GALLON. LIQUID MERCURY SENT IN BOTTLES WILL BE SUBJECT TO RECOVERY CHARGES DUE TO THE NECESSITY OF PROCESSING EMPTY CONTAINERS. ANY EXCESSIVE PLASTIC OR PACKING MATERIAL WILL CAUSE ADDITIONAL PROCESSING CHARGES.

G. APPROVAL-ALL MATERIALS MUST HAVE PRIOR APPROVAL BEFORE SHIPMENT.

H. INDEMNITY COMPANY AGREES TO INDEMNIFY, DEFEND AND HOLD BETHLEHEM APPARATUS CO., INC., (BA) (INCLUDING THEIR OFFICERS, DIRECTORS, EMPLOYEES, SUBCONTRACTORS AND AGENTS) HARMLESS FROM AND AGAINST ANY AND ALL LIABILITIFS, DAMAGES, FINES, PENALTIES, COSTS, CLAIMS, DEMANDS AND EXPENSES (INCLUDING COSTS OF DEFENSE, SETTLEMENT AND REASONABLE ATTORNEY'S FEES) OF WHATEVER TYPE OR NATURE, ARISING OUT OF A BREACH OF ANY WARRANTIES BY COMPANY OR RESULTING FROM FAILURE OF COMPANY, ITS AGENTS, EMPLOYEES OR
SUBCONTRACTORS TO COMPLY WITH THIS AGREEMENT OR ANY ACTUAL VIOLATION OR ALLEGED VIOLATION OF FEDERAL, STATE OR LOCAL LAW, STATUTE, REGULATIONS, RULE, ORDINANCE, OR GOVERNMENT DIRECTIVE WHICH MAY DIRECTLY OR INDIRECTLY REGULATE OR AFFECT OBLIGATIONS OF COMPANY HEREUNDER, OR RESULTING FROM DAMAGE (INCLUDING

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OF OR ADVERSE EFFECT ON THE ENVIRONMENT, OR INJURY (INCLUDING DEATH) TO ANY PERSON ARISING OUT OF OR ATTRIBUTABLE, DIRECTLY OR INDIRECTLY, TO ANY NEGLIGENT ACT OR OMISSION BY COMPANY, ITS AGENTS, EMPLOYEES OR SUBCONTRACTORS IN PERFORMANCE OF THIS AGREEMENT, EXCEPT TO THE EXTENT SUCH LIABILITY, DAMAGE, FINE OR EXPENSE IS THE RESULT OF BA NEGLIGENT ACT OR OMISSIONS.

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AGREEMENT

ACCEPTED: Date_____ 19_____

Company _____
Name _____
Signature _____
Title _____

BETHLEHEM APPARATUS COMPANY, INC.

Name_____
Signature_____
Title_____
Date_____

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AGREEMENT

ACCEPTED: Date_____ 19_____

Company _____
Name _____
Signature _____
Title _____

BETHLEHEM APPARATUS COMPANY, INC.

Name_____
Signature_____
Title_____
Date_____

Printed on recycled paper

MERCURY REFINING COMPANY, INC.

OFFICE: 790 Watervliet-Shaker Road • Latham, N.Y. 12110
PLANT: 26 Railroad Avenue • Albany, N.Y. 12205
PHONES 518-785-1703 • 800-833-3505 • FAX 518-785-2623

ACCEPTANCE CRITERIA

The purpose of this listing is assist the customer in determining acceptability of mercury bearing materials or compounds at Mercury Refining Company, Inc. Materials and compounds which may be accepted at this facility may or may not be subject to regulation as RCRA hazardous waste.

I. General Criteria

1. No "F", "K", or "P" listed hazardous waste. (40 CFR 261.31, 261.32, 261.33)

2. No PCB contamination. Any oils or materials contaminated with oil are subject to a PCB screening charge.

3. No radioactive materials.

4. No halogens.

5. Flash point must be 140°F or higher.

6. Lead < 1%

II. Mercury Compounds

The following listings of acceptable and unacceptable mercury compounds are not all-inclusive. Please contact our office for information on any compound not listed here.

1/6/92

A COMMERCIAL TSD FACILITY • COMPLETE MERCURY RECOVERY SERVICES
AMALGAMS • HOUSEHOLD BATTERY PROGRAMS

Acceptable Mercury Compounds

NAME

MERCURIC ACETATE Syn: bis (acetyloxy) mercury, diacetoxymercury, mercury(ic) diacetate
MERCURIC CYCLOHEXANE BUTYRATE
MERCURIC DINAPTHYLMETHANE DISULPHONATE Syn: 3,3 Methylenedi - 2 - Napthalenesulfonic acid, mercury salt
MERCURIC NITRATE Syn: Mercury (II) nitrate, mercury pernitrate
MERCURIC OXIDE Syn: Red oxide of mercury, yellow oxide of mercury, mercury (I) oxide
MERCURIC SALICYLATE Syn: mercurisalicylic acid, mercury subalicylate
MERCURIC SULFATE Syn: Mercury (II) sulfate, mercury persulfate, mercury bisulfate, sulfuric acid, mercury (2+) salt
MERCUROL Syn: Mercury Nucleate
MERCUROPHEN
MERCUROPHYLLINE Syn: Mercupurin, mercuzanthin
MERCUROUS ACETATE Syn: mercury monoacetate, mercury acetate
MERCUROUS NITRATE Syn: Mercury (I) nitrate
MERCUROUS OXIDE Syn: Mercury (I) oxide
MERCUROUS SULFATE Syn: mercury (I) sulfate
MERCURY (I) GLUTONATE Syn: mercurous gluconate
MERCURY (II) BENZOATE Syn: mercuric benzoate
MERCURY (II) LACTATE Syn: mercuric lactate
MERCURY OLEATE Syn: Mercuric oleate
MERCURY TETRAVANADATE
MERTHIOLATE SODIUM Syn: Thimersol, thiomersalate, SET, elicide, merfamin, o-(ethylmercurithio)benzoic acid sodium salt, ethylmercurithiosalicyclic a sodium salt, mertogan, merzonin sodium, thiomersalate
p-HYDROXY MERCURIBENZOATE
PHENYL MERCURIC BENZOATE
PHENYL MERCURIC HYDROXIDE

Acceptance Criteria, Continued
Unacceptable Mercury Compounds

NAME

1 - (4 - CHLOROMERCURIPHENYLAZOL - 2 - NAPTHOL) Syn: Mercury Orange
MERCURIC ARSENATE Syn: Mercury (II) - o - arsenate
MERCURIC AZIDE Syn: mercury (II) azide
MERCURIC BARIUM CHLORIDE
MERCURIC BROMIDE Syn: Mercury (II) Bromide
MERCURIC CHLORANILATE
MERCURIC CHLORIDE
MERCURIC DIPHENYL CARBAZONE
MERCURIC FLOURIDE
MERCURIC IODIDE Syn: Mercury (II) Iodide
MERCURIC OXALATE Syn: Mercury (II) Oxalate
MERCURIC OXYCYANIDE Syn: Mercury cyanide oxide
MERCURIC PEROXYBENZOATE
MERCURIC POTASSIUM IODIDE
MERCURIC THIOCYANATE Syn: mercuric sulfocyanate, mercuric sulfocyanid
MERCUROCHROME Syn: aseptichrome, flourochrome, gallochrome, gynochrome
2,7 - dibromo - 4 - hydroxymercurifluoresceine disodium salt, flavurol
merbromin, mercuranine, mercurophage, planochrome
MERCUROUS CHLORIDE Syn: calomel
MERCUROUS CHLORITE Syn: mercury dichlorite
MERCUROUS FLOURIDE Syn: mercury(I)flouride
MERCUROUS IODIDE Syn: mercury(I)Iodide
MERCUROUS THIONITROSYLATE Syn: mercury (I) thionitrosylate,
phenylmercuric nitrate, basic
MERCURY (I) BROMIDE Syn: Mercurous Bromide
MERCURY (I) CHLORITE
MERCURY (II) CYANIDE
MERCURY (II) FLUORACETATE Syn: Fluoroacetic acid, Mercury (II) salt
MERCURY (II) METHYLNITROLATE
MERCURY (II) NAPHTHALENEDIAZONIUM TRICHLORIDE
MERCURY (III) FORMHYDROXAMATE
MERCURY AMIDE CHLORIDE Syn: amino mercuric chloride, mercuric ammoniu
chloride, mercury amine chloride, mercury ammoniated, white mercury
precipitated, white precipitate
MERCURY FULMINATE - dry or wet Syn: Mercury (II) Fulminate, dry or we
MERCURY METHYL CHLORIDE Syn: chloromethylmercury, methylmercury
chloride, methylmercuric chloride, monomethyl mercury chloride
MERCURY TETRATHIOCYANATOCOBALATE
PHENYL MERCURIC ACETATE Syn: Acetoxyphenylmercury, acetic acid,
phenylmercury deriv., (acetato) phenylmercury

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MERCURY RECOVERY/RECYCLING AGREEMENT

STANDARD PRICING-TO PROCESS MATERIALS FOR MERCURY RECOVERY/RECYCLING AND ISPOSAL OF RESIDUAL MATERIALS IN A NON-HAZARDOUS WASTE LANDFILL OR SOLD TO SCRAP METAL RECYCLING BUSINESSES .....$1,848.00/55 GAL. DRUM
MAXIMUM WEIGHT 500 LBS.
$770.00/5 GAL. PAIL
MAXIMUM WEIGHT 50 LBS.
$2,864.00/85 GAL. DRUM
MAXIMUM WEIGHT 700 LBS.
5% LAND BAN SURCHARGE*

*TO COVER THE COST OF RETORT PROCESSING AND ANALYSIS OF ALL PACKING MATERIALS.

SPECIAL PRICING - DRUMS OF MATERIALS THAT REQUIRE SPECIAL HANDLING WILL BE PRICED SEPARATELY. SOME TYPES OF MATERIALS THAT REQUIRE SPECIAL PRICING ARE:

1. MERCURY BATTERIES WITH A LARGE PROPORTION OF PLASTIC.
2. WASTE MATERIALS THAT CONTAIN OTHER HAZARDOUS MATERIALS, WHICH MUST BE SEPARATE AND MUST BE SENT FOR FURTHER HAZARDOUS WASTE TREATMENT.
3. DRUMS WITH A HIGH DENSITY OF QUARTZ BULBS THAT REQUIRE CRUSHING BEFORE RETORT PROCESSING.
4. **DISCOUNT pricing for materials of uniform consistency and in lots of 5 drums or more. Contact our office with descriptions for special price quotes.**

TERMS - NET 30 DAYS FROM INVOICE DATE WITH APPROVED CREDIT AND ACCEPTABLE D & B RATING, ELSE PAYMENT PRIOR TO RECEIPT OF MATERIALS.

*A. MATERIALS-MATERIALS ACCEPTABLE FOR PROCESSING INCLUDE, BUT ARE NOT LIMITED TO; THERMOMETERS, SWITCHES (BOTH GLASS AND STEEL), CONTROLS, RELAYS, IGNITRON TUBES, HIGH PRESSURE QUARTZ LAMPS, MERCURY VAPOR LAMPS, MERCURY DENTAL AMALGAMS, MERCURY OIL SLUDGES, MERCURY ENCAPSULATED IN DEVICES OR CONTAINERS, MERCURY SPILL KITS, MERCURY OXIDE, MERCURY BATTERIES, ETC.

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Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Annemarie Gustavsson

DATE: August 24, 1992

FROM: Ron Nakaoka RKN

MAIL STOP/TELEPHONE: E517/7-7391

SYMBOL: EM-7A-92-260

SUBJECT: **OFF-SITE CAPABILITIES FOR TREATMENT OF MERCURY-CONTAINING HAZARDOUS COMPOUNDS**

During the FFCA discussion, DOE-AL brought up two companies that would accept mercury-containing hazardous compounds for treatment. These companies were Quicksilver, Inc., and Bethlehem Steel (?) both located in San Francisco, CA. In an effort to cross check this information, I called a representative of the waste management group at the Pacific Northwest Laboratory (PNL). This individual said that they had been shipping mercury compounds to Quicksilver until recently. Dealings with this company were ceased due to allegations of RCRA violations by the State of California. He recommended that if we are considering using Quicksilver, a comprehensive pre-award audit should be conducted, and that we realize that the company is on very shaky ground with the State. PNL has not used Bethlehem, and was not familiar with their capabilities. This may be a possibility, but would require a more thorough investigation.

Mercury componds generated by PNL are typically shipped to MERICO (Mercury Refining Company) located around Albany, NY. This company has been in existence since the 1950's and has a good reputation. The PNL representative did not have a phone number for this company, since they deal with a "broker" instead of individual companies. The company PNL uses to arrange for shipping and treating their hazardous wastes is Burlington Environmental. The individual that they primarily deal with is Bob Orr (1-800-547-2436). He could give you more information concerning MERICO, and possibly supply a phone number and contact.

As a side note, PNL has not identified any commercial facilites that will accept F027 (pentachlorophenol) either. If you have any questions, or would like the phone number of the PNL representative, please call me.

Cy: A. Drypolcher
S. Zygmunt
EM-7A File

John,
Please follow up on this.
Write a short memo to
Annemarie (copy Tony + Ron)
... whatever you find out. The
... compounds and

And
PDJ/Annemarie
Please - high -

added to our Rollins and Chemwaste contract as a third party outlet. At this time, no recycler seems capable of handling halogenated compounds of mercury, although a representative from Mercury Refining Co. did inform me that they are working on that problem. If the Laboratory is going to continue to generate halogenated mercury compounds, then we should write a letter to the state explaining a lack of disposal/treatment options similar to the letter for dioxin waste.

JK:dg

Att. a/s

Cy: A. Drypolcher, EM-7, w/att., MS E517
R. Nakaoka, EM-7, w/att., MS E517
A. Montoya, EM-7, w/att., MS E517
EM-7 Group Office Files, w/att., MS E517
EM-7L Office Files, w/att., MS J593

Los Alamos

Los Alamos National Laboratory
Los Alamos New Mexico 87545

memorandum

TO Annemarie Gustavsson, EM-7 DATE September 1, 1992

FROM John Kelly, EM-7 JK. MAIL STOP TELEPHONE J593/7-7579

SYMBOL EM-7L-92-519

SUBJECT RESPONSE TO RON NAKAOKA'S MEMO DATED AUGUST 24, 1992

In response to the information in Ron Nakaoka's memo (dated August 24, 1992), I did some research on three mercury recyclers located in the United States. The first one is Bethlehem Apparatus Company, Inc. located in Hellertown, PA. (215-838-7034). Waste Management (EM-7) has been shipping mercury to Bethlehem for the past year or so. According to Bethlehem's recycling agreement (see attached), they accept metallic mercury, articles containing mercury (such as ignitron tubes), mercury batteries, and mercury oxide. They specifically state that they do <u>not</u> accept mercuric chloride, mercury solutions, organic mercury compounds, and mercury salts.

The second company that I contacted was Mercury Refining Company, Inc. located in Latham, N.Y. (518-785-1703). According to their waste acceptance criteria (see attached), they will <u>not</u> accept a number of common mercury compounds, such as mercuric bromide, mercuric thiocyanate, mercuric chloride, and mercuric potassium iodide. However, their list of acceptable compounds does appear to include some items that Bethlehem cannot accept (eg. mercuric nitrate, mercuric acetate).

The last company that I contacted was Quicksilver, Inc. located just outside San Francisco, CA. (415-468-2000). A representative from their company informed me that they only accept metallic mercury and articles containing mercury. They do <u>not</u> accept any mercury compounds. They are in the process of sending me some literature including a waste acceptance criteria.

In summary, since Quicksilver Inc. can only handle a limited amount of material, and since they are under investigation by the State of California (as pointed out in Ron Nakaoka's memo), I do not see any point in pursuing them as potential recycler. However, Mercury Refining Co., Inc., does appear to be a viable option for us to pursue. Their list of acceptable materials is more comprehensive than our current recycler's (Bethlehem Apparatus) list. I recommend that we audit Mercury Refining Co. and if they pass the audit, we should have them

93-0218-001-000

InterOffice Memo

To: Paul Newberry, Rollins CHEMPAK

From: Tim Sloan, LANL, EM-7 TSloan

Date: February 18, 1993

Subject: Unacceptable Waste Streams.

Per our conversation this afternoon, please update your letter to Annemarie Gustavsson, dated February 4, 1993, to reflect Rollins' current abilities to handle metallic mercury, asbestos and dioxin wastes. Please include any information related to programs developed by Rollins utilizing non-Rollins, specialized disposal facilities.

CC: Annemarie Gustavsson, John Kelly, Andrew Montoya

93-0218-001-000

DATA SHEET

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AMG

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DATE CHECKED:
CHECKED BY:

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE:

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

BETZ FUNGICIDE F-16 #1332
VOLUME: .208M3
RCRA CODE: F027

PER DONNA LUSARDI

WPN:
WEIGHT: 272.156 KG

Dioxin tri/tetra/penta chlorophenol

215-355-3300

Sodium pentachlorophenate 20.7%

Sodium 2,4,5 trichlorophenate 7.5%

Sodium salts of other phenates 2.4%

+ inerts — MeOH is one

KATHY ELSBERRY
EM-7 MS E517
665-4686

APTUS INC 9/15
Coffeyville, Kansas
1-800-248-0442
Waste Acceptance Dept.
AMOS WIENEKE
extension 410
other contact
Shawn Rook

Permit 2/92 for Dioxin-TYPE
currently not accepting this
type of waste - will put
you on a waiting list

PER TED LEDEBOER

9/8/90 Talked to Dale Brown at Mound. about dioxins. He said there were incinerators in Canada that could take dioxins. He goes through a broker and said he would have the broker call me. Requires that we have permission to export wastes.

9/18/92 Paul Brown SAIC (301) 601-5610
legal consultant to EM-30 HQ.
Said he called to get a copy of
courts decision but got it elsewhere
Reviewed it and sent memo to
EM-30 saying decision opened door
to states and may have greater
impact than 5th decision that DOE was
subject to RCRA regulations.

Call Shelia and told her what was
said and passed on phone #. Shelia
said Joyce was trying to stir up
interest at HQ without success.

9/18/92 Talked with Celia at Aptus in
Coffeyville Kansas
800-248-0442
Called for Amos Wienebe left 4/0. he was to in

They have permit for dioxin wastes (incin
to 69's). They have not ~~yet~~ yet started
to accept wastes because they have
not located a disposal site that
will take the slag.

She took my name and number and will
send it to the Pittsburg office. They
will contact us about possible start
dates.

Aptus has agreement with Quim that

CHEMPAK

ROLLINS **CHEMPAK** INC.
2801 BROADBENT PARKWAY NE
BUILDING 6, SUITE B
ALBUQUERQUE NM 87107
505-345-1515
FAX 505-345-3905

Mercury Waste Reclaimers

(1) Mercury Refining - Albany, NY (518) 785-1703

(2) Bethlehem Apparatus Co. - Hellertown, Pa (215) 838-7034

(3) Quicksilver products - San Francisco, Ca

(4) Pure Lab Co. - Horwood Ma (617) 326-3442 (Larry Hyborn)

(5) D.F. Goldsmith - Evanston, Il (708) 869-7800

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To Andy Montoya	From TERRY Stady
Co.	Co.
Dept.	Phone #
Fax #	Fax #

September 14, 1992

Fungicide F-16

Ingredient	Percent
Pentachlorophenol	< 35
Sodium hydroxide	< 7
Ethylene glycol	< 7
Methanol	< 10
2,4,5-Trichlorophenol	< 10
Water	> 31

Per Donna Lusardi 9/11 :

70.7% Sodium pentachloro phenate
7.5% Sodium 2,4,5 trichlorophenate
2.4% Sodium salts of other phenates
+ Inerts (MeOH is one)

Therefore, F027 is the proper RCRA code for the drum.

Kathy

BETZ Industrial

Please deliver this sheet with message

Cover sheet plus 1 pages

TO: Kathy Elsberry

COMPANY: Waste Management

CITY/COUNTRY:

FAX NUMBER: 505-665-3750
(If not a subsidiary)

FROM: Ted Ledeboer

P.S. If message is not clear please call right away.

CONTACT NUMBER (215) 953-2463

WE HAVE THE FOLLOWING FACSIMILE EQUIPMENT (GROUP 3) AT THE NUMBER LISTED BELOW.

(215) 953-2464 ------- DAY & EVENING HOURS

Andy - you may ~~want~~ want to add this to your files - ref. ID# H87059500N
CWDR 199 20424 134665

APPENDIX I

STATEMENT OF WORK FOR UNKNOWN GAS CYLINDERS

Statement of Work
For
Sampling, Analysis and Recontainerization of Unknown Gas Cylinders at TA-54, Area L

1.0 General

This Statement of Work covers the sampling and analysis (and possible recontainerization) of unknown gas cylinders currently in storage at TA-54, Area L and at TA-46. Cylinders in storage at TA-46 will be transported to TA-54, Area L prior to the commencement of this work. These cylinders will have both operable and inoperable valves; therefore, the capability of remotely drilling into the cylinder is a necessity. The characterization of these unknown gases (and possibly liquids) is required under the Laboratory's Part B RCRA Permit.

2.0 Description of the Waste

There are approximately 250 gas cylinders ranging in size from 12" x 2" (lecture size) to 60" x 12". The approximate size breakdown is as follows:

12" x 2"	(Lecture)	-56%
18" x 7"		-32%
22" x 8"		-3%
40" x 6"		-7%
48" x 10"		-3%
60" x 12"		-1%

Cylinders may contain pyrophoric, reactive, corrosive, toxic, flammable, or radioactive gases or liquids. Markings or faint labels on some of the cylinders indicate the presence of the following chemical compounds:

Ammonia	Nitrogen Dioxide
Nitric Oxide	Trimethyl Aluminum
Sulfur Tetrafluoride	Nitrosyl Chloride
Tungsten Hexafluoride	Silicon Tetrafluoride
Pentaborane	Nitrogen Trifluoride
Hydrogen Fluoride	Boron Trichloride
Chlorine Trifluoride	Chlorine

However, markings and labels indicate only tentative contents. Many of the cylinders lack any external markings.

3.0 Services Required

The following services are required:

- On-site sampling (two samples required);
- Analyzing samples for chemical content (the Laboratory will perform the radiological analysis); and
- Recontainerization of certain gases and liquids into DOT-approved cylinders.

4.0 Sampling and Analysis

The subcontractor will provide on-site services for sampling at TA-54, Area L. Prior to sampling the cylinder, the subcontractor will complete an inspection log identifying external features on the cylinder. The subcontractor will be required to pull two samples from each gas cylinder inside a secondary containment vessel: one for radiation screening and one for chemical analysis. The subcontractor will be performing the chemical analysis on-site using their own facilities (mobile laboratory). Radiation screening will be performed by the Laboratory.

The subcontractor shall provide a sampling and analysis plan prior to the commencement of the project. Inspection logs, analytical reports, raw data, calculation sheets, and summaries will be required on a daily basis. The subcontractor will be required to clearly mark each cylinder with a unique identification number tying it to an analysis report.

5.0 Preparation of Gas Cylinders for Transportation

In order to comply with DOT regulations pertaining to the off-site shipment of hazardous materials, all gases and liquids will have to be in DOT-approved containers. Approximately 30 percent of the 250 gas cylinders (or 75) will require recontainerization because of an inoperable valve or unapproved shipping vessel. The subcontractor will be responsible for recontainerizing the material in a contained, inert environment. The subcontractor shall provide the necessary materials, including DOT-approved empty cylinders, overpacks, etc.

The subcontractor shall provide documentation to support the recontainerization or overpacking effort.

6. Management of Empty Cylinders

The subcontractor shall define how cylinders are demonstrated to be "empty" after recontainerization and will be asked to purge empty cylinders with an inert gas.

7.0 Health and Safety

The subcontractor shall provide EM-7 with the following documentation before starting the project:

- A Work Plan addressing the tasks and objectives of the site operations and the logistics and resources required;
- A Site-Specific Health and Safety Plan detailing proper safety procedures for handling gas cylinders. The plan should contain a comprehensive worker respiratory protection plan;
- Standard operating procedures describing each step required in sampling, analyzing, and recontainerizing gas cylinders; and
- A Safety and Risk Assessment.

EM-7 will be responsible for providing a Radiation Protection Technician to monitor radioactive emissions and perform swipe and survey data on the gas cylinders. In addition, the RPT will be responsible for ensuring that all subcontractor personnel are appropriately monitored for exposure to ionizing radiation.

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO Ed Lopez, EM-7, MS J593

DATE March 26, 1993

FROM Rubén Rangel, EM-8

MAIL STOP/TELEPHONE K490/7-2416

SYMBOL EM-8:93-776

SUBJECT **NESHAP REVIEW: GAS CYLINDER DISPOSAL AT AREA L, PHASE III**

ES&H QUESTIONNAIRE NO.: 92-0477
PROJECT ID NO.: 92-NONE

EM-8 has reviewed the referenced project, and based on the information provided to us, we have determined your project does not require a radioactive air emissions pre-construction application under 40 CFR Part 61 National Emissions Standards for Hazardous Air Pollutants (NESHAP).

According your discussions with our NESHAP contractor on March 3, 1991, the project involves sampling and analysis of the contents of compressed gas cylinders. These cylinders originated at TA-54 Area G, and there is a small possibility that they contain radioactive materials. However, the sampling and analysis system to be used is completely sealed, and therefore, no radioactive materials will be emitted to the air.

Provided that the scope of this project does not change, the project will not be required to submit a NESHAP pre-construction approval application to the Environmental Protection Agency.

Please bear in mind that the EPA can impose criminal penalties for circumvention of the NESHAP regulations. It is your Group's responsibility to maintain the proper documentation on this project.

Thank you for your information during the review process.

RR:DA/es

Cy: Anthony Drypolcher, EM-7, MS E518
Duane Verley, ENG-5, MS K588
Jennifer Dann, RADIAN, MS K490
Larry Andrews, HS-DO/RAEM, MS E528
Gaye Barnes, HS-3, MS K479
NEPA, EM-8, MS K490
NESHAP File
Circ. File

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Ed Lopez, EM-7, J593

DATE: July 15, 1993

FROM: Peggy Powers, EM-8

MAIL STOP/TELEPHONE: K490/5-5717

SYMBOL: EM-8:93-1900

SUBJECT: NEPA Status of ***Review for Gas Cylinder Removal: Characterization and Storage or Disposal***

PROJECT ID NO.: none
EM-8 ACCESSION NO.: 4070
ES&H QUESTIONNAIRE NO.: 92-0477
DOE IDENTIFICATION NO.: LAN-93-023

The enclosed Department of Energy (DOE) Environmental Checklist (DEC) was submitted to the DOE. The DOE reviews Laboratory projects to determine the documentation required by the National Environmental Policy Act (NEPA). The DEC is the initial document in the review process. The DOE will determine if:

- an Environmental Impact Statement (EIS) is required,
- an Environmental Assessment (EA) is required, or
- no further NEPA documentation is required.

The enclosed copies of the DEC and transmittal letter are for your information only.

You may not proceed with detailed design, construction (including site preparation), or project operations until all NEPA requirements are satisfied. We will let you know of DOE's determination as soon as they notify us.

The DOE ID Number, LAN-93-023, is to be included on planning, authorization, and control documents including Construction Project Data Sheets and activity data sheets for this project (Supplemental Directive DOE/AL 5440.1D, Appendix A).

Please call me if you have any questions about NEPA requirements.

MP:jm

Enclosures: a/s

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE June 25, 1993
IN REPLY REFER TO EM-8:93-1704
MAIL STOP K490
TELEPHONE (505) 667-5021

Ms. Constance Soden
Acting NEPA Compliance Officer
U. S. Department Of Energy
P.O. Box 5400
DOE Albuquerque Operations Office
Albuquerque, New Mexico 87185-5400

Ms. Diana Webb
Nepa Specilist
Environment, Safety, & Health Branch
U. S. Department Of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

Dear Ms. Soden and Ms. Webb:

SUBJECT: DOE ENVIRONMENTAL CHECKLIST (1)

Enclosed is a Department of Energy (DOE) Environmental Checklist for the following proposed project:

> *Gas Cylinder Removal: Characterization and Storage or Disposal,*
> Accession No. 4070, LAN-93-023

This checklist has been prepared following the format provided by DOE Albuquerque Operations Office (DOE/AL) for its use in determining the appropriate level of National Environmental Policy Act (NEPA) documentation.

We have identified potential environmental concerns in Block B of the checklist. If the project might cause a significant change in one of the standard entries, we have responded "yes" and provided clarification in the following text.

This action appears to be encompassed by the categorical exclusion for removal actions (10 CFR 1021, Appendix B.6.1. It is funded by the Office of Environmental Restoration/Waste Management«choose one"Defense Programs/Waste Management/Environmental Restoration/Nuclear Energy/other (specify)"». The activities described appear to have insignificant environmental impacts and appear not to affect any sensitive areas. Please inform this office of action taken on this checklist.

Sincerely,

Dave Kraig
NEPA Staff
Environmental Protection Group

DK/MP:es

Enclosure: a/s

Cy: A. Tiedman, ADO, MS A120, w/o enc.
T. Gunderson, EM-DO, MS J591, w/o enc.
D. Garvey, EM-8, MS K490, w/o enc.
J. Bellows, DOE/LAAO, MS A316, w/o enc.
J. Vozella, DOE/LAAO, MS A316, w/o enc.
Circ. File

ENVIRONMENTAL CHECKLIST
U.S. Department of Energy
Albuquerque Operations Office

Project/Activity Title: Gas Cylinder Removal: Charaterization and Storage or Disposal	ID NO: none ACC NO:4070 DEC-93-0009	Date: 04/29/93
Program Office: Environmental Restoration/Waste Management	B/R Code:	
A/O Contractor: Los Alamos Natl Lab	AL Tracking Number: LAN-93-033	
A/O Contractor Contact: LANL EM-8 David Kraig, 505-665-4815 Signature: Dave Kraig	Alternate contact: LANL EM-8 Margaret A. Powers, 505-665-5717 Signature: Margaret A. Powers	
Project Line Management: A. Drypolcher, EM-7, 667-7391, MS E518 Signature: A. Drypolcher		
DOE/LAAO Line Management Official:		

A. BRIEF PROJECT/ACTIVITY DESCRIPTION: (See Block A, Page 2)

Category: Waste Characterization/Management
Location: TA-54, Area L
Schedule: FY 93-94
Cost: $400K

B. ENVIRONMENTAL CONCERNS: (See Block B, Page 2)

	Yes	No		Yes	No
1. Air emissions	x		13. Archaeological/cultural resources		x
2. Liquid effluents	x		14. Noise levels		x
3. Solid waste	x		15. Radiation/toxic chemical exposures	x	
4. Radioactive matls/soil	x		16. Pesticide/herbicide use		x
5. Hazardous constituents	x		17. High energy sources/ explosives		x
6. Mixed waste (rad + haz)	x		18. Transportation issues	x	
7. Chemical storage/use	x		19. Special status species/ environment		x
8. Petroleum storage/use		x	20. Identified ER site		x
9. Asbestos materials		x	21. Other		x
10. Utility system		x			
11. Clearing or excavation		x			
12. Activity outside area fence/wildlife		x			

C. PERMITS: (If response is Yes, an explanation is provided in Block C)

Does or may the proposed project/activity require any local, state, or federal permits, notifications, or reviews? Yes x No ____
Would the activity threaten a violation of laws, regulations, DOE Orders, or permits? Yes ____ No x

NOTE AND PROGRAM OFFICE DETERMINATION/RECOMMENDATION BLOCKS (D AND E) AND EH OBJECTION/DETERMINATION BLOCK (F) ARE ON THE FINAL PAGE OF THIS DOCUMENT.

Block A: PROJECT/ACTIVITY DESCRIPTION

Construction Project Manager: None

Project Contact: John Kelly, EM-7, 667-7579, MS J593

Summary: This project involves characterizing the contents of compressed gas cylinders that have been identified as waste. These cylinders may contain hazardous and/or radioactive materials. The contractor will determine the contents of each cylinder and label them. Disposal or storage will be determined according to the contents of each cylinder. Cylinders containing radioactive materials will be stored on Laboratory property, whereas those containing hazardous or toxic materials will be shipped off-site for disposal in a RCRA licensed facility.

Facility: The cylinder sampling, analyzing, and recontainerizing facilities are housed in four temporary trailers and trucks. These will be located on an existing asphalt pad at TA-54, Area L, and removed by the contractor after the project is completed. Because the area is paved, clearing and excavation will not be necessary.

Scope: A contractor, responsible to EM-7, will identify compressed gas cylinders of unknown age, condition, and contents from multiple locations within the Los Alamos National Laboratory. The cylinders will be sampled and analyzed to determine their contents. A total of 250-300 cylinders will be analyzed, at a rate of approximately 50 per week.

If a cylinder meets DOT standards, a gas sample will be withdrawn through the valve. Sampling is performed in the valve-sampling trailer, which is equipped with an atmospheric protection system. Cylinders to be sampled are enclosed in a primary containment chamber constructed of 1/2 inch thick steel and equiped with an emergency scrubber system. The scrubber system consists of a molecular sieve and an activated charcoal filter.

If a cylinder does not have an operable valve, it will be placed in a cylinder recovery vessel (CRV), a metal, gas-tight container. A hole will be drilled into the cylinder, and a sample will be removed and analyzed, the gas will be pumped out of the CRV and into an appropriate cylinder that meets DOT standards. The CRV system is then purged with inert gas. If a cylinder contains hazardous or radioactive material, the CRV will be decontaminated before the next cylinder is sampled. Empty cylinders will be decontaminated by triple rinsing with an appropriate solvent.

Samples will be analyzed using a Fourier Transform Infrared Spectrometer and /or a mass spectrometer for chemical identification, and portable survey meters and liquid scintillation counters for radioactive material detection. The cylinders will be labeled according to DOT and EPA regulations.

Cylinders containing radioactive or mixed waste will be stored on Laboratory property pending decision on disposal. The contractor will transport cylinders containing hazardous and toxic gases off-site for disposal at a facility licensed under RCRA. Cylinders containing non-toxic, non-hazardous materials will be disposed of appropriately by the contractor.

The sampling and recontainerization operations will be carried out by a contractor who previously to performed sampling activities. The contractor will use the same methods and equipment to perform the sampling. The contractor has performed similar testing, and disposal services for other agencies, including the EPA, and has developed Health and Safety, and Radiation Protection Plans for this operation.

Block B: ENVIRONMENTAL CONCERNS

The intent of the Laboratory is to perform all activities in compliance with all applicable local, state, and federal regulations and orders. Wastes will be handled according to established Laboratory procedures that are intended to ensure compliance with regulations.

1. Air emissions: The sampling and analysis trailers are equipped with molecular sieve and activated carbon absorbent canisters and HEPA filters to minimize emissions to the atmosphere. No detectable exposures to members of the public are expected.

2. Liquid effluents: A maximum of eight people will work at the site. The septic system at TA-54 will be able to accommodate this activity.

3. Solid waste: Gas cylinders that do not contain radioactive material will be shipped off site for treatment and disposal.

   Disposition of uncontaminated and decontaminated empty cylinders will be decided based on the number of empty cylinders and economics.

   The operation will generate approximately 60 cubic feet of uncontaminated office waste each week. Johnson Controls disposes of LANL's uncontaminated trash in the Los Alamos County Landfill.

4. Radioactive materials/soil: It is possible that some cylinders that are emptied through the CRV process will have become radioactive through exposure to radioactive gases. Empty radioactive cylinders will be managed with other Laboratory radioactive wastes.

5. Hazardous constituents: Cylinders containing hazardous materials that are emptied through the CRV process will be decontaminated by triple rinsing with an appropriate solvent. This will generate hazardous wastes. These wastes will be stored in drums and will be managed as hazardous wastes.

6. Mixed waste (radioactive and hazardous): Cylinders containing radioactive materials that are emptied through the CRV process will be decontaminated by triple rinsing with an appropriate solvent, and the CRV vessel will also be decontaminated before processing additional cylinders. These mixed wastes will be stored in appropriate drums and managed as mixed wastes.

7. Chemical storage/use: The contractor will store approximately 100 gallons each of freon and mild caustic (soda sorb) at the site, to be used for decontamination of the CRV unit and empty gas cylinders.

15. Radiation/toxic chemical exposures: The contractor has developed Health and Safety, and Radiation Protection Plans for this operation. Contractor personnel will complete any required Laboratory training. No detectable personnel exposures are expected.

18. Transportation Issues: Some of the waste gas cylinders do not meet DOT regulations and contain unknown contents. Roads will be closed as necessary during transport of these cylinders from TA-46 to TA-54. The contents of unsound cylinders will be recontainerized. All cylinders will be labeled as to their contents. All cylinders will be in compliance with all federal regulations before shipment or storage. Off-site shipment will be conducted in compliance with DOT, DOE, and EPA regulations and guidelines.

Block C: PERMITS

The intent of the Laboratory is to conduct the project/activity in accordance with all applicable statutory and regulatory requirements, permits, and DOE Orders. The project/activity has been reviewed under the Environment, Safety, and Health questionnaire screening process at the Laboratory. No permits have been determined to be needed for this project at this time although the following areas of environmental concern have been identified. Permit modifications, notifications, reviews, and/or registrations may be required in the following areas before beginning operations.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
REVIEW FOR HAZARDOUS WASTE REQUIRED

Additional regulatory issues may be identified as the project develops.

Block D. NCO CLASSIFICATION/RECOMMENDATION: _____

_____

_____

_____

_____

_____

_____

_____

Signature: _____

Title: _____ Date: _____

Block E. PROGRAM OFFICE DETERMINATION/RECOMMENDATION: _____

_____

_____

_____

_____

_____

_____

_____

Signature: _____

Title: _____ Date: _____

Block F. EH OBJECTION/DETERMINATION: Yes __ No __

_____

_____

_____

_____

_____

_____

_____

Signature: _____

Title: _____ Date: _____

APPENDIX J

INVENTORY OF UNKNOWN GAS CYLINDERS

CYLINDER ANALYSIS PROJECT
Page No. 1
08/06/93

LCRU NO. LCRU001 GCP NO. 1548A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR, RUST FORMING ON BOTTOM
CONTENT (UNVERIFIED) POISON "A" GAS

LCRU NO. LCRU002 GCP NO. 1708A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR, RUST FORMING
CONTENT (UNVERIFIED) ANTMONY PENTAFLOURIDE

LCRU NO. LCRU003 GCP NO. 2197 ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR, RUST FORMING
CONTENT (UNVERIFIED) UNKNOWN

LCRU NO. LCRU004 GCP NO. 1644A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR, RUST FORMING
CONTENT (UNVERIFIED) F G MIXTURE

LCRU NO. LCRU005 GCP NO. 1994A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) HYDROGEN IODIDE

LCRU NO. LCRU006 GCP NO. 2063A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION GOOD
CONTENT (UNVERIFIED) ISOBUTANE

LCRU NO. LCRU007 GCP NO. 2005A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TRIBUTLY ALUMINUM

LCRU NO. LCRU008 GCP NO. 339A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR,RUSTY
CONTENT (UNVERIFIED) DEUTERIUM CHLORIDE

LCRU NO. LCRU009 GCP NO. 1539A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR, RUST ON BOTTOM
CONTENT (UNVERIFIED) POISON "A" GAS CL2

LCRU NO. LCRU010 GCP NO. 1597A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TUNGSTON HEXAFLUORIDE

LCRU NO. LCRU011 GCP NO. 1542A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION GOOD
CONTENT (UNVERIFIED) CHLORINE

LCRU NO. LCRU012 GCP NO. 309A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

CRU NO. LCRU013 GCP NO. 2012A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR, VERY RUSTY
CONTENT (UNVERIFIED) PHOSPHORUS PENTALFLUORIDE

LCRU NO. LCRU014 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED)

LCRU NO. LCRU015 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED)

LCRU NO. LCRU016 GCP NO. 2054A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR, VERY RUSTY
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU018 GCP NO. 2198A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROSYL CHLORIDE

LCRU NO. LCRU020 GCP NO. 2051A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) SUSPECT CL

LCRU NO. LCRU020 GCP NO. 2051 ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) SUSPECT CL

LCRU NO. LCRU022 GCP NO. 2083A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

CYLINDER ANALYSIS PROJECT
Page No. 5
8/06/93

LCRU NO. LCRU023 GCP NO. 2155 ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU024 GCP NO. 2148A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED)

LCRU NO. LCRU025 GCP NO. 2053A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR, VERY RUSTY
CONTENT (UNVERIFIED) SUSPECT CL2

LCRU NO. LCRU026 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) PERCHLORYL FLOURIDE (CLS535)

LCRU NO. LCRU027 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) PHENIUM HEXAFLUORIDE (CLS0366)

LCRU NO. LCRU028 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) PYROPHORIC LIQUID (CLS0360)

LCRU NO. LCRU029 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITOSYL CHLORIDE (CLS0347)

LCRU NO. LCRU030 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (CLS0355)

LCRU NO. LCRU031 GCP NO. 2048A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (CLS0281)

LCRU NO. LCRU032 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (CLS0286)

LCRU NO. LCRU033 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (CLS0357)

LCRU NO. LCRU035 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C92032208)

LCRU NO. LCRU037 GCP NO. 2011A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) SULFUR TETRAFLOURIDE

LCRU NO. LCRU038 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NF3 (C91024034N)

LCRU NO. LCRU039 GCP NO. 2139A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR, VERY RUSTY
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU040 GCP NO. 2091A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) RESIDUAL ARGON

LCRU NO. LCRU041 GCP NO. 1620A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TRIMETHYL ALUMINUM

LCRU NO. LCRU042 GCP NO. 2184A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR, VERY RUSTY
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU043 GCP NO. 2102A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) C-257

LCRU NO. LCRU044 GCP NO. 2099A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR, RUSTY
CONTENT (UNVERIFIED) C-290

LCRU NO. LCRU045 GCP NO. 2100A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) C-245

LCRU NO. LCRU046 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) NITOGEN TRIFLOURIDE (CLS0346)

LCRU NO. LCRU047 GCP NO. 1804A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR, STEM VERY RUSTY
CONTENT (UNVERIFIED) TRI-N-PROPYL BORON

LCRU NO. LCRU048 GCP NO. 2104A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) C-250

LCRU NO. LCRU049 GCP NO. 2070A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR, BOTTOM RUSTY
CONTENT (UNVERIFIED) CL F3 (UNKNOWN POISON "A" GAS)

LCRU NO. LCRU050 GCP NO. 2071A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU051 GCP NO. 2086A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) BROMINE TRIFLUORIDE

LCRU NO. LCRU052 GCP NO. 2084A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU053 GCP NO. 2180A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR, RUSTY
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU054 GCP NO. 2079A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) C-235

LCRU NO. LCRU055 GCP NO. 2187A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) HYDROGEN TRIFLUORIDE

LCRU NO. LCRU056 GCP NO. 2186A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU057 GCP NO. 2103A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) C-291

LCRU NO. LCRU058 GCP NO. 2189A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU059 GCP NO. 2205A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) CHLORINE

LCRU NO. LCRU060 GCP NO. 2014A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) MOLYBDENUM HEXAFLUORIDE

LCRU NO. LCRU061 GCP NO. 1569A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) PENTABORINE

LCRU NO. LCRU062 GCP NO. 2183A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU063 GCP NO. 2206A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C91024029N)

LCRU NO. LCRU064 GCP NO. 525A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) HYDROGEN FLOURIDE

LCRU NO. LCRU065 GCP NO. 1329A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) SULFUR DIOXIDE

LCRU NO. LCRU066 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) BORON TRICHLORIDE (CLS0352)

LCRU NO. LCRU067 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TUNGSTON HEXAFLOURIDE (CLS0349)

LCRU NO. LCRU068 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITOGEN DIOXIDE (CLS0122)

LCRU NO. LCRU069 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) POSION GAS 2 (CLS0336)

LCRU NO. LCRU070 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TUNGSTON HEXAFLOURIDE (CLS0350)

LCRU NO. LCRU071 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TUNGSTON HEXAFLUORIDE (CLS0351)

LCRU NO. LCRU072 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) SULFUR TETRAFLOURIDE (CLS0353)

LCRU NO. LCRU073 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TRICHLORSILANE ELECTRONIC GRADE

LCRU NO. LCRU074 GCP NO. 1530A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE TRIFLUORIDE

LCRU NO. LCRU075 GCP NO. 1519A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE TRIFLUORIDE

LCRU NO. LCRU076 GCP NO. 1559A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE TRIFLUORIDE

LCRU NO. LCRU077 GCP NO. 1517A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE TRIFLUORIDE

LCRU NO. LCRU078 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU079 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C91024040N)

LCRU NO. LCRU080 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TUNGSTON HEXAFLOURIDE (CLS0348)

LCRU NO. LCRU081 GCP NO. 2207A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROGEN DIOXIDE

LCRU NO. LCRU082 GCP NO. 1587A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) MATHESON GERMANE

LCRU NO. LCRU083 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE TRIFLUORIDE

LCRU NO. LCRU085 GCP NO. 1508A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ANHYDROUS AMMONIA

LCRU NO. LCRU086 GCP NO. 1345A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROGEN DIOXIDE W/FULL LENGTH DIP TUBE

LCRU NO. LCRU087 GCP NO. 1632A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) MATHESON CHLORINE, PROPYLENE

LCRU NO. LCRU088 GCP NO. 748A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE ?

LCRU NO. LCRU089 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) WASTE SILICON TETRAFLOURIDE (CLS0354)

LCRU NO. LCRU090 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU091 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C898955N)

LCRU NO. LCRU092 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C898956N)

LCRU NO. LCRU094 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C888958N)

LCRU NO. LCRU095 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C898957N)

LCRU NO. LCRU096 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (898954N)

LCRU NO. LCRU097 GCP NO. 1946A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) 10% HCL IN HE, 500psi

LCRU NO. LCRU098 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU099 GCP NO. 1612A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NICKEL CARBONYL

LCRU NO. LCRU100 GCP NO. 2094A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ANTIMONY PENTAFLUORIDE

LCRU NO. LCRU100 GCP NO. 1637A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE

LCRU NO. LCRU101 GCP NO. 1725 ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION GOOD
CONTENT (UNVERIFIED) FLUORINE, NITRATE

LCRU NO. LCRU102 GCP NO. 423A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) AMMONIA

LCRU NO. LCRU103 GCP NO. 701A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU104 GCP NO. 2097A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ANTIMONY PENTAFLUORIDE

LCRU NO. LCRU105 GCP NO. 2092A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TRIMETHYLAMINE

LCRU NO. LCRU106 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) L/C NITRIC OXIDE EMPTY (C91002742)

CRU NO. LCRU107 GCP NO. 2060A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU109 GCP NO. 319A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ANTIMONY PENTAFLUORIDE

LCRU NO. LCRU110 GCP NO. 1938A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU111 GCP NO. 2064A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) BROMINE TRIFLOURIDE

LCRU NO. LCRU118 GCP NO. 207 A ? ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU119 GCP NO. 1742A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ARSENIC TRIFLUORIDE

LCRU NO. LCRU120 GCP NO. 2065A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) BUTANE

LCRU NO. LCRU121 GCP NO. 1727A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CHLORINE

LCRU NO. LCRU122 GCP NO. 1995A`` ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROUS OXIDE

LCRU NO. LCRU112 GCP NO. 1694A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROSEL CHLORIDE

LCRU NO. LCRU113 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITRIC OXIDE (C9203229)

LCRU NO. LCRU115 GCP NO. 2204A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) C-181

LCRU NO. LCRU116 GCP NO. 2177A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) SODIUM POTASSIUM ALLOY LIQUID

LCRU NO. LCRU117 GCP NO. 1650A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) PYROPHORIC LIQUIDS, TRIMETHYL ALUMINUM

LCRU NO. LCRU123 GCP NO. 2087A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) MO, F6

LCRU NO. LCRU124 GCP NO. 2003A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) IODINE HEPTAFLUORIDE

LCRU NO. LCRU125 GCP NO. 280A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) TETRACARBONYL NICKEL

LCRU NO. LCRU126 GCP NO. 2004A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ALPHA INORGANICS, TRIETHYL ALUMINIUM

LCRU NO. LCRU127 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROGEN DIOXIDE (C92032210)

LCRU NO. LCRU128 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROGEN TRIFLOURIDE

LCRU NO. LCRU129 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITOGEN TRIFLOURIDE (CLS0365)

LCRU NO. LCRU130 GCP NO. 1557A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU131 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITOGEN TRIFLOURIDE (CLS0365)

LCRU NO. LCRU132 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) LC/NITRIC OXIDE (EMPTY)

LCRU NO. LCRU133 GCP NO. 2074A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROGEN TRIFLOURIDE

LCRU NO. LCRU134 GCP NO. 288A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) CLF3

LCRU NO. LCRU136 GCP NO. 2078A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU137 GCP NO. 733A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS (C898959)

LCRU NO. LCRU139 GCP NO. 286A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) TUNGSTON HEXAFLOURIDE, WF8

LCRU NO. LCRU140 GCP NO. 1810A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU141 GCP NO. 2165A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ANTIMONY PENTAFLOURIDE

LCRU NO. LCRU143 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) HYDROGEN BROMIDE

LCRU NO. LCRU144 GCP NO. 2027A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) HYDROGEN SULFIDE

LCRU NO. LCRU145 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) (C91024039N)

LCRU NO. LCRU146 GCP NO. 2025A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) HYDROGEN SULFIDE

LCRU NO. LCRU147 GCP NO. 2117 ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

LCRU NO. LCRU148 GCP NO. 732A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) UNKNOWN POISON "A" GAS

LCRU NO. LCRU149 GCP NO. 321A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION GOOD
CONTENT (UNVERIFIED) FIRE EXTINGUISHER

LCRU NO. LCRU150 GCP NO. 1998A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) HYDROGEN SULFIDE

LCRU NO. LCRU151 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NON-REG WASTE (CLS0361)

LCRU NO. LCRU152 GCP NO. 1960A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) NITROGEN TRIFLUORIDE

LCRU NO. LCRU153 GCP NO. 2076A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR
CONTENT (UNVERIFIED) TETRAFLUOROHYRAZINE POISON

LCRU NO. LCRU154 GCP NO. 2026A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION POOR, VALVE VERY RUSTY
CONTENT (UNVERIFIED) SULFUR DIOXIDE

LCRU NO. LCRU155 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE N
CYL OPEN

CONDITION POOR, RUSTY
CONTENT (UNVERIFIED)

LCRU NO. LCRU156 GCP NO. 1607A ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) MATHESON CHLORINE

LCRU NO. LCRU157 GCP NO. 2061 ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED) ETHYL FLUORIDE

LCRU NO. LCRU158 GCP NO. ORACLE ID

CYL VOLUME 0.000 CYL WEIGHT 0.000

VALVE THERE Y
CYL OPEN

CONDITION FAIR
CONTENT (UNVERIFIED)

APPENDIX K

INVENTORY OF GAS CYLINDER ACCUMULATION START DATES

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
90000003	GCP1529A PHOSGENE		
19901207140000	P095	07-DEC-90	.004 M
90000004	GCP1527A ARSINE		
19901207140000	D004 D001	07-DEC-90	.004 M
90000037	GCP1570A CARBONYL SULFIDE		
19901213140000	D001	13-DEC-90	.004 M
90000065	GCP1568A METHYL MERCAPTAN		
19901213140000	D001	13-DEC-90	.004 M
90000077	GCP1167A PROPYLENE		
19901218140000	D001	18-DEC-90	.07 M
90000079	GCP1552A HCL		
19901218140000	D002	18-DEC-90	.007 M
90000106	GCP1528A ARSINE,TRACE AIR		
19901218140000	D004 D001	18-DEC-90	.004 M
90000108	GCP598A H2S,N2,(TR. C6H13NO3)		
19901218140000	D001 D003 U135	18-DEC-90	.006 M
90000110	GCP658A HCL,TRACE HBR,AIR		
19901218140000	D002	18-DEC-90	.006 M
90000113	GCP736A ISO-BUTENE,N2		
19901218140000	D001	18-DEC-90	.005 M
90000115	GCP1571A CYANOGEN		
19901218140000	P031 D001	18-DEC-90	.002 M
90000116	GCP720A PHOSGENE		
19901218140000	P095	18-DEC-90	.002 M
900060	GCP1247A ISOBUTANE		
19901127140000	D001	27-NOV-90	.006 M
900110	GCP1253A NITRIC OXIDE,TRACE NITROUS OXIDE		
19901127140000	P076	27-NOV-90	.0004 M
900111	GCP1241A NO,TRACE N2O		
19901127140000	P076	27-NOV-90	.0004 M
900112	GCP1250A ETHYLENE		
19901127140000	D001	27-NOV-90	.0004 M
90011300	GCP1252A METHYL BROMIDE		
19901127140000	U029	27-NOV-90	.0004 M
900385	GCP1399A AIR,NO2,N2O,N(15)O2		
19901116140000	D001	16-NOV-90	.049 M
900386	GCP1369A AIR,TRACE ENRICHED NO		
19901116140000	P076	16-NOV-90	.06 M
900387	GCP1368A N02,AIR,TRACE ENRICHED NO2		
19901116140000	P078 D001	16-NOV-90	.06 M
900786	GCP1401A NITROGEN DIOXIDE		
19901116140000	P078 D001	16-NOV-90	.06 M
900787	GCP1400A AR,N2,N(15)O2,N(15)O(18)2		
19901116140000	D001 P078	16-NOV-90	.06 M
900837	GCP1404A NO2,ENRICHED NO2		
19901116140000	D001 P078	16-NOV-90	.06 M

030 004440

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
901036	GCP1136A DIFLUOROETHANE,AIR		
19901128140000	D001	28-NOV-90	.004 M
902030	GCP1040A XENON		
19901116140000	NONE P078	16-NOV-90	.006 M
90237800	GCP1438A NO,TRACE NO2,ENRICHED NO,TRACE CO2		
19901203140000	P076	03-DEC-90	.08 M
90237900	GCP1439A NO,ENRICHED NO,N2,TRACE NO2		
19901203140000	P076	03-DEC-90	.08 M
90240200	GCP1440A NO,TRACE NO2		
19901203140000	P076	03-DEC-90	.08 M
90240300	GCP1060A HYDROGEN,DEUTERIUM		
19901203140000	D001	03-DEC-90	.006 M
90248700	GCP1238A METHYL BROMIDE,AIR		
19901203140000	U029	03-DEC-90	.004 M
902533	GCP1168A PROPYLENE		
19901129140000	D001	29-NOV-90	.1 M
903140	GCP1367A AIR,NO2,N2O		
19901116140000	D001	16-NOV-90	.049 M
903170	GCP1398A DEUTERATED METHANE-13		
19901116140000	D001	16-NOV-90	.006 M
903171	GCP1395A NITROUS OXIDE		
19901116140000	NONE P078	16-NOV-90	.006 M
903173	GCP1394A NO2,TRACE N2O		
19901116140000	P078 D001	16-NOV-90	.006 M
904022	GCP1220A ISOBUTANE		
19901120140000	D001	20-NOV-90	.005 M
904110	GCP1215A C02,C3H8		
19901120140000	D001	20-NOV-90	.006 M
904305	GCP1232A ISOBUTANE		
19901120140000	D001	20-NOV-90	.005 M
904306	GCP1219A ISOBUTANE		
19901120140000	D001	20-NOV-90	.005 M
904611	HYDROGEN SULFIDE		
19900530092604	U135	30-MAY-90	.01 M
904612	HYDROGEN SULFIDE		
19900530092604	U135	30-MAY-90	.01 M
904613	HYDROGEN SULFIDE		
19900530092604	U135	30-MAY-90	.01 M
906349	BF3		
19900817080624	D002	17-AUG-90	.0011 M
906365	BF3		
19900817080624	D002	17-AUG-90	.0011 M
907320	GCP238A OXYGEN,TRACE ARGON		
19900912140000	D001	12-SEP-90	.006 M
907324	GCP257A OXYGEN,TRACE: AR,CO2		
19900912140000	D001	12-SEP-90	.006 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
907342	GCP276A BUTADIENE,ARGON		
19900913140000	D001	13-SEP-90	.0004 M
907343	GCP277A BUTADIENE		
19900913140000	D001	13-SEP-90	.0004 M
907344	GCP278A BUTADIENE		
19900913140000	D001	13-SEP-90	.0004 M
907345	GCP279A BUTADIENE		
19900913140000	D001	13-SEP-90	.0004 M
907346	GCP250A HYDROGEN CHLORIDE		
19900913140000	D002	13-SEP-90	.006 M
907347	GCP282A H2S,AIR,AR,CH3OH		
19900913140000	D001 D003	13-SEP-90	.0023 M
907354	GCP291A HYDROGEN,TRACE SILANE		
19900914140000	D001	14-SEP-90	.0438 M
907355	GCP292A SILANE,TRACE ARGON		
19900914140000	D001 D003	14-SEP-90	.0438 M
907356	GCP303A 1,1,1, CHLORODIFLUOROETHANE		
19900914140000	D001	14-SEP-90	.0004 M
907357	GCP305A DIFLUOROETHANE		
19900914140000	D001	14-SEP-90	.0004 M
907397	GCP370A HYDROGEN SULFIDE		
19900915140000	D001 D003 U135	15-SEP-90	.0023 M
907406	GCP294A HELIUM,ARGON,FLUORINE,CL2		
19900917140000	D001	17-SEP-90	.0438 M
907420	GCP425A NO2,N2O,NO		
19900918140000	D001	18-SEP-90	.0384 M
907421	GCP426A NO2,NO,N2O		
19900918140000	D001	18-SEP-90	.0384 M
907422	GCP427A NO2,N2O,NO		
19900918140000	D001	18-SEP-90	.0167 M
907423	GCP429A NITRIC OXIDE		
19900918140000	P076	18-SEP-90	.004 M
907436	GCP409A HYDROGEN CHLORIDE		
19900919140000	D002	19-SEP-90	.0438 M
907437	GCP408A HYDROGEN CHLORIDE		
19900919140000	D002	19-SEP-90	.0438 M
907438	GCP407A HYDROGEN CHLORIDE		
19900919140000	D002	19-SEP-90	.0438 M
907439	GCP406A HYDROGEN CHLORIDE		
19900919140000	D002	19-SEP-90	.0438 M
907440	GCP404A HYDROGEN CHLORIDE, NITRIC OXIDE		
19900919140000	D002	19-SEP-90	.0438 M
907445	GCP414A NO,N2O		
19900919140000	P076	19-SEP-90	.023 M
907452	GCP363A ARGON,F2		
19900920140000	D001 P056	20-SEP-90	.006 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER#	DESCRIPTION			PICKDATE	VOLUME
CWDR#		EPA CODE			
907455	GCP365A HF,CL2,CARBONTETRAFLUORIDE				
19900920140000		D002		20-SEP-90	.006 M
907456	GCP483A ARGON,FLUORINE				
19900920140000		D001	P056	20-SEP-90	.049 M
907469	GCP478A HELIUM,ARGON,FLORINE				
19900920140000		P056	D001	20-SEP-90	.0438 M
907471	GCP482A ARGON,FLUORINE				
19900920140000		P056	D001	20-SEP-90	.049 M
907472	GCP386A MOF6,SIF4,HF,AR				
19900920140000		D002		20-SEP-90	.0023 M
907488	GCP400A HELIUM,ARGON,CL2,HF,F2				
19900924140000		D001	D002	24-SEP-90	.049 M
907491	GCP457A H2,(TRACE HF,HCL,SIF4)				
19900924140000		D001		24-SEP-90	.128 M
907493	GCP461A H2,HF,HCL				
19900924140000		D001	D002	24-SEP-90	.128 M
907496	GCP464A H2,TRACE CH4,SIF4,HF				
19900924140000		D001		24-SEP-90	.128 M
907499	GCP467A H2,AR,TRACE HF				
19900924140000		D001		24-SEP-90	.128 M
907501	GCP469A H2,HF,(TRACE CH4,HCL,SIF4,AR)				
19900924140000		D001	D002	24-SEP-90	.128 M
907502	GCP459A H2,HF,METHANE				
19900924140000		D001		24-SEP-90	.049 M
907503	GCP472A H2,HF,AR,(TRACE CH4,HCL,SIF4)				
19900924140000		D001	D002	24-SEP-90	.128 M
907505	GCP475A H2,F2,HF,HCL,AR,(TRACE CH4,SIF4)				
19900924140000		D001	D002	24-SEP-90	.128 M
907540	GCP458A HYDROGEN FLUORIDE				
19900925140000		D002	U134	25-SEP-90	.0438 M
907544	GCP496A HCL,HF				
19900925140000		D002		25-SEP-90	.0438 M
907546	GCP498A HCL,HF				
19900925140000		D002		25-SEP-90	.0438 M
907548	GCP501A HCL,HF,AR				
19900925140000		D002		25-SEP-90	.0438 M
907549	GCP502A HCL,HF,AR				
19900925140000		D002		25-SEP-90	.0438 M
907550	GCP505A ENRICHED NITRIC OXIDE,(TRACE CH4)				
19900925140000		P076		25-SEP-90	.0438 M
907619	GCP510A SILANE,TRACE ARGON				
19900926140000		D001	D003	26-SEP-90	.0435 M
907620	GCP511A ARSINE,H2,AR				
19900926140000		D001	D004	26-SEP-90	.049 M
907621	GCP513A SILANE,TRACE ARGON				
19900926140000		D001	D003	26-SEP-90	.0435 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
907644	GCP433A HYDROGEN SULFIDE		
19900927140000	D001 D003 U135	27-SEP-90	.0157 M
907673	GCP326A DICHLORODIFLUOROMETHANE		
19900927140000	U075	27-SEP-90	.0004 M
907687	GCP428A PHOSPHINE		
19901002140000	P096 D001	02-OCT-90	.0023 M
907692	GCP566A H2S,HF		
19901002140000	D001 D002 D003	02-OCT-90	.006 M
907713	GCP530A H2,CH4,HF,HCL,AR		
19901002140000	D001 D002	02-OCT-90	.11 M
907714	GCP529A H2,CH4,HF,HCL,AR,SIF4		
19901002140000	D001 D002	02-OCT-90	.06 M
907797	GCP243A ACETYLENE W/RAD		
19901003140000	D001	03-OCT-90	.006 M
907799	GCP435A H2,ARSINE,AR		
19901001140000	D001 D004	01-OCT-90	.0157 M
907807	GCP537A HCL,H2,HF,SIF4		
19901001140000	D001 D002	01-OCT-90	.06 M
907810	GCP539A ARGON,HYDROGEN FLUORIDE		
19901001140000	U134 D002	01-OCT-90	.06 M
907811	GCP545A H2,(TRACE CH4,HF,SIF4,HCL)		
19901001140000	D001	01-OCT-90	.06 M
907831	GCP576A AR,H2S		
19901004140000	D001 D003 U135	04-OCT-90	.0023 M
907833	GCP578A AR,H2S		
19901004140000	D001 D003 U135	04-OCT-90	.0023 M
907851	GCP646A CHLOROTRIFLUOROETHYLENE		
19901005140000	D001	05-OCT-90	.128 M
907852	GCP644A CHLOROTRIFLUOROETHYLENE		
19901005140000	D001	05-OCT-90	.128 M
907864	GCP655A HCL		
19901008140000	D002	08-OCT-90	.006 M
907866	GCP657A HCL		
19901008140000	D002	08-OCT-90	.006 M
907867	GCP659A HCL		
19901008140000	D002	08-OCT-90	.006 M
907868	GCP660A HCL, TRACE AR		
19901008140000	D002	08-OCT-90	.006 M
907869	GCP662A HCL		
19901008140000	D002	08-OCT-90	.006 M
907870	GCP667A HCL		
19901008140000	D002	08-OCT-90	.006 M
907871	GCP668A HYDROGEN CHLORIDE		
19901008140000	D002	08-OCT-90	.006 M
907873	GCP671A HCL		
19901008140000	D002	08-OCT-90	.006 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
907875	GCP674A HCL		
19901008140000	D002	08-OCT-90	.006 M
907876	GCP677A HCL		
19901008140000	D002	08-OCT-90	.006 M
907877	GCP685A HCL		
19901008140000	D002	08-OCT-90	.006 M
907878	GCP686A HCL		
19901008140000	D002	08-OCT-90	.006 M
907879	GCP687A HCL		
19901008140000	D002	08-OCT-90	.006 M
907882	GCP693A HCL		
19901008140000	D002	08-OCT-90	.006 M
907886	GCP666A HCL,AR		
19901008140000	D002	08-OCT-90	.006 M
908002	GCP721A PHOSGENE		
19901009140000	P095	09-OCT-90	.002 M
908003	GCP722A CYANOGEN		
19901009140000	P031 D001	09-OCT-90	.002 M
908004	GCP724A CYANOGEN		
19901009140000	P031 D001	09-OCT-90	.002 M
908021	GCP754A CHLORINE,ARGON		
19901012140000	D002	12-OCT-90	.006 M
908035	GCP739A CHLORINE,AIR,(TRACE CO2)		
19901012140000	D002	12-OCT-90	.0239 M
908048	GCP222A TETRAFLUOROETHYLENE,CERTIFIED		
19901010140000	D001	10-OCT-90	.003 M
908050	GCP233A HYDROCARBON IN AIR,CERTIFIED		
19901010140000	D001	10-OCT-90	.002 M
908051	GCP223A TETRAFLUOROETHYLENE,CERTIFIED		
19901010140000	D001	10-OCT-90	.003 M
908066	GCP231A HYDROGEN FLUORIDE		
19901010140000	D002 U134	10-OCT-90	.0004 M
908087	GCP723A METHYL BROMIDE		
19901010140000	U029	10-OCT-90	.0004 M
908088	GCP718A VINYL CHLORIDE		
19901010140000	D001 U043 D043	10-OCT-90	.0004 M
908170	GCP796A DEUTERIUM		
19901015140000	D001	15-OCT-90	.006 M
908186	GCP562A F2, CL2, (TRACE CLF, COF2, CO2, FLUORINATED ETHANES)		
19901013140000	D001	13-OCT-90	.006 M
908200	GCP729A HF,MOF6,AR		
19901013140000	D002	13-OCT-90	.0023 M
908224	GCP782A ARSENIC PENTAFLUORIDE		
19901012140000	D004	12-OCT-90	.0023 M
908236	GCP565A F,TRACE HF		
19901013140000	D001	13-OCT-90	.006 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
908246	GCP792A CHLOROTRIFLUOROETHYLENE		
19901016140000	D001	16-OCT-90	.004 M
908251	GCP424A PHOSGENE		
19901016140000	P095	16-OCT-90	.0023 M
908255	GCP495A HCL,HF		
19901016140000	D002	16-OCT-90	.049 M
908256	GCP688A HCL,HF		
19901016140000	D002 U134	16-OCT-90	.006 M
908265	GCP795A CHLOROTRIFLUOROETHYLENE,ARGON		
19901016140000	D001	16-OCT-90	.004 M
908266	GCP675A HCL,TRACE HF		
19901016140000	D002	16-OCT-90	.006 M
908267	GCP504A H2S,HCL		
19901016140000	D001 D002 D003	16-OCT-90	.043 M
908509	GCP837A BUTADIENE		
19901022140000	D001	22-OCT-90	.0004 M
908770	GCP974A NO		
19901029140000	D001	29-OCT-90	.006 M
908797	GCP845A HE,HCL,NO		
19901030140000	D002	30-OCT-90	.016 M
908799	GCP859A NEON,HCL		
19901030140000	D002	30-OCT-90	.049 M
908806	GCP999A HYDROGEN CHLORIDE,TRACE HF		
19901030140000	D002	30-OCT-90	.0025 M
908825	GCP900A HCL,AIR, TRACE HF		
19901101140000	D002	01-NOV-90	.006 M
908875	GCP998A AR,F2		
19901103140000	P056 D001	03-NOV-90	.006 M
908876	GCP1000A AR,TRACE F2		
19901103140000	P056 D001	03-NOV-90	.006 M
908877	GCP990A CF4,F2,(TRACE CL2,AR,COF2)		
19901103140000	D001	03-NOV-90	.003 M
908878	GCP564A F2,TRACE CL2,CO2,O2,AR		
19901103140000	P056 D001	03-NOV-90	.006 M
908879	GCP563A FLUORINE, TRACE CO2, O2		
19901103140000	D001	03-NOV-90	.006 M
908886	GCP1075A AR,F		
19901105140000	P056 D001	05-NOV-90	.06 M
908893	GCP1080A AR,F		
19901105140000	P056 D001	05-NOV-90	.06 M
908894	GCP1095A AR,F		
19901105140000	P056 D001	05-NOV-90	.06 M
908896	GCP1093A AR,KR,F		
19901105140000	P056 D001	05-NOV-90	.049 M
908900	GCP1084A AR,F		
19901105140000	P056 D001	05-NOV-90	.06 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
908972	GCP1087A AR,F		
19901106140000	P056 D001	06-NOV-90	.06 M
908975	GCP1139A NE,HE,KR,F		
19901106140000	P056 D001	06-NOV-90	.008 M
908976	GCP1131A NE,KR,HE,F		
19901106140000	P056 D001	06-NOV-90	.008 M
908977	GCP1132A NE,KR,HE,F2		
19901106140000	P056	06-NOV-90	.008 M
908979	GCP1120A AR,KR,F		
19901106140000	P056 D001	06-NOV-90	.049 M
908983	GCP1124A AR,F		
19901106140000	P056 D001	06-NOV-90	.049 M
909073	GCP1109A AR,F2,KRYPTON		
19901108140000	P056 D001	08-NOV-90	.049 M
909077	GCP1104A AR,KR,F2		
19901108140000	P056	08-NOV-90	.049 M
909080	GCP560A F2,CO2,TRACE O2,N2		
19901108140000	D001	08-NOV-90	.012 M
909081	GCP975A HE,KR,F2		
19901108140000	P056 D001	08-NOV-90	.006 M
909082	GCP991A F2,AR,TRACE CL2, TRACE CH4, HF, CO2, O2		
19901108140000	D001 D002	08-NOV-90	.004 M
909086	GCP1133A NE,HE,KR,F2		
19901108140000	P056 D001	08-NOV-90	.006 M
909087	GCP1134A NE,KR,HE,F2		
19901108140000	P056 D001	08-NOV-90	.008 M
909088	GCP1130A NE,KR,HE,F2,AR		
19901108140000	P056 D001	08-NOV-90	.008 M
909091	GCP1140A NE,KR,HE,F2		
19901108140000	P056 D001	08-NOV-90	.008 M
909092	GCP1129A KR,F2		
19901108140000	P056 D001	08-NOV-90	.008 M
909093	GCP509A F2,AR,O2,TRACE:N2,HF,CL2,CO2,CH4		
19901108140000	D001	08-NOV-90	.03 M
909122	GCP1103A AR,F2,TRACE SIF4		
19901109140000	P056 D001	09-NOV-90	.06 M
909123	GCP1102A ARGON,F2		
19901109140000	D001 P056	09-NOV-90	.06 M
909132	GCP1142A AR,F		
19901112140000	P056 D001	12-NOV-90	.06 M
909137	GCP446A H2,AR,(TRACE CH4,HF)		
19901112140000	D001	12-NOV-90	.049 M
909141	GCP1007A AR,F		
19901112140000	D001	12-NOV-90	.06 M
909144	GCP1021A AR,F2		
19901112140000	P056 D001	12-NOV-90	.06 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
909148	GCP1150A HE,F		
19901112140000	P056 D001	12-NOV-90	.02 M
909155	GCP444A HE,KR,F		
19901112140000	P056 D001	12-NOV-90	.049 M
909168	GCP1161A HE,F2,AR,TRACE: CO2,O2,N2		
19901113140000	D001	13-NOV-90	.008 M
909204	GCP1063A BF3,TRACE SIF4		
19901113140000	D002	13-NOV-90	.006 M
909205	GCP1064A BF3,TRACE SIF4		
19901113140000	D002	13-NOV-90	.006 M
909210	GCP1026A NO,TRACE N2O		
19901113140000	P076	13-NOV-90	.012 M
909211	GCP1024A NO,(TRACE N2O)		
19901113140000	P076	13-NOV-90	.015 M
909214	GCP987A AR,TRACE HF,NE,HCL		
19901113140000	D002	13-NOV-90	.004 M
909217	GCP551A H2,HF,HCL		
19901113140000	D001 D002	13-NOV-90	.012 M
909372	GCP1411A DICHLORODIFLUOROMETHANE		
19901116140000	U075	16-NOV-90	.05 M
909373	GCP1396A TETRADEUTEROMETHANE		
19901116140000	D001	16-NOV-90	.004 M
909807	GCP1360A NO,EMPTY		
19901117140000	P076	17-NOV-90	.049 M
909812	GCP1359A NO,EMPTY		
19901117140000	P076	17-NOV-90	.049 M
909814	GCP1357A NO,EMPTY		
19901117140000	P076	17-NOV-90	.049 M
909823	GCP1354A N0,EMPTY		
19901117140000	P076	17-NOV-90	.049 M
909826	GCP1366A NO,EMPTY		
19901119140000	P076	19-NOV-90	.049 M
909829	GCP1365A NO,EMPTY		
19901119140000	P076	19-NOV-90	.049 M
909831	GCP1364A EMPTY, NO		
19901119140000	P076	19-NOV-90	.049 M
909833	GCP1363A NO,EMPTY		
19901119140000	P076	19-NOV-90	.049 M
909846	GCP1436A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909847	GCP1437A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909848	GCP1419A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909849	GCP1418A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
909850	GCP1417A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909851	GCP1416A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909852	GCP1415A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909853	GCP1414A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909854	GCP1413A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909855	GCP1412A N0, EMPTY		
19901119140000	P076	19-NOV-90	.08 M
909924	GCP1205A PROPANE,CO2		
19901117140000	D001	17-NOV-90	.006 M
909925	GCP1217A ETHANE,XENON		
19901117140000	D001	17-NOV-90	.003 M
909926	GCP1214A ETHYLENE		
19901117140000	D001	17-NOV-90	.006 M
909927	GCP1213A PROPANE,CO2		
19901117140000	D001	17-NOV-90	.006 M
909929	GCP1218A C3H8,CO2		
19901117140000	D001	17-NOV-90	.006 M
909936	GCP1231A CH4,C02		
19901119140000	D001	19-NOV-90	.049 M
91000650	GENETRON-152A,DIFLUOROETHANE CYLINDERS		
19900928102311	D001	23-JAN-91	.0035 M
91000652	DIFLUOROETHANE CYLINDERS		
19900928102311	D001	23-JAN-91	.0188 M
91000653	DIFLUOROETHANE CYLINDERS		
19900928102311	D001	23-JAN-91	.0188 M
91000655	FLUORINE CYLINDERS		
19900928102311	P056 D001	23-JAN-91	.06 M
91000853	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.1096 M
91000854	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M
91000855	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M
91000858	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M
91000859	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M
91000863	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M
91000865	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
91000870	FLUORINE, CERTIFIED		
19910204140604	P056 D001	04-FEB-91	.0097 M
91000871	EMPTY FLUORINE CYLINDER, CERTIFIED		
19910129150328	P056 D001	05-FEB-91	.012 M
91000873	EMPTY FLUORINE CYLINDER, CERTIFIED		
19910129150328	P056 D001	05-FEB-91	.012 M
91000874	EMPTY FLUORINE CYLINDER, CERTIFIED		
19910129150328	P056 D001	05-FEB-91	.012 M
91000933	COMPRESSED GAS, RADIOACTIVE C14		
19910207152345	D001	22-MAY-90	.0189 M
91000977	GCP1459A NONFLAMMABLE GAS MIXTURE,CERTIF,NO2		
19910115140000	D001	15-JAN-91	.049 M
91000978	GCP1460A NONFLAMMABLE GAS MIXTURE,CERTIF, O2, N2		
19910115140000	D001	15-JAN-91	.049 M
91001013	GCP1584A HYDROGEN,CO2,		
19910117140000	D001	17-JAN-91	.004 M
91001021	GCP1599A SULFUR TETRAFLUORIDE,SO2,F2		
19910117140000	D002	17-JAN-91	.004 M
91001022	GCP1598A SF4,SO2,F2,(TR. SF6)		
19910117140000	D002	17-JAN-91	.004 M
91001023	GCP1805A SF4,SO2,F2,(TR. SF6)		
19910117140000	D002	17-JAN-91	.004 M
91001341	GCP1619A PROPYLENE		
19910118140000	D001	18-JAN-91	.004 M
91001342	GCP1624A PROPYLENE		
19910118140000	D001	18-JAN-91	.007 M
91001343	GCP1623A PROPYLENE		
19910118140000	D001	18-JAN-91	.007 M
91001361	GCP1789A SULFUR TETRAFLUORIDE,SO2F2		
19910118140000	D002	18-JAN-91	.004 M
91001366	GCP1640A PROPYLENE		
19910118140000	D001	18-JAN-91	.008 M
91001367	GCP1639A AIR,PROPYLENE,AR		
19910118140000	D001	18-JAN-91	.008 M
91001368	GCP1631A AIR,PROPYLENE		
19910118140000	D001	18-JAN-91	.008 M
91001369	GCP1642A PROPYLENE,N2		
19910118140000	D001	18-JAN-91	.008 M
91001371	GCP1667A SILANE		
19910118140000	D001	18-JAN-91	.049 M
91001379	GCP1665A C02,O2,AR		
19910118140000	D001	18-JAN-91	.004 M
91001382	GCP1670A H2,DEUTERIUM,H2O,TRACE: AR,O2,N2		
19910118140000	D001	18-JAN-91	.049 M
91001385	GCP1685A H2,AR,HCL,H2O,TRACE N2		
19910125140000	D001 D002	25-JAN-91	.004 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION	EPA CODE	PICKDATE	VOLUME
91001386	GCP1677A HYDROGEN			
19910125140000		D001	25-JAN-91	.003 M
91001392	GCP1689A CHLORINE,HCL,(TRACE FE,CL2,AIR)			
19910125140000		D002	25-JAN-91	.004 M
91001393	GCP1672A CL2,(TRACE AIR,C02)			
19910125140000		D002	25-JAN-91	.004 M
91001394	GCP1683A CL2,HCL			
19910125140000		D002	25-JAN-91	.049 M
91001395	GCP1686A CL2,HCL,(TRACE C02,AIR)			
19910125140000		D002	25-JAN-91	.004 M
91001397	GCP1706A HYDROGEN SULFIDE			
19910125140000		D001 D003 U135	25-JAN-91	.0004 M
91001402	GCP1681A AMMONIA,(TRACE N2O,AR)			
19910125140000		D001 D002	25-JAN-91	.06 M
91001403	GCP1719A TRIETHYLALUMINUM,CERTIFIED			
19910125140000		D003 D001	25-JAN-91	.002 M
91001411	GCP1476A CARBON MONOXIDE,CERTIFIED			
19910130140000		D001	30-JAN-91	.049 M
91001412	GCP1477A NITRIC OXIDE,CERTIFIED			
19910130140000		P076	30-JAN-91	.004 M
91001418	GCP1483A NFG MIXTURE,CERTIFIED,NO2,N2O			
19910130140000		D001	30-JAN-91	.006 M
91001424	GCP1489A N204 POISON GAS,CERTIFIED			
19910130140000		D001	30-JAN-91	.002 M
91001429	GCP898A CL2,BR2,HCL,BRCL,N2O,(TR. HF,AR)			
19900921140000		D001 D002	21-SEP-90	.004 M
91001432	GCP1829A N2,AR,CL2,F2,TRACE: O2,BRCL,HBR			
19910221140000		D001	21-FEB-91	.049 M
91001433	GCP1854A AIR,NE,AR,F2,TRACE XE,HE			
19910221140000		D001 P056	21-FEB-91	.04 M
91001435	GCP1826A AR,FLUORINE			
19910221140000		P056 D001	21-FEB-91	.049 M
91001439	GCP1812A AR,F2,HCL,N2,TRACE CL2			
19910221140000		D001 D002	21-FEB-91	.049 M
91001440	GCP1832A AR,HE,KR,F2			
19910221140000		P056 D001	21-FEB-91	.04 M
91001442	GCP1840A AR,HE,F2,TRACE CL2,TRACE H2O			
19910221140000		D001	21-FEB-91	.04 M
91001444	GCP1818A HE,NE,AR,AIR,F2,HCL			
19910221140000		D001 D002	21-FEB-91	.049 M
91001445	GCP1822A AR,CL2,F2			
19910221140000		D001	21-FEB-91	.049 M
91001446	GCP1726A D2,TRITIUM,(TRACE F2)			
19910221140000		D001	21-FEB-91	.0004 M
91001448	GCP1628A CL2,(TRACE HBR,H20),HCL,AIR			
19910221140000		D002	21-FEB-91	.008 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
91001449	GCP1646A CL2,AIR,HCL		
19910221140000	D002	21-FEB-91	.008 M
91001450	GCP1638A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001451	GCP1634A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001452	GCP1647A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001454	GCP1613A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001464	GCP1629A NICKEL CARBONYL,AR		
19910221140000	D001 P073	21-FEB-91	.008 M
91001465	GCP1633A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001466	GCP1630A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001467	GCP1626A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001468	GCP1625A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001469	GCP1645A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001472	GCP1635A BORON TRICHLORIDE,AR		
19910221140000	D002 D003	21-FEB-91	.004 M
91001475	GCP1610A HCL,(TRACE AIR,H2O)		
19910221140000	D002	21-FEB-91	.006 M
91001477	GCP1658A METHYL BROMIDE		
19910221140000	U029	21-FEB-91	.0004 M
91001479	GCP1641A BORON TRICHLORIDE		
19910221140000	D002 D003	21-FEB-91	.008 M
91001482	CHLORINE TRIFLUORIDE,CERTIFIED		
19910226142351	D001 D003	26-FEB-91	.001 M
91001483	ARSENIC PENTAFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M
91001484	ARSENIC PENTAFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M
91001485	ARSENIC PENTAFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M
91001486	ARSENIC PENTAFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M
91001488	ARSENIC TRIFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M
91001489	ARSENIC TRIFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M
91001490	ARSENIC TRIFLUORIDE,CERTIFIED		
19910226142351	D004	26-FEB-91	.001 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION	EPA CODE	PICKDATE	VOLUME
91001491	BORON TRIFLUORIDE,CERTIFIED			
19910226142351		D003	26-FEB-91	.001 M
91001520	FREON 12 (DICHLORODIFLUOROMETHANE)			
19910225164737		U075	06-MAR-91	.0019 M
91001525	GCP1756A OXYGEN			
19910226140000		D001	26-FEB-91	.005 M
91001527	GCP1678A CO,TRACE H20,AR,CO2			
19910226140000		D001	26-FEB-91	.006 M
91001528	GCP1762A CO,TRACE AR			
19910226140000		D001	26-FEB-91	.006 M
91001529	GCP1746A HCL,TRACE HBR			
19910226140000		D002	26-FEB-91	.006 M
91001531	GCP1734A HYDROGEN CHLORIDE,(TRACE HBR)			
19910226140000		D002	26-FEB-91	.005 M
91001533	GCP1745A N02,N20,NO			
19910226140000		D001	26-FEB-91	.002 M
91001536	GCP1740A ETHANE			
19910226140000		D001	26-FEB-91	.0004 M
91001538	GCP1759A TRACE HE,NE,F2,XE,TRACE H2O			
19910226140000		D001 P056	26-FEB-91	.049 M
91001540	GCP1444A ARGON,FLUORINE,CHLORINE			
19910226140000		D001	26-FEB-91	.06 M
91001541	GCP1760A AR,F2,HE,XE,NE			
19910226140000		D001 P056	26-FEB-91	.049 M
91001542	GCP1761A HE,NE,XE,TRACE AR,TRACE F2			
19910226140000		D001 P056	26-FEB-91	.06 M
91001543	GCP1758A HE,KR,TRACE H20,F2			
19910226140000		D001 P056	26-FEB-91	.049 M
91001546	GCP1752A OXYGEN			
19910226140000		D001	26-FEB-91	.005 M
91001549	GCP1733A AIR,CH4,AR			
19910226140000		D001	26-FEB-91	.002 M
91001550	GCP1622A ARGON			
19910226140000		NONE U226	26-FEB-91	.004 M
91001558	GCP1526A SILANE			
19910225140000		D001	25-FEB-91	.049 M
91001560	GCP1525A SIH4,N2,(TRACE AR,H2)			
19910225140000		D001 D003	25-FEB-91	.049 M
91001570	GCP1828A N2,AR,CL2,F2,TRACE:BRCL,BR			
19910225140000		D001	25-FEB-91	.049 M
91001571	GCP1830A F2,NE,HE,XE,AR,(TRACE: CL2,HCL)			
19910225140000		D001	25-FEB-91	.049 M
91001572	GCP1927A HE,H20,AR,HCL,TRACE CL2,BR,BRCL,HF			
19910225140000		D002	25-FEB-91	.008 M
91001573	GCP1924A HCL,HF,(TRACE CL2,BR2,BRCL,HBR)			
19910225140000		D002	25-FEB-91	.006 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER#	DESCRIPTION					PICKDATE	VOLUME
CWDR#		EPA CODE					
91001583	GCP1781A PROPYLENE						
19910225140000		D001				25-FEB-91	.004 M
91001612	GCP1954A FE(CO)5,AR,CO						
19910226140000		D001				26-FEB-91	.0004 M
91001620	GCP1768A CO,(TRACE AR,O2)						
19910226140000		D001				26-FEB-91	.006 M
91001623	GCP1771A C2H6,H2,CH4,TRACE ARGON						
19910226140000		D001				26-FEB-91	.049 M
91001624	GCP1425A ETHANE						
19910226140000		D001				26-FEB-91	.003 M
91001767	GCP2036A HELIUM,F2						
19910227140000		D001	P056			27-FEB-91	.049 M
91001768	GCP1936A F2,CL2,AR,N2,O2,CO2,TRACE CF4						
19910227140000		D001				27-FEB-91	.049 M
91001770	GCP1967A ARGON,TRACE F2						
19910227140000		D001	P056			27-FEB-91	.006 M
91001825	GCP1941A CL2,O2,F2,TRACE: CHLOROFLUOROCARBONS,HF						
19910227140000		D001				27-FEB-91	.007 M
91001826	GCP1964A F2,(TRACE CHLORINE,HF)						
19910227140000		D001	P056			27-FEB-91	.006 M
91001827	GCP1866A HCL,CL2,AR,HE,(TRACE BRCL)						
19910227140000		D002				27-FEB-91	.049 M
91001829	GCP1984A AR,HF (TRACE SIF4,F2)						
19910227140000		D002				27-FEB-91	.004 M
91001830	GCP1904A HE,KR,F2,TRACE: AR,AIR,H2O						
19910228140000		D001	P056			28-FEB-91	.06 M
91001831	GCP1922A NE,AR,AIR,KR,F2						
19910228140000		D001	P056			28-FEB-91	.06 M
91001832	GCP1909A HE,XE,AIR,H20,TRACE AR,F2						
19910228140000		D001				28-FEB-91	.06 M
91001833	GCP1874A AIR,AR,TRACE CL2,F2						
19910228140000		D001	D002			28-FEB-91	.06 M
91001834	GCP1910A AIR,TRACE AR,F2						
19910228140000		D001	D002	P056		28-FEB-91	.06 M
91001835	GCP1911A HE,KR,AR,F2						
19910228140000		D001	P056			28-FEB-91	.06 M
91001836	GCP1901A CL2,O2,F2,TRACE: CF4,HCL,CCL2F2						
19910228140000		D001				28-FEB-91	.06 M
91001837	GCP1834A AIR,(TRACE AR,F2)						
19910228140000		D001	D002	P056		28-FEB-91	.049 M
91001838	GCP1865A AR,F2						
19910228140000		D001	P056			28-FEB-91	.06 M
91001844	HYDROGEN SULFIDE,CERTIFIED						
19910228140000		D001	D003	U135		28-FEB-91	.0004 M
91001845	BORON TRICHLORIDE,CERTIFIED						
19910228140000		D002	D003			28-FEB-91	.0004 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
91001846	BORON TRICHLORIDE,CERTIFIED		
19910228140000	D002 D003	28-FEB-91	.0004 M
91001847	METHYL BROMIDE,CERTIFIED		
19910228140000	U029	28-FEB-91	.0004 M
91001848	METHYL FLUORIDE,CERTIFIED		
19910228140000	D001	28-FEB-91	.0004 M
91001849	METHYL CHLORIDE,CERTIFIED		
19910228140000	D001 U045	28-FEB-91	.0004 M
91001850	METHYL FLUORIDE,CERTIFIED		
19910228140000	D001	28-FEB-91	.0004 M
91001851	BORON TRICHLORIDE,CERTIFIED		
19910228140000	D002 D003	28-FEB-91	.0004 M
91001854	SELENIUM HEXAFLUORIDE,CERTIFIED		
19910228140000	D010	28-FEB-91	.0004 M
91001855	SELENIUM HEXAFLUORIDE,CERTIFIED		
19910228140000	D010	28-FEB-91	.0004 M
91001856	GCP1780A NITROGEN DIOXIDE,CERTIFIED		
19910228140000	P078 D001	28-FEB-91	.0004 M
91001858	GCP1778A BORON TRICHLORIDE,CERTIFIED		
19910228140000	D002 D003	28-FEB-91	.0004 M
91001881	GCP1784A OXYGEN DIFLUORIDE		
19910304140000	D001 D003	04-MAR-91	.005 M
91001884	GCP1966A AR,F2,TRACE CL2		
19910304140000	D001	04-MAR-91	.006 M
91001886	GCP2082A H2		
19910304140000	D001	04-MAR-91	.006 M
91001962	GCP2043A NO2,AR		
19910304140000	D001 P078	04-MAR-91	.049 M
91001964	GCP2040A CARBONYL FLUORIDE,CO2		
19910304140000	D003	04-MAR-91	.0004 M
91002014	GCP2021A ETHYLENE		
19910306140000	D001	06-MAR-91	.003 M
91002021	GCP1772A N2O,NO2,NO		
19910306140000	D001	06-MAR-91	.049 M
91002023	GCP2044A OXYGEN		
19910306140000	D001	06-MAR-91	.004 M
91002026	GCP2046A O2,TRACE N2		
19910306140000	D001	06-MAR-91	.004 M
91002029	GCP2030A HYDROGEN		
19910306140000	D001	06-MAR-91	.004 M
91002030	GCP2019A ETHANE		
19910306140000	D001	06-MAR-91	.003 M
91002032	GCP2016A METHANE		
19910306140000	D001	06-MAR-91	.004 M
91002034	GCP2017A ETHANE		
19910306140000	D001	06-MAR-91	.003 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
91002050	GCP1765A PROPANE		
19910306140000	D001	06-MAR-91	.006 M
91002051	GCP2018A METHYL CHLORIDE,N2,TRACE O2		
19910306140000	D001 U045	06-MAR-91	.0004 M
91002052	GCP1979A ETHYL CHLORIDE		
19910306140000	D001	06-MAR-91	.0004 M
91002055	GCP1987A HYDROGEN		
19910306140000	D001	06-MAR-91	.006 M
91002123	GCP1985A PHOSPHINE		
19910318140000	P096 D001	18-MAR-91	.004 M
91002124	GCP1968A CL,BR,HF,CLF,BRCL		
19910318140000	D002	18-MAR-91	.004 M
91002125	GCP2041A PF5,POF3,HF,(TRACE HCL,HBR)		
19910318140000	D002	18-MAR-91	.0004 M
91002137	GCP2039A PF5,POF3,HF,(TRACE HCL,HBR)		
19910318140000	D002	18-MAR-91	.0004 M
91002140	GCP2038A HF,(TRACE HCL,CL2,DF)		
19910318140000	D002 U134	18-MAR-91	.0004 M
91002157	GCP1989A PHOSGENE		
19910318140000	P095	18-MAR-91	.0004 M
91002158	GCP1867A F2,CL2,N2,O2,AR,TRACE: C02		
19910318140000	D001	18-MAR-91	.049 M
91002160	GCP2024A HYDROGEN SULFIDE,(TRACE HCL)		
19910318140000	D001 D003 U135	18-MAR-91	.004 M
91002741	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002742	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002743	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002744	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002745	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002746	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002747	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002748	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002749	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002750	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002751	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER#	DESCRIPTION			
CWDR#		EPA CODE	PICKDATE	VOLUME
91002752	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002753	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002754	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002755	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002756	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002757	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002758	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002759	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002760	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002761	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002762	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002763	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002764	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002765	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002766	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002767	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002768	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002769	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002770	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002771	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002772	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002773	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M
91002774	EMPTY CYLINDER (LC/NITRIC OXIDE)			
19910327141007		P076	28-MAR-91	.009 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
91002775	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002776	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002777	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002778	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.009 M
91002779	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002780	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002781	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002782	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002783	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002784	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002785	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002786	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002787	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002788	EMPTY CYLINDER (LC/NITRIC OXIDE)		
19910327141007	P076	28-MAR-91	.006 M
91002847	HYDROGEN,ARGON MIXTURE W/RAD		
19910328140000	D001	28-MAR-91	.049 M
91002848	HYDROGEN,ARGON MIXTURE W/RAD		
19910328140000	D001	28-MAR-91	.049 M
91002849	HYDROGEN,ARGON MIXTURE W/RAD		
19910328140000	D001	28-MAR-91	.049 M
91002850	OXYGEN W/RAD		
19910328140000	D001	28-MAR-91	.049 M
91002853	NITROGEN DIOXIDE		
19910329140000	P078	29-MAR-91	.049 M
91002860	GCP1581A H2SE,AIR,HCL,H2		
19901212140000	D001 D002	12-DEC-90	.049 M
91002863	GCP1574A HYDROGEN SULFIDE		
19901212140000	D001 D003 U135	12-DEC-90	.049 M
91003102	GCP235A HYDROGEN CHLORIDE,TRACE ARGON		
19900914140000	D002	14-SEP-90	.0069 M
91003173	GCP2028A HYDROGEN CHLORIDE,(TRACE HF)		
19910410102700	D002	10-APR-91	.006 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
91003275	NITRIC OXIDE		
19910412154414	P076	12-APR-91	.0153 M
91003578	HYDROGEN SULFIDE (GCP1655A)		
19910425151733	D001 D003 U135	25-APR-91	.002 M
91003782	GCP1652B TWH543971 CH3CL		
19910501140000	D001 U045	01-MAY-91	.06 M
91003784	GCP785B AA12225 AR,C2H2,TRACE ACETONE,AIR,TRACE BUTADIENE		
19910501140000	D001	01-MAY-91	.049 M
91003786	GCP1617B AR,ISOBUTENE,ETHYL ACETYLENE		
19910501140000	D001	01-MAY-91	.06 M
91003788	GCP1666B AA10857 C3H8		
19910501140000	D001	01-MAY-91	.06 M
91003789	GCP1666A TWH818884 PROPANE		
19910501140000	D001	01-MAY-91	.049 M
91004001	GCP1593B AA4419 AR,C2H2,AIR,ACETONE		
19910501140000	D001	01-MAY-91	.049 M
91004002	GCP1534B AA810748 ISOBUTYLENE		
19910501140000	D001	01-MAY-91	.06 M
91004003	GCP1210B AA6069 C2H6,TRACE AR		
19910501140000	D001	01-MAY-91	.049 M
91004467	GCP1506 DICHLORODIFLUOROMETHANE,CERTIFD		
19910520161005	U075	20-MAY-91	.0067 M
91004468	GCP1507 DICHLORODIFLUOROMETHANE,CERTIFD		
19910520161005	U075	20-MAY-91	.0067 M
91004614	GCP1106B TU-H810752,KR,AR,F2		
19910531140000	P056 D001	31-MAY-91	.049 M
91004615	GCP1440B TWH818892 AR,KR,F2,AIR		
19910531140000	D001 D002	31-MAY-91	.049 M
91004616	GCP1009A TWH1644034 HE,TRACE F2		
19910531140000	D001 P056	31-MAY-91	.043 M
91004617	GCP2208B TWH818889 F2,AR,HE		
19910531140000	P056 D001	31-MAY-91	.043 M
91004618	GCP927B ARGON, FLUORINE		
19910531140000	D001 P056	31-MAY-91	.049 M
91004621	GCP1518B 130722 AR,O2,CL2,HF,F2,N2,TRACE: SIF4,CF4		
19910531140000	D001 D002	31-MAY-91	.109 M
91004622	GCP1518A R130708 AR,CO2,HF,CL2,HCL,CF3CL		
19910531140000	D001 D002	31-MAY-91	.109 M
91004626	GCP1112B AR,HE,F2,HF		
19910531140000	D001 D002	31-MAY-91	.049 M
91004627	GCP1723B 201627 F2,AR,CO2,O2,HF,TRACE: CL2,CF4		
19910531140000	D001 D002	31-MAY-91	.049 M
91004628	GCP1963B TWH818888 F2,O2,AR,CO2,N2,TRACE: CL2,CO2		
19910531140000	D001	31-MAY-91	.049 M
91005183	GCP1711B TWH826405 PHOSGENE,ARGON		
19910619140000	P095	19-JUN-91	.049 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
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CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
91005184	GCP2219B AA14005 NO2,N2O,AR,NO		
19910619140000	D001	19-JUN-91	.049 M
91005185	GCP470B H28826 HF,H2,N2		
19910619140000	D002	19-JUN-91	.049 M
91005186	GCP1721B TWH826402 HF,AR,HCL,H2		
19910619140000	D001 D002	19-JUN-91	.049 M
91005187	GCP470A AA7906 HF,AR,H2		
19910619140000	D002	19-JUN-91	.049 M
91005188	GCP470C AA1414 HF,AR		
19910619140000	D002 U134	19-JUN-91	.049 M
91005193	GCP730B AA19575 AR,TRACE AIR,F2		
19910619140000	P056 D001	19-JUN-91	.049 M
91005194	GCP1175B TWH463448 CCL2F2		
19910619140000	U075	19-JUN-91	.049 M
91005195	GCP1244B TWH826404 AR,NO,H2O		
19910619140000	P076	19-JUN-91	.049 M
91005198	GCP1173B TWH810755 CCL2F2		
19910619140000	U075	19-JUN-91	.049 M
91005200	GCP499B TWH543974 HELIUM,HCL,		
19910619140000	D002	19-JUN-91	.049 M
91005202	GCP1583B TWH810749 AR,HE,FLUORINE,AIR		
19910619140000	D001 P056	19-JUN-91	.049 M
91005206	GCP1791B TWH818887 CHCIF2,C2CIF5,CCL2F2		
19910619140000	U075	19-JUN-91	.049 M
91005207	GCP1175A TWH463448 FREON 12,FREON-152		
19910619140000	U075	19-JUN-91	.049 M
91005212	GCP1687B TWH818886 TRACE BUTADIENE POLYMERIZATION PRODUCTS		
19910619140000	D001	19-JUN-91	.049 M
91005213	GCP1790B TWH810754 CCL2F2,CH3CHF2		
19910619140000	D001	19-JUN-91	.049 M
91005214	GCP1594B R130795 CHOROTRIFLUOROETHYLENE		
19910619140000	D001	19-JUN-91	.049 M
91005215	GCP1556B AA5119 AR,AIR,ACETYLENE,H2O,TRACE TETRAFLUOROETHYLENE		
19910619140000	D001	19-JUN-91	.049 M
91005217	GCP1234B CP30135 H2S,H2,AR,AIR		
19910619140000	D003	19-JUN-91	.049 M
91006872	GCP1616B 130798 ACETONE, AR		
19910801140000	D001	02-AUG-91	.109 M
91007107	GCP676B TWH826386 HCL,ARGON,TRACE HBR		
19910801140000	D002	02-AUG-91	.049 M
91007108	GCP715B TWH826394 HCL,ARGON		
19910801140000	D002	02-AUG-91	.049 M
91007142	GCP1800B TWH826389 HCL,AR,BCL3		
19910801140000	D002 D003	02-AUG-91	.049 M
91007144	GCP1773B TWH826400 HCL,AR,TRACE: HBR,SIF4		
19910801140000	D002	02-AUG-91	.049 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
91007146	GCP1714B R130699 AR,HCL,TRACE: BCL3,BF3		
19910801140000	D002 D003	02-AUG-91	.109 M
91007147	GCP1710B R130789 AR,BCL3,HCL,TRACE BF3		
19910801140000	D002 D003	02-AUG-91	.109 M
91007148	GCP1696B AA3914 S02,COS,CS2		
19910801140000	D001	02-AUG-91	.043 M
91007149	GCP610B TWH463441 CH3CHF2,ARGON		
19910801140000	D001	02-AUG-91	.049 M
91007150	GCP1551B TWH826393 PHOSPHINE,ARGON		
19910801140000	P096 D001	02-AUG-91	.049 M
91007151	GCP1043B TWH826392 CCLF:CF2,AR		
19910801140000	D001	02-AUG-91	.049 M
91007152	GCP1775B TWH826380 HYDROGEN SULFIDE,AR		
19910801140000	U135 D001 D003	02-AUG-91	.049 M
91007153	GCP2156B TWH826390 CH3CL3SI,AR,HCL		
19910801140000	D001	02-AUG-91	.049 M
91007155	GCP302B TWH826409 AR,AIR,H2O,TRACE CH3BR		
19910801140000	D001	02-AUG-91	.049 M
91007156	GCP2116B TWH826385 AR,TRACE: H2S,AIR		
19910801140000	D001	02-AUG-91	.049 M
91007157	GCP2015B TWH826373 SILANE,AR		
19910801140000	D001	02-AUG-91	.049 M
91007408	CLS0084 HYDROGEN SULFIDE		
19910815073555	D001 D003 U135	15-AUG-91	.007 M
91007412	CLS0101 HYDROGEN SULFIDE		
19910815073555	D001 D003 U135	15-AUG-91	.007 M
91007413	CLS0102 H2S		
19910815073555	D001 D003 U135	15-AUG-91	.002 M
91007414	CLS0103 HYDROGEN SULFIDE		
19910815073555	D001 D003 U135	15-AUG-91	.002 M
91007518	GCP1707B TWH826396 BCL3,AR,HCL,TRACE BF3		
19910807140000	D002 D003	07-AUG-91	.049 M
91007519	GCP705B TWH826377 HCL,ARGON		
19910807140000	D002	07-AUG-91	.049 M
91007520	GCP842B TWH826401 HCL,AR,TRACE HBR		
19910807140000	D002	07-AUG-91	.049 M
91007523	GCP289B AO219336 AR,HCL,TRACE: SIF4,SO2,HBR,AIR		
19910807140000	D002	07-AUG-91	.06 M
91007525	GCP1923B TWH826407 H2,HCL,SIF4,AR		
19910807140000	D001 D002	07-AUG-91	.049 M
91007526	GCP1509B TWH826372 H2,HCL,HF,AIR,AR,TRACE: SIF4,CO2		
19910807140000	D001 D002	07-AUG-91	.049 M
91007527	GCP2222B TWH826397 H2S,TRACE ARGON		
19910807140000	U135 D001 D003	07-AUG-91	.049 M
91007528	GCP1715B TWH826381 PHOSGENE,ARGON		
19910807140000	P095	07-AUG-91	.049 M

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
91007573	CLS0096 SO2		
19910815073555	D003	15-AUG-91	.002 M
91007574	CLS0097 SO2		
19910815073555	D003	15-AUG-91	.002 M
91007681	NITROGEN DIOXIDE, CERTIFIED		
19910219134436	P078 D001	19-FEB-91	.0283 M
91007682	NITROGEN DIOXIDE, CERTIFIED		
19910219134436	P078 D001	19-FEB-91	.0283 M
91007683	NITROGEN DIOXIDE, CERTIFIED		
19910219134436	P078 D001	19-FEB-91	.0283 M
91007684	NITROGEN DIOXIDE, CERTIFIED		
19910219134436	P078 D001	19-FEB-91	.0283 M
91007685	NITROGEN DIOXIDE, CERTIFIED		
19910219134436	P078 D001	19-FEB-91	.0283 M
91007686	NITRIC OXIDE, CERTIFIED		
19910219134436	P076	19-FEB-91	.0283 M
91007687	NITRIC OXIDE, CERTIFIED		
19910219134436	P076	19-FEB-91	.0283 M
91007688	NITRIC OXIDE, CERTIFIED		
19910219134436	P076	19-FEB-91	.0283 M
91007691	CHLOROTRIFLUOROETHANE, CERTIFIED		
19910215164249	D001	15-FEB-91	5.6634 M
91007714	CHLOROTRIFLUOROETHANE, CERTIFIED		
19910215164249	D001	15-FEB-91	5.6634 M
91007740	GCP904A DEUTERIUM,AIR; TRACES H3,NO		
19910221140000	D001	21-FEB-91	.001 M
91007741	GCP2118A DEUTERIUM,TRITIUM		
19910221140000	D001	21-FEB-91	.001 M
91007742	FLUORINE NITRATE		
19910205140000	D001	06-FEB-91	.0014 M
C91025603	CLS169 HYDROGEN SULFIDE		
1001597	U135 D001 D003	10-DEC-91	.5 L
C91025618	CLS186 FREON-12 (DICHLORODIFLUOROMETHANE)		
1001597	U075	10-DEC-91	29.5 L
C91025619	CLS187 FREON-12 (DICHLORODIFLUOROMETHANE)		
1001597	U075	10-DEC-91	29.5 L
C91025621	CLS189 O2,H2O,H2S		
1001597	D001 D003	10-DEC-91	2.5 L
C91025625	CLS190 HYDROGEN SULFIDE (STUCK VALVE)		
1001597	U135 D001 D003	10-DEC-91	2.5 L
C91025666	CLS235 CARBONYL SULFIDE		
1001597	D001 D003	10-DEC-91	.5 L
C91025667	CLS240 DICHLORODIFLUORO METHANE (STUCK CAP)		
1001597	U075	10-DEC-91	8 L
C92026920	CLS237 EMPTY, LC/NITRIC OXIDE		
1001878	P076	24-FEB-92	.5 L

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
C92026921	CLS238 EMPTY, LC/NITRIC OXIDE		
1001878	P076	24-FEB-92	.5 L
C92026924	CLS242 HYDROGEN CHLORIDE		
1001878	D002	24-FEB-92	.5 L
C92026925	CLS243 HYDROGEN CHLORIDE		
1001878	D002	24-FEB-92	.5 L
C92026930	CLS258 HYDROGEN CHLORIDE		
1001878	D002	24-FEB-92	5.9 L
C92026941	CLS282 HYDROGEN CHLORIDE		
1001878	D002	24-FEB-92	.5 L
C92026944	CLS285 HYDROGEN CHLORIDE		
1001878	D002	24-FEB-92	.5 L
C92026975	CLS269 NITRIC OXIDE		
1001878	P076	24-FEB-92	60.9 L
C92026976	CLS270 NITRIC OXIDE		
1001878	P076	24-FEB-92	17.2 L
C92026978	CLS289 HYDROGEN SULFIDE		
1001878	D003 U135 D001	24-FEB-92	2.24 L
C92027473	COMPRESSED GAS (HCL)		
1002018	D002	13-MAR-92	16 L
C92027474	COMPRESSED GAS (HCL)		
1002018	D002	13-MAR-92	6 L
C92027475	COMPRESSED GAS (HCL,NE,XE)		
1002018	D002	13-MAR-92	16 L
C92027476	WASTE COMPRESSED GAS (F2)		
1002018	D001 P056	13-MAR-92	6 L
C92027477	WASTE COMPRESSED GAS (F2,HE)		
1002018	D001 P056	13-MAR-92	6 L
C92027478	WASTE COMPRESSED GAS (F2,HE)		
1002018	D001 P056	13-MAR-92	6 L
C92027481	COMPRESSED GAS (F2,NE,XE)		
1002018	D001 P056	13-MAR-92	16 L
C92027482	COMPRESSED GAS (HCL,XE,NE)		
1002018	D002	13-MAR-92	16 L
C92027483	COMPRESSED GAS (F2,HE)		
1002018	D001 P056	13-MAR-92	16 L
C92027484	COMPRESSED GAS (F2,HE)		
1002018	D001 P056	13-MAR-92	16 L
C92027485	COMPRESSED GAS (F2 MIXTURE)		
1002018	D001 P056	13-MAR-92	16 L
C92027486	COMPRESSED GAS (F2 MIXTURE)		
1002018	D001 P056	13-MAR-92	16 L
C92027488	COMPRESSED GAS (F2 MIXTURE)		
1002018	D001 P056	13-MAR-92	16 L
C92027489	COMPRESSED GAS (F2 MIXTURE)		
1002018	D001 P056	13-MAR-92	16 L

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
C92027490	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027491	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027492	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027493	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027494	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027495	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027496	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027497	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027498	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027499	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027500	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027501	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027502	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027503	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027504	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027505	FLUORINE MIXTURE		
1002018	D001 P056	13-MAR-92	6 L
C92027506	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027507	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027508	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027509	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027510	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027511	FLUORINE MIXTURE		
1002018	P056 D001	13-MAR-92	6 L
C92027512	WASTE HYDROGEN FLUORIDE		
1002018	D002 U134	13-MAR-92	16 L

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
C92027513	SULFUR HEXAFLUORIDE		
1002018	D002	13-MAR-92	16 L
C92027846	GCP1849 F2,NE,KR		
1002140	P056 D001	09-MAR-92	49 L
C92027847	GCP1915 F2,NE,KR		
1002140	P056 D001	09-MAR-92	60 L
C92027848	GCP1902 F2,AR		
1002140	P056 D001	09-MAR-92	60 L
C92027849	GCP1853 F2,KR,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027850	GCP1856 FLUORINE LASER MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027851	GCP1850 F2,KR,NE		
1002140	P056 D001	09-MAR-92	49 L
C92027852	GCP1845 FLUORINE		
1002140	P056 D001	09-MAR-92	49 L
C92027854	GCP1823 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027855	GCP1848 F2,KR,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027856	GCP1863 F2 MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027857	GCP1891 F2,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027858	GCP1889 F2,NE		
1002140	P056 D001	09-MAR-92	49 L
C92027859	GCP1831 F2,KR,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027860	GCP1897 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027861	GCP1861 F2,KR,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027862	GCP1892 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027863	GCP1833 F2		
1002140	P056 D001	09-MAR-92	49 L
C92027864	GCP1847 F2,NE		
1002140	P056 D001	09-MAR-92	49 L
C92027865	GCP1869 F2 LASER MIXTURE		
1002140	P056 D001	09-MAR-92	60 L
C92027866	GCP1893 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027867	GCP1896 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027868	GCP1887 F2		
1002140	P056 D001	09-MAR-92	49 L

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# CWDR#	DESCRIPTION EPA CODE	PICKDATE	VOLUME
C92027869	GCP1881 F2 LASER MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027870	GCP1898 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027871	GCP1500 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027872	182001Y F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	60 L
C92027873	GCP1877 F2 LASER MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027876	2-4479 HE,N2,CO		
1002140	D001	09-MAR-92	49 L
C92027877	GCP1860 F2,N2		
1002140	P056 D001	09-MAR-92	49 L
C92027878	GCP1871 F2 MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027880	GCP1859 F2 MIXTURE,AR		
1002140	P056 D001	09-MAR-92	49 L
C92027881	GCP1494 F2 MIXTURE,F2,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027882	GCP1491 F2,HE		
1002140	P056 D001	09-MAR-92	49 L
C92027883	GCP1870 F2 MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027884	GCP1884 F2,NE		
1002140	P056 D001	09-MAR-92	49 L
C92027885	GCP1917 F2 MIXTURE		
1002140	P056 D001	09-MAR-92	49 L
C92027886	GCP1886 F2,NE		
1002140	P056 D001	09-MAR-92	49 L
C92027887	GCP1873 XE,F2		
1002140	P056 D001	09-MAR-92	49 L
C92027888	GCP1920 F2 MIXTURE		
1002140	P056 D001	09-MAR-92	60 L
C92027889	GCP1899 F2 MIXTURE,ARGON		
1002140	P056 D001	09-MAR-92	49 L
C92027890	GCP1855 XE,CL2		
1002140	NONE D001	09-MAR-92	49 L
C92027891	GCP1821 HE,HCL		
1002140	D002	09-MAR-92	49 L
C92027893	GCP1872 F2,N2		
1002140	P056 D001	09-MAR-92	49 L
C92029792	CLS181 ARGON,OXYGEN		
1002727	D001	29-MAY-92	21.4 L
C92029803	CLS316 MONOMETHYL AMINE		
1002727	D001	29-MAY-92	56 L

FROM: YU-YING TANG
TO: ANDY MONTOYA
SUBJECT: AREA L: RCRA GAS CYLINDER
EM7CD = 08, 28
DATE: PICKDATE < 09-AUG-92

CYLINDER# / CWDR#	DESCRIPTION / EPA CODE	PICKDATE	VOLUME
C92029832	CLS372 H2S		
1002727	D001 U135 D003	29-MAY-92	.44 L
C92029834	CLS379 DIBORANE,ARGON		
1002727	D001	29-MAY-92	49.9 L
C92029835	CLS371 AIR,TRACE H2S		
1002727	D001	29-MAY-92	.44 L
C92030467	REJECTED, CLS361 NITROGEN TRIFLUORIDE		
1002727	D001	29-MAY-92	2.47 L
C92030468	REJECTED, CLS362 NITROGEN TRIFLUORIDE		
1002727	D001	29-MAY-92	1.04 L
C92030469	REJECTED, CLS363 NITROGEN TRIFLUORIDE		
1002727	D001	29-MAY-92	1.04 L
C92030470	REJECTED, CLS364 NITROGEN TRIFLUORIDE		
1002727	D001	29-MAY-92	1.04 L
C92030471	REJECTED, CLS365 NITROGEN TRIFLUORIDE		
1002727	D001	29-MAY-92	1.04 L
C92030472	REJECTED, CLS347 NITROSYL CHLORIDE		
1002727	D001	29-MAY-92	.4 L
C92030476	REJECTED, CLS122 NITROGEN DIOXIDE		
1002727	P078 D001	29-MAY-92	2.24 L
C92030477	REJECTED, CLS357 NITROGEN DIOXIDE		
1002727	P078 D001	29-MAY-92	.5 L
C92030478	REJECTED, CLS359 PERCHLORYL FLUORIDE		
1002727	D001	29-MAY-92	.5 L
C92030480	REJECTED, CLS281 HYDROCHLORIC ACID		
1002727	D002	29-MAY-92	.5 L
C92030481	REJECTED, CLS286 HYDROCHLORIC ACID		
1002727	D002	29-MAY-92	.5 L
C92030483	REJECTED, CLS360 TRIISOBUTYL ALUMINUM		
1002727	D001 D002 D003	29-MAY-92	.5 L
C92030484	REJECTED, CLS349 TUNGSTEN HEXAFLUORIDE		
1002727	D002	29-MAY-92	6.88 L
C92030485	REJECTED, CLS350 TUNGSTEN HEXAFLUORIDE		
1002727	D002	29-MAY-92	6.88 L
C92030486	REJECTED, CLS351 TUNGSTEN HEXAFLUORIDE		
1002727	D002	29-MAY-92	6.88 L
C92030487	REJECTED, CLS336 TUNGSTEN HEXAFLUORIDE		
1002727	D002	29-MAY-92	2.24 L
C92030488	REJECTED, CLS348 TUNGSTEN HEXAFLUORIDE		
1002727	D002	29-MAY-92	6.88 L
C92030489	REJECTED, CLS352 BORON TRIFLUORIDE		
1002727	D002	29-MAY-92	18 L
C92030490	REJECTED, CLS356 BORON TRIFLUORIDE		
1002727	D002	29-MAY-92	.5 L
C93034682	GCP1663A HYDROGEN		
19910306140000	D001	06-MAR-91	.5 F

APPENDIX L

LANL'S POSITION ON THE THERMAL DECOMPOSITION UNIT DOCUMENTATION

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

MAY 18 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Edward Horst
Program Manager
Hazardous Waste Section
New Mexico Environment Department
525 Camino de Marquez Place
Santa Fe, NM 87502

Dear Mr. Horst:

This letter addresses the issue of whether permitting requirements apply to recycling units. This issue was discussed during the meeting between New Mexico Environment Department (NMED), Los Alamos National Laboratory (LANL), and Department of Energy (DOE) staff on January 16, 1992. This letter is also intended to provide additional information about a process used to passivate nitrated cheesecloth rags contaminated with plutonium. These issues are closely related and are therefore both addressed in the same letter.

It is LANL's and DOE's understanding that, pursuant to NMED's Hazardous Waste Management Regulations (HWMR-6), Section 261.6(c), the processes used to reclaim materials that may contain hazardous or mixed waste are not regulated under HWMR-6 (except certain types of units that emit volatile organics). As we discussed in our January 16, 1992 meeting, the intent of the regulations is to encourage recycling. The promulgation of two sets of recycling regulations separate from permitting regulations for treatment illustrates this intent. In both HWMR-6, Section 261.6 and Part 266, it is clear that not only can hazardous wastes be reclaimed, but hazardous waste can be separated from other valuable material without reclaiming the hazardous portion and no permit is required for the process itself. Recycling activities often only require compliance with storage, transportation and notification regulations. The fact that these recycling regulations exist separately from the permitting requirements indicates the Environmental Protection Agency's (EPA) desire to regulate recycling differently.

As noted above, HWMR-6, Section 261.6(c) states that, "The recycling process itself is exempt from regulation except as provided in 261.6(d)". The exception for the provisions in 261.6(d) was added when the new Subparts AA and BB of Parts 264 and 265 were promulgated. These subparts specifically addressed organic emissions from certain types of treatment units that were, until now, unregulated because they were recycling units. The preamble discussion for these new regulations implies that these recycling units had not been regulated in the past. Additionally, the exception for Subparts AA and BB suggests that only when a regulation specifically states that a process requires a permit would one be necessary.

LANL currently operates various processes at the Plutonium Reprocessing Facility, Technical Area (TA) 55, under this same interpretation. At this facility, plutonium is extracted from several types of waste, some of which is mixed waste. LANL and DOE believe that the processes used to recover plutonium need not be permitted, although the handling of mixed waste prior to and after plutonium is recovered would be considered Resource Conservation and Recovery Act (RCRA) regulated activities. The general recycling requirements of HWMR-6 Section 261.6 and the intent of Part 266, Subpart F support this approach.

Although recovering plutonium is not included in the Part 266 Subpart F regulations for precious metal recovery, the concepts from which these requirements have been derived are similar. EPA believed that the strong motivation to manage precious metal-containing wastes carefully due to the high value of the metals justified a partial exemption from regulation. In fact, such wastes are exempt from all but the requirements for notification, manifests, precluding overaccumulation, and recordkeeping to document that wastes are not being overaccumulated (Federal Register Vol. 50, No. 3, pg 648). Plutonium-containing mixed waste at TA-55 is managed very stringently due to safety, security, and economic concerns. For example, the storage area containing waste to be reclaimed is monitored 24 hours a day, 7 days a week with a continuous air monitoring system that could detect a radioactive airborne release within 10 minutes and trigger an alarm. Also, containers that potentially hold RCRA mixed waste liquid to be processed are stored with five levels of containment to ensure strict waste control.

The above-mentioned preamble (pg. 648, 649) also stated that, for precious metals to be conditionally exempt from regulation, economically significant amounts must be recovered. Recovery operations at TA-55 are based upon an Economic Discard Level (EDL) that prescribes an amount of plutonium above which recovery is mandated by DOE due to the value of the metal available in the waste. Although plutonium was not included in

the list of precious metals in Subpart F, its economic value far surpasses the metals listed.

One activity in particular at TA-55 has been identified as a plutonium recycling process, and, as stated in my transmittal letter (January 25, 1991) for the RCRA Mixed Waste Part A Application, would presumably not require a RCRA permit. A small volume of cheesecloth rags used to wipe gloveboxes must periodically be passivated to recover plutonium and address safety concerns. Typically, the rags will be exposed to nitric acid in the cleaning process. When the acid comes in contact with the cellulose in the cheesecloth, nitrocellulose can be generated. The nitrocellulose could cause the rags to become ignitable or reactive, presenting a safety concern. For this reason, and the need to recover plutonium, the rags were typically ashed daily until June 1989.

The ashing of these rags was previously performed using a process that could have been construed as incineration. With the promulgation of New Mexico Laws 1989, Chapter 279 (House Bill 59) prohibiting incineration, the unit was shut down. A different technique to passivate these rags was developed that, although not as efficient, is a usable alternative.

The new method uses a stainless steel vessel heated to approximately 900 degrees Celsius with electric resistance heaters. A positive flow of argon into the vessel maintains an inert environment. The processed material is thermally decomposed to an ash-like material at these elevated temperatures by breaking the organic bonds and recombining them with the oxygen present in the initial matrix. The offgas produced passes through an aqueous caustic scrubber and then out the high efficiency particulate air filters. The residue generated is subsequently processed through a rotary calciner drying unit and then reintroduced into the plutonium recovery process.

Because the cheesecloth may have come in contact with spilled solutions containing solvents or nitric acid, these materials must be handled in compliance with hazardous waste generation, transportation and storage requirements [see HWMR-6, Section 261.6(a)(1)]. However, because the passsivation unit is an integral part of the recycling process, we believe it is exempt from regulation pursuant to HWMR-6, Section 261.6(c)(1).

We would appreciate your review of this matter and a response indicating whether you agree with our determination that the passivation unit does not require a permit. Please contact Jon Mack at 665-5026 if you have any questions.

Sincerely,

Jerry L. Bellows
Area Manager

LESH:6JM-002

cc:
J. Mack, ES&H, LAAO
A. Tiedman, ADO, LANL, MS A120
T. Gunderson, EM-DO, LANL, MS K491
K. Hargis, EM-8, (EM-8:92-1008-1), LANL, MS K490

MAY 22 1992

RECEIVED EM-8
ROUTE: GRPMGMT: SLS
COPY: GRPMGMT: SLS
RETURN TO: GRPOFC
ORIGINAL: Jim White
NOTE:

Department of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

JAN 19 1993

JAN 1993
RECEIVED
HAZARDOUS WASTE
PROGRAM

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Benito J. Garcia, Bureau Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
525 Camino de los Marquez
Santa Fe, NM 87502

Dear Mr. Garcia:

The purpose of this letter is to clarify the position of the Department of Energy (DOE) and the University of California (the University) regarding requirements applicable to recycling units at the Los Alamos National Laboratory (LANL). This letter supplements a letter sent to Mr. Edward Horst, New Mexico Environment Department (NMED) by DOE on May 18, 1992, a copy of which is enclosed. DOE and the University believe that the processes at Technical Area (TA) 55 associated with the reclamation of plutonium (Pu) commingled with hazardous waste are subject to the recycling regulations and are therefore exempt from the hazardous waste permitting requirements. Specifically, while the TA-55 waste streams are subject to the generator, transporter, storage and notification requirements of the New Mexico Hazardous Waste Management Regulations (HWMR) Section 261.6(c), the actual reclamation processes at TA-55 are not subject to the HWMR permitting requirements.

You expressed concern in a December 11, 1992 meeting with DOE and the University that, because the "hazardous" component of the materials is not being recovered, and because Pu is not included in the precious metal exemption, the TA-55 recovery processes may not constitute recycling as defined in the HWMR. As explained below, it is our understanding that it is not necessary that the "hazardous" component portion be recovered for a process to be considered recycling. Also, it is our understanding that both the Environmental Protection Agency (EPA) and NMED intend to regulate mixed waste using hazardous waste regulations. Consequently, recycling rules applicable to hazardous waste also apply to mixed waste and this is discussed below.

This letter examines several issues, with headings for each issue provided. This letter first addresses EPA's intention to

regulate recycling processes differently than hazardous waste treatment and disposal processes that are subject to Part 264, 265, and 270, interim status and permitting requirements. It then discusses the definition of reclamation, which allows the recovery of either hazardous or non-hazardous components independently. Several examples of different processes considered by the EPA to be recovery processes follow in the next section. A brief clarification of our precious metals discussion is then presented. This is followed by a discussion of the application of hazardous waste regulations to mixed waste. Copies of references are enclosed for your convenience.

EPA's Intention to Regulate Recycling Differently

The EPA's regulatory scheme distinguishes the regulation of recycling and reclamation processes and facilities from the regulation of hazardous waste treatment and disposal facilities. The preamble to the hazardous waste management program clearly demonstrates its intent to regulate processes that recycle waste differently from the more "traditional" hazardous waste treatment and disposal processes (see 45 Federal Register 33092, May 19, 1980). In the above preamble, EPA recognized that "proposed Section 3004 treatment and disposal standards . . . may not be well-suited for regulating all hazardous waste recovery and reclamation facilities . . . " EPA further recognized that recovery and reclamation operations would be "different in nature or degree, and therefore may justify the imposition of different management standards." In many cases, effective control of health and environmental hazards could occur "without requiring compliance with Section 3004..." In fact, EPA's definition of solid waste distinguishes recovered and reclaimed materials from other solid wastes. In HWMR-6, Section 261.2, Table I, a sludge or by-product that would otherwise be considered a hazardous waste due to the characteristic it exhibited is not defined as a solid waste when reclaimed and is therefore regulated less stringently. EPA intended to allow more regulatory flexibility for recycling processes than for traditional hazardous waste treatment and disposal processes.

Definition of Reclamation

The regulatory definition of reclamation is broad and incorporates both processes that recover the "hazardous" component of the waste and processes that recover a valuable contained material other than the "hazardous" component. EPA defined reclamation to include either regenerating a waste material or processing materials to recover usable products. Essentially, reclamation is regeneration or material recovery

(see 50 Federal Register 633, January 4, 1985). Examples of reclamation include processes that regenerate spent material by removing contaminants (e.g., spent solvent recovery), and processes that separate usable products from spent material (e.g., recovery of metal from secondary material) (50 Federal Register 633 [January 4, 1985] and 48 Federal Register 14487.88 [April 4, 1983]). At no point in the preamble did the EPA interpret the regulation as requiring that the reclaimed metal has to be the component that caused the waste material to be hazardous. In fact, in distinguishing between "use" and "reclamation," EPA described reclamation as that which occurs "when the spent material, sludge, or by-product is itself recovered or when its contained material values are recovered as an end-product. For example, if a metal containing sludge is processed to recover its contained metal values . . ." (see 48 Federal Register 14487.88 [April 4, 1983]). Thus, while spent material, sludge, and by-products are typically hazardous waste, the metal contained in the sludge and later recovered may not necessarily be hazardous waste. Clearly, either hazardous waste or its non-hazardous "contained material" can be the intended component or goal of the recovery process and the process is still considered reclamation by EPA.

Examples of Recovery of Non-Hazardous Components

The following discussion is presented to address your concern that the hazardous component of the waste is not recovered in the TA-55 process. Several examples of recognized recycling activities are given below which demonstrate that recycling operations need not recover hazardous components contained in the recycled material.

EPA recognizes burning wastes in industrial furnaces and boilers for energy recovery, material recovery, and waste destruction (see 50 Federal Register 630-31 [January 4, 1985]). In the descriptions of energy and material recovery in furnaces and boilers, no requirement exists to return that which constitutes the hazardous component of the waste to its original usable form. In fact, it would be virtually impossible to do so in the case of energy recovery because the waste is consumed as fuel. During material recovery, an occasion may exist for the hazardous waste portion to be processed into a usable material (e.g., organic wastes processed to recover energy and carbon values, and chlorinated wastes processed to recover energy and chlorine), however, regenerating of the hazardous portion into the original product does not necessarily occur. Furnaces and boilers are nonetheless considered subject to recycling requirements. Additionally, EPA has since promulgated specific regulations in Section 266, Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste

Management Facilities, for furnaces and boilers using hazardous waste for fuel. This again demonstrates EPA's intent to distinguish recycling from hazardous waste treatment operations and to regulate specific recycling activities when deemed necessary. Currently, there are no specific requirements which apply to TA-55 activities in this manner.

Another example of the EPA's inclusion of recovery of substances other than the hazardous waste component in the recycling regulations, is found in the January 4, 1985 Federal Register on page 618. Here the EPA divides recycling activities according to types of secondary materials. These include spent substances such as spent activated carbon and spent catalysts. The fact that the processes for regeneration of carbon and catalysts do not typically recover any of the hazardous waste contaminating these materials supports the premise that it is not required in order to be considered recycling.

Support for this approach is also found in the statutory language and its Congressional history. In Section 1004 (22) of the Resource Conservation and Recovery Act (RCRA), recovery is defined as the recovery of material or energy resource from solid waste. House Report Number 94-1491 at pages 11 and 13 also recognizes that "both raw materials and energy can be recovered from waste." A basic purpose of RCRA is to allow and encourage reclamation of resources in any form (materials, raw materials, or energy) and not be limited solely to activities that recover the hazardous portion of the waste.

Clarification of "Precious Metals" Discussion in May 18, 1992 Letter

In our May 18, 1992 letter, we mentioned the precious metals exemption in 40 CFR 266, Subpart F, as an illustration only. As you requested in our November 19, 1992 meeting, this letter clarifies our original letter. We intended to illustrate a regulated process, similar to ours, in which the hazardous component of a material to be recovered need not be reclaimed for EPA to consider the process to be recycling. We never intended to suggest that Pu is a precious metal subject to Subpart F.

It is illustrative, however, that Section 266, Subpart F does not establish a specific allowance for nonhazardous waste to be reclaimed. This Subpart was cited because of its clarity in describing recycling operations that might only recover portions of the waste not defined as hazardous. It does not present any less stringent requirements for the recovery of nonhazardous

portions of waste, although it does relax some other general recycling requirements relating to storage found in Section 261.6. Neither Section 266 nor 261.6 require recovery of the hazardous waste component in recycling operations.

Application of Hazardous Waste Regulations to Mixed Waste

Plutonium is not specifically mentioned in the hazardous waste regulations; the recycling requirements, however, still apply to mixed waste containing Pu. It is generally recognized that EPA does not intend to promulgate new regulations specifically for mixed waste at this time. Instead, it applies the existing hazardous waste regulations. NMED has not promulgated new regulations in order to enforce its mixed waste authority. This is demonstrated in its application for mixed waste authority submitted to EPA on July 19, 1989. This application certifies that "the State will utilize the procedures for implementation, inspection, enforcement, and permitting as currently exist within the authorized program." NMED adopts federal regulations by reference. Because EPA has no regulations specific for mixed waste, NMED is therefore committed to apply hazardous waste regulations to mixed waste.

TA-55 Operations

LANL's intent, at TA-55 in general, and more specifically, the unit used for the passivation of nitrated rags (see 5/18/92 letter and enclosed flow diagram), is to recover a usable material. TA-55 operates under a mandate that requires the recovery of economically significant amounts of Pu; materials not meeting the economically significant criteria do not enter the recovery process. DOE has described the economic basis for recovery of a usable Pu product in DOE Order 5660.1, Chapter VI, which states: "Dollars are saved by reducing production requirements and, in those cases where material can be reused, fabrication and processing funds can be saved as well as time in implementing or accelerating ongoing programs." During one year of operation, prior to the June 1989 shutdown, over 10 kilograms of Pu were recovered from the nitrated rags.

Also, the flow diagram depicts the fact that mixed waste that contains recoverable levels of Pu remain within the recovery system until Pu levels fall below that which is economically significant to reclaim. Material which does not contain recoverable levels of Pu is removed from the system. If this waste is hazardous, then it is treated and/or stored pursuant to RCRA interim status requirements.

In summary, it is DOE's and the University's understanding that, based on the interpretations described above, the processes

recovering Pu at Technical Area 55 constitute recycling under the HWMR, and, as such, do not require permitting under the HWMR. Your review of this matter and a response indicating whether you agree with our understanding would be greatly appreciated. Please contact Jon Mack of my staff at 665-5026 or Alice Barr of LANL at 667-0820 if you have any questions.

Sincerely,

Joseph C. Vozella, Acting Chief
Environment, Safety and Health
Branch

LESH:7JV-023

Enclosures

cc w/o enclosures:
J. Mack, ES&H, LAAO
A. Tiedman, ADO, LANL, MS-A120
T. Gunderson, EM-DO, LANL, MS-K491
J. White, EM-8, LANL, MS-K490
K. Hargis (EM-8: 92-3763-1), LANL, MS-K490
S. Brown, LC-GL, LANL, MS-A187
D. Harbur, NMT-DO, LANL, MS-E500

APPENDIX M

EPA REGION 6 INSPECTION REPORT OF FENTON HILL SITE

NARRATIVE INSPECTION REPORT

INTRODUCTION

As part of the Multi-media inspection at the Los Alamos National Laboratory, an inspection was conducted at TA 57, Hot Dry Rock Geothermal Project. This site is also known as the Fenton Hill Geothermal Site or the Fenton Lake Site. Participants in the inspection were as follows:

Walter Helmick Hydrologist, EPA Region 6 214/655-8373
(RCRA Inspector, author)

Brian McKeown Environmental Engineer, NEIC 303/236-5124
(NPDES Inspector)

Robin P. Reynolds LANL, Water Quality and Toxics
505/665-4301

Michelle Cash LANL, Water Quality and Toxics
505/665-0223

Kerry Burns LANL, TA 57, Chemical Safety 505/667-1924

Jim Albright LANL, TA 57, Geoengineering Group Leader
505/667-4318

Jay Thorne LANL, TA 57, Test Site Manager, Waste
Coordinator 505/667-7900

Jim Thomson LANL, TA 57, Engineering Systems
505/667-1914

The inspectors arrived at the site at about 10:45 a.m., on August 12, 1993. Mr. Albright started the inspection with a presentation on the activities and safety at the site. Following this discussion, the team broke into two groups. One group (McKeown, Reynolds, Thorne, and Thomson) went to inspect the site for issues related to NPDES. The second group (Helmick, Cash, Burns) conducted a RCRA inspection at the site. The remainder of this report will discuss only the RCRA portion of the inspection. The team left the site at approximately 12:30 p.m.

THE RCRA INSPECTION

The RCRA inspection team began with a tour of the facility. Mr. Burns explained the equipment and processes used in the site's research on geothermal energy. At the time of the inspection, the site is on "standby." The DOE is in the process of evaluating this research for continued funding. No active research projects are being conducted at the site. A site map is attached (Attachment A).

On August 4, 1993, a team of EPA and State inspectors reviewed the site for Class V injection wells. This group made a list of items that were to be reviewed during a RCRA inspection. These items included a Safety-Kleen parts washing station, machine shop and storage area, and a chemical storage building. Each of these items were reviewed during the inspection.

The Safety-Kleen parts washing station is in a machine shop called the High Bay Workshop. This station uses Safety-Kleen 105 Solvent (see attached MSDS, Attachment B). This solvent is identified by the facility as a D001, D039, and D018 waste. The solvent is used as a product until the Safety-Kleen representatives periodically pick up the solvent for recycling by the Albuquerque office of Safety Kleen. This material is not stored or accumulated prior to shipment offsite. These shipments are accompanied by a manifest and LDR notice (see Attachment C for an example).

The machine shop and associated storage area were inspected. Mr. Burns claims that the chemicals stored in this area are not waste but products being stored for future use. A review of the area appears to confirm Mr. Burns assertion. The materials in storage are those that could continue to be used after the containers are first opened and are being stored in a manner that would allow the use of the items at a later date.

The chemical storage area in Building 57-56 was also inspected but no containers of hazardous waste were being stored at the time. If needed, the area could be used as a Satellite Accumulation Point (SAP). A sign indicates the area as a SAP an gives an outline of the RCRA regulations for SAPs. The area consists of a concrete pad completely surrounded by a curb with a metal grating. The building consists of a roof and three walls, with the front being open. At the time of the inspection, only a drum, 1/4 full, was present containing used transmission oil. Other drums in the building were identified as unused product.

A walking tour of the remainder of the site was completed at about 11:30 a.m. No other areas of concern were noted. The group returned to the main offices and reviewed records. Approximately two years of manifests, LDR notices and other records were reviewed.

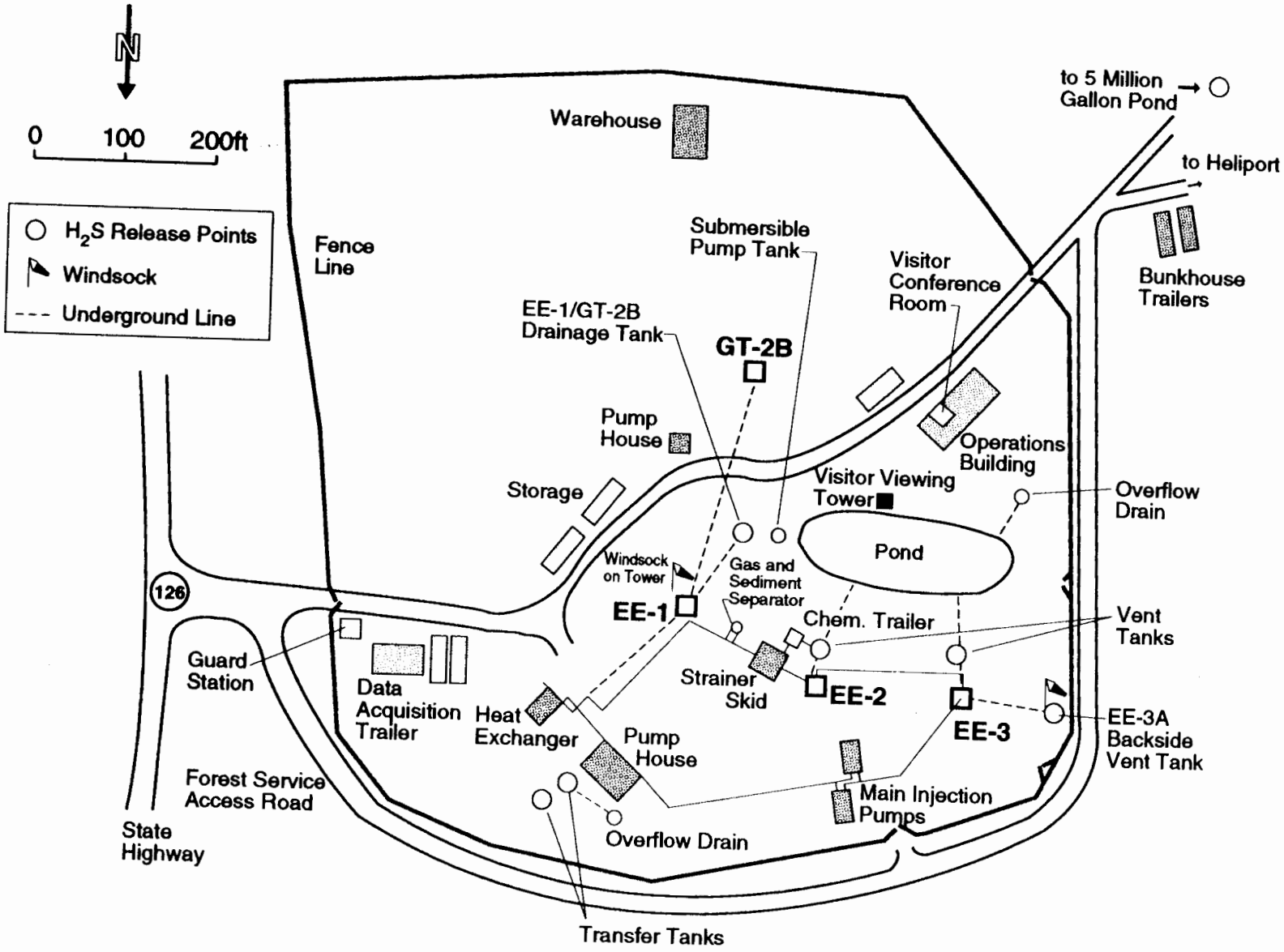
FINDINGS OF THE INSPECTION

Three areas of concern were noted during this inspection. The first area of concern relates to the SAP in Building 57-56. This SAP is away from any identified waste generating process. If the area was being used as a SAP then it would be away from the point of generation and the control of the operator of the waste generating process. This would be an improper SAP. SAPs should be located at or near the point of waste generation or the site should be designated for use as container storage area.

The second area of concern results from the identification of the Safety-Kleen 105 Solvent waste. The facility's Notification of Hazardous Waste Activity (see Attachment D) lists generation of D001/D018 waste. The manifest in Attachment C indicates that waste codes D001, D018 and D039 apply. However, the LDR notice (also in Attachment C) indicates that it is only a D001 waste. The facility needs to take measures to eliminate this confusion and ensure that the waste is properly identified.

The third area of concern is the use of the EPA ID No. NMP360026994 on the manifest (Attachment C). This is a provisional number and its use is limited. The new number is NMD986676807.

Fenton Hill Site Plan



Location of Current and Anticipated H_2S Release Points

Attachment B

SAFETY-KLEEN 105 SOLVENT

MATERIAL SAFETY DATA SHEET FOR U.S.A. AND CANADA

SECTION I -- PRODUCT INFORMATION

Safety-Kleen Corp. - 777 Big Timber Road - Elgin, IL, U.S.A. 60123
Safety-Kleen Canada Inc. - 3090 Blvd. Le Carrefour - Suite 300 - Chomedy Laval Quebec, Canada H7T 2J7
For Product Technical Information Call 312-694-2700 (U.S.A.);
800-363-2260 (Eastern Canada); 514-686-2040 (Western Provinces/Call Collect)

24-HOUR EMERGENCY TELEPHONE	*MEDICAL:*	*TRANSPORTATION:*
These numbers are for emergency use only. If you desire non-emergency information about this product, please call a telephone number listed above.	800-752-7869 (U.S.A.) 312-942-5969 (CANADA) RUSH POISON CONTROL CENTER CHICAGO, ILLINOIS, U.S.A.	708-888-4660 (U.S.A.) SAFETY-KLEEN ENVIRONMENT, HEALTH AND SAFETY DEPARTMENT 613-996-6666 (CANADA) CANUTEC

IDENTITY (TRADE NAME): SAFETY-KLEEN 105 SOLVENT

SYNONYMS: PETROLEUM DISTILLATES, PETROLEUM NAPHTHA, MINERAL SPIRITS, STODDARD SOLVENT

SK PART NUMBER: 6617

FAMILY/CHEMICAL NAME: HYDROCARBON SOLVENT

PRODUCT USAGE: SOLVENT FOR CLEANING AND DEGREASING PARTS

SECTION II -- HAZARDOUS COMPONENTS

NAME	SYNONYM	Wt %	CAS NO	OSHA PEL TWA (ppm)	OSHA PEL STEL (ppm)	ACGIH TLV TWA (ppm)	ACGIH TLV STEL (ppm)	LD50[a]	LC50[b]
Parts Washer Solvent (Consists predominantly of C9-C13 Saturated Hydrocarbons)	Mineral Spirits	85.0	64741-41-9	100 **	N.Av.	100 **	N.Av.	> 5000**	3400**
C8 + Aromatics		12.0	Mixture	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.
*Toluene		0.5	108-88-3	100	150	100	150	5000	4000
*Xylene		1.0	1330-20-7	100	150	100	150	4300	5000
*Ethyl Benzene		0.5	100-41-4	100	125	100	125	3500	4000[c]
*1,1,1 Trichloroethane	Methyl Chloroform	0-0.5***	71-55-6	350	450	350	450	10300	18000
*Perchloroethylene	Tetrachloroethylene	0-0.5***	127-18-4	25	N.Av.	50	200	2629	4000[c]
Total Chlorinated Solvents		0-1.0***							

N.Av. = Not available.
* See Section X - Other Regulatory Information
**For Stoddard Solvent
***Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

[a] Oral-Rat LD50 (mg/kg)
[b] Inhalation-Rat LC50 (ppm/4 hours)
[c] Inhalation Rat LCLo (ppm/4 hours)

SECTION III -- PHYSICAL DATA

PHYSICAL STATE, APPEARANCE AND ODOR:	Combustible liquid, clear, green, with characteristic hydrocarbon odor.
ODOR THRESHOLD:	Not available.
BOILING POINT:	304-435°F (151-224°C).
VAPOR PRESSURE:	2 mm Hg at 68°F (20°C).
FREEZING POINT:	Not available.
EVAPORATION RATE:	0.1 (Butyl Acetate = 1).
VOLATILE:	99.9%
VOLATILE ORGANIC COMPOUNDS:	6.4 to 6.7 lbs/gal; 770 to 800 g/l
DENSITY:	Not available.
VAPOR DENSITY:	4.9 (Air = 1).
SOLUBILITY IN WATER:	Negligible.
pH:	Not applicable.
SPECIFIC GRAVITY:	0.77 to 0.80 at 60/60°F (16/16°C) (Water = 1).
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available.
MOLECULAR WEIGHT:	142 (Approximately).

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	105°F (41°C) SETA
AUTOIGNITION TEMPERATURE:	473°F (245°C).
CONDITIONS OF FLAMMABILITY:	Materials must be moderately heated before ignition can occur.
FLAMMABLE LIMITS IN AIR:	*LOWER:* 0.7 Vol. % *UPPER:* 6.0 Vol. %
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Decomposition and combustion products may be toxic. Heated containers may rupture, explode or be thrown into the air. Vapors are heavier than air and may travel great distances to ignition source and flash back. Not sensitive to mechanical impact. Material may be sensitive to static discharge, which could result in fire or explosion.
EXTINGUISHING MEDIA:	Carbon dioxide, foam, dry chemical, water (mist only).
FIRE FIGHTING PROCEDURES -- SPECIAL:	NFPA 704 Rating 0-2-0 Keep storage containers cool with water spray. Use self-contained breathing apparatus (SCBA).
HAZARDOUS COMBUSTION PRODUCTS:	Thermal decomposition and burning may produce carbon monoxide.

SECTION V – REACTIVITY DATA

STABILITY: Stable under normal temperatures and pressures, and not reactive with water.

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID): Avoid oxidizing agents, flames, sparks and high temperatures.

HAZARDOUS POLYMERIZATION: Not known to occur under normal temperatures and pressures.

HAZARDOUS DECOMPOSITION PRODUCTS: Normally none.

SECTION VI – HEALTH HAZARD DATA AND TOXICOLOGICAL PROPERTIES

PRIMARY ROUTES OF EXPOSURE: Eye and skin contact; inhalation.

EXPOSURE LIMITS: See Section II.

SIGNS AND SYMPTOMS OF EXPOSURE:

ACUTE:

Eyes: Contact may cause slight to moderate irritation. High vapor concentrations (> 500 ppm) are irritating to the eyes.

Skin: Prolonged or repeated contact tends to remove skin oils, possibly leading to irritation and dermatitis. No significant skin absorption hazard.

Inhalation (Breathing): High concentrations of vapor or mist may be irritating to the respiratory tract, cause headaches, dizziness, nausea, impaired coordination, anesthesia and may have other central nervous system effects.

Ingestion (Swallowing): Low order of acute oral toxicity. May cause irritation of the throat, nausea, vomiting and symptoms of central nervous system depression. Aspiration into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

CHRONIC: Prolonged and/or repeated skin contact may cause drying and cracking or dermatitis.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing central nervous system dysfunction may have increased susceptibility to the effects of exposure. Contact with skin may aggravate pre-existing dermatitis.

CARCINOGENICITY: IARC classifies chemicals by their carcinogenic risk, including agents that are known, probable, or possible carcinogens. NTP classifies chemicals as either known carcinogens or for which there is a limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

Perchloroethylene is listed by IARC as a possible carcinogen and is classified by NTP as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

OTHER POTENTIAL HEALTH HAZARDS: The following information is required by Canadian WHMIS regulations. Irritancy is covered in Signs and Symptoms of Exposure in Section VI. There is no known human sensitization or toxicologically synergistic product. Xylene has demonstrated experimental effects for reproductive toxicity, mutagenicity and teratogenicity. Studies indicate Ethylbenzene and 1,1,1-Trichloroethane are experimental teratogens.

SECTION VII -- EMERGENCY AND FIRST AID PROCEDURES

EYES: For direct contact, flush eyes with water for 15 minutes lifting upper and lower lids occasionally. If irritation or redness from exposure to vapors or mists develops, move victim away from exposure into fresh air. Consult physician if irritation or pain persists.

SKIN: Remove contaminated clothing. Wash skin twice with soap and water. If irritation or pain

INHALATION: (Breathing)	Remove to fresh air immediately. Use oxygen if there is difficulty breathing or artificial respiration if breathing has stopped. Do not leave victim unattended. Seek immediate medical attention if necessary.
INGESTION: (Swallowing)	If conscious, drink 4 to 8 ounces of water and seek immediate medical attention. DO NOT induce vomiting.

SECTION VIII – PRECAUTIONS FOR SAFE USE AND HANDLING AND PREVENTIVE MEASURES

SPILL PROCEDURES:	Remove all ignition sources. Ventilate area and avoid breathing vapors. For large spills, isolate area and deny entry. If possible, contain as a liquid for possible re-refining. Absorb with compatible absorbent material. Shovel into closable container for disposal. Wear protective equipment specified in Section IX. Contain away from surface waters and sewers.
WASTE DISPOSAL METHODS:	Dispose in accordance with Federal, State, Provincial and local regulations. Contact Safety-Kleen regarding recycling or proper disposal.
HANDLING PRECAUTIONS:	Avoid contact with eyes, skin or clothing. Use in well ventilated area and avoid breathing vapors or mists. Keep away from heat, sparks and flames.
SHIPPING AND STORING PRECAUTIONS:	Keep container tightly closed when not in use and during transport. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, grind or expose containers to flame or other sources of ignition.
PERSONAL HYGIENE:	Use good personal hygiene. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco products. Launder contaminated clothing and clean protective equipment before reuse.

SECTION IX -- CONTROL MEASURES AND OTHER PREVENTIVE MEASURES

EYE PROTECTION:	Where there is likelihood of spill or splash, wear chemical goggles and faceshield. Contact lenses should not be worn.
PROTECTIVE GLOVES:	Use nitrile or neoprene gloves to prevent contact with skin.
RESPIRATORY PROTECTION:	Use NIOSH/MSHA-approved respiratory protective equipment when concentration of vapors or mists exceeds applicable exposure limit. Depending on the airborne concentration, use a respirator or gas mask with appropriate cartridges and canisters. A self-contained breathing apparatus (SCBA) is required for large spills and emergencies. Selection and use of respiratory protective equipment should be in accordance in the U.S.A. with OSHA General Industry Standard 29 CFR 1910.134 and in Canada with CSA Standard Z94.4-M1982.
ENGINEERING CONTROLS:	Provide local exhaust or general dilution ventilation needed to maintain concentrations of vapors or mists below applicable exposure limits. Where explosive mixtures may be present, systems safe for such locations should be used.
OTHER PROTECTIVE EQUIPMENT:	Wear appropriate solvent-resistant boots, apron or other protective clothing where spills and splashes are possible. A source of clean water should be available in work areas for flushing the eyes and skin.

SECTION X – OTHER REGULATORY INFORMATION

DOT PROPER SHIPPING NAME:	PETROLEUM NAPHTHA
DOT CLASS:	COMBUSTIBLE LIQUID
DOT ID NUMBER:	UN1255

SARA-TITLE III:

Product contains toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Toxic constituents are listed with an asterisk in Section II of this Material Safety Data Sheet.

Product poses the following physical and/or health hazards as defined in 40 CFR 370.3 (Sections 311, 312 of SARA Title III):

Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard

TDGA:

NAPHTHA, PETROLEUM
CLASS 3.3, UN1255, P.G. III

WHMIS CLASSIFICATION:

Class B3, Combustible Liquid;
Class D2A, Other Toxic Effects, Very Toxic Material;
Class D2B, Other Toxic Effects, Toxic Material

SECTION XI – PREPARATION INFORMATION

PREPARED BY: Product MSDS Coordinator

FORM PART NO. 82310

ORIGINAL ISSUE DATE: July 20, 1989 *REVISED:* December 14, 1990 *SUPERSEDES:* March 12, 1990

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the material as supplied to the user.

Attachment C

Please print or type (Form designed for use on elite (12-pitch) typewriter) Form Approved OMB No. 2050-0039 Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NMP3600026994 Manifest Document No. 37797
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Los Alamos National Lab ~~Accounting Dept~~ PO Box 1663, MS0443 Los Alamos NM 87545
4. Generator's Phone (505) 667-7000
A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: Safety Kleen Corp.
6. US EPA ID Number: ILD 010604008
C. State Transporter's ID
D. Transporter's Phone: 505 884-2277

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address: Safety Kleen Corp 2720 Girard NE Albuquerque 87107
10. US EPA ID Number: 7-008-01 NMD000804294
G. State Facility's ID
H. Facility's Phone: 505 884-2277

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Petroleum Naphtha Combustible Liquid UN1255 (D001) (ERG #27)	X	6	DM	516	P	D001 D039
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above: I (a) D018

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information: P 37797, P37796

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: JAY D. THORNE Signature: Jay D Thorne Date: Month 1 Day 29 Year 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: L. Tom Oyler Signature: L. Tom Oyler Date: Month 1 Day 29 Year 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Signature: Date: Month Day Year

FACILITY

19. Discrepancy Indication Space: Box 3 Location of site mailing address PO. Box 1663, MS0443 ATTN: JOE SKALSKI

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name: Adrienne Osborne Signature: Adrienne Osborne Date: Month 1 Day 29 Year 92

SAFETY-KLEEN CORP.

EPA Form 8700-22 (Rev. 9-88) previous editions obsolete

safety-kleen.

NOTICE OF LAND DISPOSAL RESTRICTION OF WASTE

TO: SAFETY-KLEEN CORP.
(DESIGNATED FACILITY)

EPA ID NO. [illegible]
(DESIGNATED FACILITY)

ADDRESS: [illegible]

OPTION A	Under manifest number [illegible] the generator noted below is shipping to you a waste determined to be restricted under 40 CFR Part 268. In accordance with 40 CFR 268.7, the generator hereby provides notice that the waste is restricted from land disposal. A copy of this form must be kept by the generator and facility for five (5) years from the date of waste shipment.
OPTION B SQG CUSTOMERS ONLY (PARTS WASHER AND IMMERSION CLEANER 609 AND 699)	I am a small quantity generator (100-1,000 kg/mo) in accordance with 40 CFR 268.7. This notice applies to all waste shipments under my service contract with Safety-Kleen Corp. It covers today's shipment on manifest NO. _____, or sales/service acknowledgement NO. _____, and all subsequent shipments. A copy of this notice will be maintained with the service contract(s) or sales/service acknowledgement(s) for five (5) years beyond the termination of the service contract.

PLEASE CHECK THE APPROPRIATE BOXES

✓	WASTE NAME	EPA * WASTE CODE	THE WASTE MAY CONTAIN THE FOLLOWING RESTRICTED CONSTITUENTS	TREATMENT STANDARD (mg/l) OR METHOD (FOR NON-WASTE WATER)
☒	Waste Petroleum Naphtha	D001	Ignitable Liquid (High TOC Subcategory) Halogenated Organic Compounds (HOC's) ≥ 1000 mg/l	Incineration (INCIN), fuel substitution (FSUBS) or recovery (RORGS) INCIN
☐	Waste Petroleum Naphtha (sludges from Safety-Kleen Service Center Operations)	D001, D006, D007, D008,	All of the above, plus: —Cadmium —Chromium —Lead	 1.0 5.0 5.0
☐	Waste Compound Cleaning Liquid/ Immersion Cleaner 609	F002, F004, D006, D007, D008,	Cresylic Acid 1, 2-dichlorobenzene Methylene Chloride —Cadmium —Chromium —Lead	0.75 0.125 0.96 1.0 5.0 5.0
☐	Waste Compound Cleaning Liquid/ Immersion Cleaner 699	 D006, D007, D008,	HOC's ≥ 1000 mg/l —Cadmium —Chromium —Lead	INCIN 1.0 5.0 5.0
☐	Waste Perchloroethylene	F002	Tetrachloroethylene	0.05
☐	Waste Trichloro-trifluoroethane	F002	Trichlorotrifluoroethane	0.96
☐	Waste 1,1,1 Trichloroethane	F002	1,1,1 Trichloroethane	0.41
☐	Waste Paint Related Material	F005, F003, D006, D007, D008, D001	Acetone Methyl Ethyl Ketone Methyl Isobutyl Ketone Toluene Xylene Cadmium Chromium Lead Ignitable Liquid (High TOC Subcategory)	0.59 0.75 0.33 0.33 0.15 1.0 5.0 5.0 INCIN, FSUBS, or RORGS

The constituent composition is based on knowledge of the waste (via Material Safety Data Sheets for the chemical(s) used, and the process which created the waste). This listing does not include waste codes which are not yet restricted from land disposal.
* These treatment standards do not preclude reclamation prior to final disposition

Generator Company _____ EPA ID NO _____

Generator's Signature X _____ Date _____

safety-kleen corp.

777 BIG TIMBER ROAD • ELGIN, ILLINOIS 60123

DUNS NO. 05106-0408
FED. ID NO. 39-6090019

COMS SERVICE CONTRACT

P37797

GENERATOR/LOCATION	BILL TO (IF DIFFERENT FROM LOCATION)
NAME	NAME
DELIVERY ADDRESS	DELIVERY ADDRESS
INFORMATION/ATTENTION LINE	INFORMATION/ATTENTION LINE
CITY & STATE	CITY & STATE
ZIP / TAX CODE	ZIP / TAX CODE
USA EPA ID NO. / STATE ID NO.	MANIFEST NUMBER

DATE PLACED	MACHINE SERIAL NO.	BRANCH	TYPE OF OUTLET	MAKE AND MODEL OF EQUIPMENT
	360-37797			

Safety-Kleen agrees to furnish clean solvent service and solvent removal service on cleaning equipment owned by customer at the above location. Safety-Kleen is not responsible for repair or maintenance of such equipment. Solvent servicing and removal shall be performed by Safety-Kleen only.

Customer agrees to indemnify Safety-Kleen against any loss or claim arising from any personal injury or property damage, however caused, resulting from the placement or use of the machine on the customer's premises. Safety-Kleen is not responsible for any violation, loss or claim arising from non-compliance with pollution control laws caused by release of solvent to the environment from the unit and resulting from improper customer handling including, but not limited to spills into adjacent waterways, sewer lines or ground water, however caused. However, Safety-Kleen accepts responsibility for any spill solely caused by its agents in connection with the installation or servicing of the machine by Safety-Kleen.

DATE OF CONFIRMATION	SALES REP. NO	SALES SPECIALIST	DATE OF FIRST SCHEDULED SERVICE CALL	BLITZ CODE	P/W TAX %	C.O.M.S. TAX %	PROD. TAX %	CHAIN	SVC P/S	PROD P/S

SERVICE INTERVAL (WEEKS)	CUSTOMER'S P.O. NUMBER ☐ BLANKET ☐ TEMPORARY	SALES TAX EXEMPTION NO	GENERATOR/CUSTOMER TELEPHONE NUMBER AREA CODE	SPECIAL HANDLING	CREDIT CODE

SERVICE CHARGE	TAX	TOTAL

I ACKNOWLEDGE THAT I HAVE NO OBLIGATION TO PURCHASE SERVICE ON SAID EQUIPMENT FROM ANY THIRD PARTY, AND I ACCEPT THE FOREGOING TERMS AND ACKNOWLEDGE FIRST SERVICE PRICES ARE SUBJECT TO CHANGE. X

GENERATOR/CUSTOMER SIGNATURE REQUIRED

UNIFORM HAZARDOUS WASTE MANIFEST INFORMATION

----- CONTAINERS -----

Pails No.	Pails DM	16 Gal No.	16 Gal DM	30 Gal No.	30 Gal DM
				3	

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

Waste Petroleum Naphtha, Combustible Liquid, UN 1255 (EPA, Ignitability, D001)

Waste Compound Cleaning Liquid, Corrosive Material, NA 1760 (EPA, F002)

I certify that my hazardous waste streams total less than 220 pounds (100 kg) for this calendar month and that I am not required to obtain an EPA identification number.

GENERATOR'S INITIALS

Total Quantity = Number of Drums x Ave. Wt/Drum of: Pails #, 16 Gal #, 30 Gal #

SPENT SOLVENT MEETS ACCEPTANCE CRITERIA YES ☐ NO ☐

DESIGNATED FACILITY NAME AND ADDRESS: **SAFETY-KLEEN CORP.**

USA EPA ID No.

STATE ID No.

PRODUCT SALES SECTION

PRODUCT NUMBER	DESCRIPTION	DEALER PRICE	UNIT OF MEASURE	QUANTITY DELIVERED	SALES AMOUNT	TAX	LINE TOTAL

PAYMENT RECEIVED SECTION

CASH ☐ CHECK NUMBER	TOTAL RECEIVED	APPLY PAYMENT TO
		☐ TODAYS SERVICE/SALE ☐ PREVIOUS BALANCE AS FOLLOWS

INV # _____ AMOUNT $ _____

INV # _____ AMOUNT $ _____

INV # _____ AMOUNT $ _____

TOTAL PRODUCT ORDER AMOUNT	$
TOTAL MACHINE SERVICE AMOUNT (INCLUDING TAX)	$
TOTAL DUE	$

CHARGE MY ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT RECEIVED SECTION I HEREBY ACKNOWLEDGE READING AND DO ACCEPT THE TERMS AND CONDITIONS OF THIS SOLVENT SALES, SERVICE AND RECLAMATION AGREEMENT, MORE SPECIFICALLY DESCRIBED ON THE REVERSE SIDE.

X

GENERATOR/CUSTOMER SIGNATURE

Attachment D

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Please refer to the *Instructions for Filing Notification* before completing this form. The information requested here is required by law *(Section 3010 of the Resource Conservation and Recovery Act)*.

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

Date Received (For Official Use Only)

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

☐ A. First Notification ☐ B. Subsequent Notification *(complete Item C)*

C. Installation's EPA ID Number

II. Name of Installation *(Include company and specific site name)*

LOS ALAMOS NATIONAL LAB BLDG TA57 Fintonlake

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: FINTON LAKE

Street (continued):

City or Town: LOS ALAMOS State: NM ZIP Code: 87545-

County Code: County Name:

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: LOS ALAMOS NATIONAL LAB PO BOX 1663

City or Town: LOS ALAMOS State: NM ZIP Code: 87545-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(last)*: SKALSKI *(first)*: JOE

Job Title:

Phone Number *(area code and number)*: 505-667-7900

VI. Installation Contact Address *(See Instructions)*

A. Contact Address Location ☐ Mailing ☐

B. Street or P.O. Box:

City or Town: State: ZIP Code: -

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner:

Street, P.O. Box, or Route Number:

City or Town: State: ZIP Code: -

B. Land Type C. Owner Type D. Change of Owner (Date Changed)

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028. Expires 10-31-91
GSA No. 0246-EPA-OT

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes. Refer to instructions.)*

A. Hazardous Waste Activity

1. Generator (See Instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (220 - 2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs.)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

   Mode of Transportation
   - [ ] 1. Air
   - [ ] 2. Rail
   - [ ] 3. Highway
   - [ ] 4. Water
   - [ ] 5. Other - specify
3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Burner - indicate device(s) - Type of Combustion Device
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Fuel Activities

1. Off-Specification Used Oil Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Markerer
   - [ ] c. Burner - indicate device(s) - Type of Combustion Device
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
2. [ ] Specification Used Oil Fuel Marketer (or On-site Burner) Who First Claims the Oil Meets the Specification

IX. Description of Regulated Wastes *(Use additional sheets if necessary)*

A. **Characteristics of Nonlisted Hazardous Wastes.** Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable *(D001)*	2. Corrosive *(D002)*	3. Reactive *(D003)*	4. EP Toxic *(D000)*
[X]	[ ]	[ ]	[ ]

(List specific EPA hazardous waste number(s) for the EP Toxic contaminant(s))

B. **Listed Hazardous Wastes.** (See 40 CFR 261.31 - 33. See instructions if you need to list more than 12 waste codes.)

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. **Other Wastes.** (State or other wastes requiring an I.D. number. See instructions.)

1	2	3	4	5	6

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed

XI. Comments

DH 10/30/92

EPA

ACKNOWLEDGEMENT OF NOTIFICATION OF REGULATED WASTE ACTIVITY
(VERIFICATION)

This is to acknowledge that you have filed a Notification of Regulated Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER: NMD 089416097

LOS ALAMOS NATL LAB
4M NW OF INT-120
LOS ALAMOS , NM 87544
JERRY BELLOWS AREA MGR

INSTALLATION ADDRESS:
4M NW OF INT-120
LOS ALAMOS , NM 87544

EPA Form 8700-12B (6-90)

for Filing Notification before completing this form. The information requested here is required by law (Section 3010 of the Resource Conservation and Recovery Act).

Notification of Regulated Waste Activity

EPA
MAR 2 1992
United States Environmental Protection Agency

Date Received (For Official Use Only)

DA. 3.19.92

I. Installation's EPA ID Number (Mark X in the appropriate box)

[X] A. First Notification *

[ ] B. Subsequent Notification (complete item C)

C. Installation's EPA ID Number: NM9861618107

II. Name of Installation (Include company and specific site name)

LOS ALAMOS NATIONAL LABORATORY

III. Location of Installation (Physical address not P.O. Box or Route Number)

Street: 4 MILES NW OF INTERSECTION

Street (continued): NEW MEXICO 126 & 4 ON 126

City or Town: | State: | ZIP Code:

County Code: 0218 | County Name: LOS ALAMOS

IV. Installation Mailing Address (See instructions)

Street or P.O. Box: LOS ALAMOS AREA OFFICE

City or Town: LOS ALAMOS | State: NM | ZIP Code: 87544

V. Installation Contact (Person to be contacted regarding waste activities at site)

Name (last): BELLOWS | (first): JERRY

Job Title: AREA MANAGER | Phone Number (area code and number): 505-667-5105

VI. Installation Contact Address (See instructions)

A. Contact Address: Location [ ] Mailing [X]

B. Street or P.O. Box:

City or Town: | State: | ZIP Code:

VII. Ownership (See instructions)

A. Name of Installation's Legal Owner: U.S. DEPARTMENT OF ENERGY

Street, P.O. Box, or Route Number: LOS ALAMOS AREA OFFICE

City or Town: LOS ALAMOS | State: NM | ZIP Code: 87544

Phone Number (area code and number): 505-667-5105

B. Land Type: F

C. Owner Type: F

D. Change of Owner Indicator: Yes [ ] No [ ]

EPA Form 8700-12 (01-90) Previous edition is obsolete

* The Regulated Waste Activity of L
originally submitted in DOE's notification of LANL's Regulated Waste Ac
however, it has recently been determined that it needs a

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes. Refer to instructions.)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (220 - 2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs.)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [X] a. For own waste only
   - [ ] b. For commercial purposes

   Mode of Transportation
   - [ ] 1. Air
   - [ ] 2. Rail
   - [ ] 3. Highway
   - [ ] 4. Water
   - [ ] 5. Other - specify
3. [ ] Treater Storer Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Burner - indicate device(s) - Type of Combustion Device
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Fuel Activities

1. Off-Specification Used Oil Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketer
   - [ ] c. Burner - indicate device(s) - Type of Combustion Device
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
2. [ ] Specification Used Oil Fuel Marketer (or On-site Burner) Who First Claims the Oil Meets the Specification

IX. Description of Regulated Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. Mark X in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. EP Toxic (D000)	(List specific EPA hazardous waste number(s) for the EP Toxic contaminant(s))		
XX			XX	D018		

B. Listed Hazardous Wastes. (See 40 CFR 261.31 - 33. See instructions if you need to list more than 12 waste codes.)

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. (State or other wastes requiring an ID number. See instructions.)

1	2	3	4	5	6

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed
[illegible]	Deputy Area Manager	2/7/92

XI. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (See Section III of the booklet for addresses.)

APPENDIX N

WASTE ANALYSIS PLAN FROM THE PERMIT

WASTE ANALYSIS PLAN

AND

WASTE SEGREGATION PROCEDURES

PERMIT ATTACHMENT A

NM0890010515-1

ATTACHMENT A
WASTE ANALYSIS PLAN

A.1 Hazardous waste generated by Laboratory activities can be considered as three general types: (1) wastes from processing operations, (2) wastes from research and development (R&D) activities, and (3) high explosive (HE) waste. Each of these general types has unique characteristics. Processing wastes typically are significant volumes of material that contain a very limited number of contaminants. R & D wastes, however, are typically lesser volumes of a variety of laboratory reagents, chemicals, solvents and other general laboratory waste. The composition and concentration of contaminants in a given process waste is generally uniform unless modifications to the process are made. Conversely, the waste species from R & D activities continually vary depending on the activities of the rapidly changing R & D efforts at the Laboratory. HE wastes consist of a narrow assemblage of chemicals, the concentrations of which may vary. The chemical assemblage, however, remains fairly constant.

LANL has developed procedures for the identification and segregation of hazardous wastes. When a waste is identified as hazardous, it is diverted to the appropriate method of storage, treatment or disposal based on its characteristics as determined by the Waste Analysis Plan.

A.2 Types of Waste Generated at Los Alamos

Presented below is a description of the types of wastes generated, treated, and stored at the Laboratory and those disposed of at off-site permitted facilities. The wastes are divided according to process or facility activities which generate the wastes.

A.2.1 Wastes from Basic and Applied Chemistry R & D Programs

Primary Laboratory sites for basic and applied chemistry R & D include the Chemistry and Metallurgy Research Building (TA-3-29), Radiochemistry Laboratory (TA-48), Sigma Building (TA-3-66), and the Health Research Laboratory (TA-43). Typical nonradioactive chemical wastes consist of large quantities of partly empty small containers of laboratory reagents, solvents, test samples, and other laboratory wastes. Up to several hundred waste types consisting of relatively small quantities of different acids, bases, organics, inorganics, reactive metals and other chemicals require disposal. These R & D wastes represent nearly all of the waste species included in Permit Attachment G.

A.2.2 Surface Finishing Process Wastes

The Electrochemistry Section of the MST-7 Materials Technology: Polymers and Coatings Group, located at TA-3-66, generates plating solutions containing heavy metals. Some of the wastes also contain cyanides. These are coded as toxic and reactive wastes D007, D008, D011, F007, and F009. The Print Circuit Board Shop of the MEC-10 Electronic Manufacturing and Technician Resources Group, located at TA-3-40, generates primarily acid/base wastes heavily contaminated with copper. They also generate plating solutions contaminated with lead and mercury. These wastes are coded as D002, D008, and D009, respectively. The Fabrication Section of the M-7 Detonation Systems Group, located at TA-22-91, generates a copper contaminated ferric chloride etching waste that is corrosive. It is coded D002.

A.2.3 Isotope Separation Wastes

The Isotope and Structural Chemistry Group, INC-4, generates 7N nitric and 14N sulfuric acid wastes that are hazardous because of their corrosive characteristics (D002). Based on knowledge of the waste generating processes, it has been determined that these wastes do not contain heavy metals.

A.2.4 Shops Department Wastes

The Main Shops Department, Building TA-3-39, houses most of the machine shop capabilities at the Laboratory. Waste materials from machining operations are segregated by metal when generated. (For example, there are containers for aluminum chips and turnings.) Some machining operations generate waste lithium metal and lithium hydride, both of which are hazardous because of their reactivity (D003). These materials, when generated, are known and are not commingled with other metal wastes. The Main Shops Department also generates waste nonhalogenated solvents (F003) and halogenated degreasers (F001) and solvents (F002).

A.2.5 Explosives Wastes

High explosives (HE) waste is generated by the Dynamics Testing (M) and Design Engineering (WX) Divisions in the course of processing and testing various HE materials. Processing includes pressing, machining, and casting HE. Waste occurs as discrete pieces of HE, as well as chips, machine cuttings, and powder. Solid HE may include off-specification or old explosives, as well as scrap pieces of HE from processing operations. The chips, cuttings, and powder are usually in the form of waterborne suspensions, collected in specially designed accumulating/settling sump tanks. Spent carbon (K045) from the TA-16 wastewater treatment unit is generated approximately twice a year. Wastes also consist of materials contaminated with HE; these may include paper, oil, solvents, wood, machine tools, fixtures, etc. HE-contaminated equipment, tools, and other large items are considered reactive, D003. HE-contaminated oil may also contain listed solvents, F001, F002, F003, and/or F005, as well as exhibit the characteristic of EP-toxicity for barium, D005. Chemically, the predominant wastes consist of HMX (high melting explosives), RDX (cyclonite), TNT (2,4,6 trinitrotoluene), PETN (pentaerythriotol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine and various plastic binders. Nearly all the HE waste substances are ignitable (D001) or reactive (D003) and barium nitrate is EP toxic (D005). Residues from HE waste are generated by flashing or burning HE waste at TA-16. These residues are typically present in the uppermost layer of sand that covers the burn pad. The sand from the two pads used to burn pieces of explosives is considered hazardous because of its barium content (D005).

A.2.6 Maintenance Activity Wastes

The Laboratory's Engineering Division and support maintenance contractor, Pan Am, generate a variety of wastes in the course of performing maintenance work. Hazardous wastes range from residual pesticides and herbicides (D001 and D016) to paints/thinners (D001, D008, and F003). Classification of these wastes can generally be performed by process knowledge and the use of Material Safety Data Sheets (MSDS's).

A.2.7 Chemically Contaminated Equipment

In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated may be considered hazardous waste. Empty process tanks are typical contaminated items. Empty drums and containers meet the requirements of HWMR-6 Part 2, Section 261.7 and are therefore not considered hazardous waste. Generation of this type of hazardous waste occurs throughout the Laboratory facilities and produces a wide variety of waste types.

A.2.8 Waste Treatment Residues

Treatment operations at the Laboratory generate solid hazardous waste. These residues include the barium contaminated sand from the explosives burning operation, ash from the incinerator, and sludge from the chemical treatment operations. The classification and volume of this waste varies with the waste that was treated.

A.3 Waste Analysis and Handling Procedures for Storage

This section specifies the procedures for the identification and handling of hazardous waste for storage at the Laboratory. The decision process is summarized in Table A-1.

A.3.1 Waste Identification

When chemical substances are declared to be in excess, the originating group completes a Chemical Waste Disposal Request (Form 10-3A Part A, Figure A-1) and sends the form to the Waste Management Group (HSE-7). The request lists the chemical waste the generating group needs to dispose of, the quantity and physical form of the wastes, and other pertinent information such as the condition of the containers. Material Safety Data Sheets (MSDS's) and existing analytical data may also be available and attached.

Using Part B of the Request Form (Form 10-3A Part B, Figure A-1), HSE-7 staff can assign a Reactivity Group Number (RGN) to each container or bottle. The RGN is found from Figure A-2 (excerpted from EPA-600/2-80-076). The referenced EPA document, "A Method for Determining the Compatibility of Hazardous waste," serves as the basis for the Laboratory procedure. For additional information, the user is referred to the EPA document cited. Additional information assigned during this review includes EPA codes and transportation information. The completed request form, container label, and MSDS/analytical data serve as the waste analysis record for the waste to be stored per the following segregation schemes.

A.3.2 Waste Segregation

To prevent adverse interactions of incompatible chemical wastes and to facilitate recycling or treatment of wastes, chemical wastes will be segregated into the following general categories:

- Organics, including solvent wastes such as acetone, benzene, and toluene,
- Corrosive acidic wastes, including organic and mineral acids,
- Corrosive caustic wastes,
- Oxidizers, such as perchloric or chromic acid, and nonacidic oxidizers, such as permanganates and chlorates,
- Reactive metals and compounds, such as sodium, lithium hydride, and phosphorous trichloride,
- Nonreactive metals, salts, and neutral compounds, such as lead and barium salts, and cyanide or sulfide compounds (in <5 gal. quantities only).

Utilizing the RGN assigned to the container and Table A-2, an area for storage of the waste is assigned. The organics and oxidizers have subcategories of segregation that will be followed for packaging/compositing of wastes to ensure that potential incompatibles are not combined together.

A.4 Waste Analysis and Handling Procedures for Treatment and Disposal

The analysis and handling procedures for waste requiring treatment and/or disposal follows. The decision process is summarized in Table A-1.

Several terms used throughout this section require further explanation.

- LDR is land disposal restricted. When used in this section it refers to all waste currently regulated under 40 CFR 268.

- EP Toxic metals means those eight metals regulated under the EP Toxic characteristic.

- KOP refers to knowledge of process. In the case of original containers of materials, the information from the Chemical Disposal Request Form, as described earlier, is the KOP documentation. All other waste is documented by previous analyses or information provided by the generator.

- Labpack waste refers to original containers of hazardous materials no greater than 5 gallons in size.

- Coliwasa sampler also includes the use of coliwasa type sampling apparatus.

A.4.1 Organic Waste

Organic waste is split into four processing categories: uncomposited labpack waste, drummed material, composited labpack waste, and composited drummed waste. The following discussions treat each as a unique analysis entity.

A.4.1.1 Uncomposited labpack waste

These wastes are those, that due to their toxicity or their physical (solid) state, will not be composited but will be packaged in overpack containers with absorbent. The entire container is then incinerated. The Laboratory's incinerator cannot generally receive such a package, therefore, most of this waste is and will be shipped offsite. The packing list of bottles and cans in the overpack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.1.2 Drummed waste

There are very few ongoing operations at the Laboratory that generate an organic process waste. As a result, each drum of this waste is virtually a unique entity. The exception would be those cases where we know more than one drum of waste came from the same place, e.g. 400 gallons of oil drained from the same machine reservoir. The drums are all sampled using a coliwasa sampler if liquid or a core sampler if solid. Since this waste is destined for incineration, the following parameters are tested for: pH, ash content, viscosity, heat value, EP toxic metals, total organic halogen, total organic chlorine, sulfur,and chemical composition. This latter will identify approximately ninety-five percent of the substances that are present in the waste. Availability of documented KOP will determine if the organic trace analyses need to be performed. Documentation or analyses will identify the presence/absence of organic LDR compounds, trichlorofluoromethane, bromoform, dichlorodifluoromethane and ethylene dibromide. These latter four compounds are only necessary if the waste is to be incinerated onsite. The test methods are listed in Table A-3.

Throughout the year, containers of organic waste mixtures, smaller than a 55-gallon drum, are generated in the many laboratories at LANL. The generator maintains a list of the substances placed in these containers. This allows HSE-7 personnel to confirm compatibility of these wastes before they are composited into 55-gallon or larger containers. When the composite receptacle is full, the waste is analyzed as described above for any large container of organic waste.

Solid organic waste is sampled using a core sampler or a grab sampler if the material can not be penetrated by a core sampler. Analytical parameters, frequencies, and test methods would be the same as those outlined above for any large container of waste. Debris that is organically contaminated is analyzed per Section A.4.8.

A.4.1.3 Composited labpack waste

Composited labpack wastes are those bottles and cans of liquid waste that have been combined for the purpose of incineration. Compatability is ensured by following the procedures in Section A.3.1 and A.3.2. Since all the chemicals in a composite drum are known entities, the list of chemicals and their quantity serves as the primary analysis record. This listing is sufficient to allow the identification of any and all LDR waste. When the drum is full, it is sampled with a coliwasa sampler. Since chemical composition is known, only the physical parameters need to be calculated or analyzed for. If any physical characteristics can not be calculated due to the variety of substances placed in the drum, the sample is analyzed for that parameter. Therefore, analysis or calculation would provide pH, flashpoint, ash content, viscosity, heat value, total organic halogens, and total organic chlorine. The methods used for these analyses are specified in Table A-3. This will be done for each container of composited waste since each container is unique. Calculated parameters for waste to be incinerated onsite will be verified according to the schedule in Permit Module V, C.2.

A.4.1.4 Composited drummed waste

Composited drummed waste are those drums of waste for which the analytical data described in Section A.4.1.3 already exists and are combined in either the TA-54, Area L storage tanks or the liquid feed tanks at the incinerator for the purposes of offsite shipment or onsite incineration. Compatability is ensured by following the procedures in Sections A.3.1 and A.3.2. Chemical and physical parameters can be calculated from the existing data. If at any time calculations of physical parameters, such as heat value, is inadequate, those identified analyses will be redone. The calculations will be performed on each unique tank of waste. Calculated parameters for waste to be incinerated onsite will be verified according to the schedule in Permit Module V, C.2.

A.4.2 Corrosive acid waste

Corrosive acid waste is handled in two primary processing categories: labpack and process waste. The following discussions treat each as a unique analysis entity.

A.4.2.1 Labpack waste

This wastestream consists of original containers of acid waste. The labels on the containers continue to serve as the primary analytical record. Those acids that can be reused by another component of the Laboratory are redistributed for use as a raw material. Those that can not be reused are treated by elementary neutralization. This occurs primarily at the TA-50 Liquid Waste Treatment Plant but could occur throughout LANL in individual laboratories.

A.4.2.2 Process waste

There are three categories of process waste: nonroutine nonmetallic waste, nonroutine metallic waste, and routine waste. Each is discussed separately. Documented KOP will negate the concern for the presence of LDR organic compounds. Therefore, references to LDR in this section refers only to inorganic constituents.

Nonroutine nonmetallic waste is periodically generated throughout the Laboratory. This waste will be analyzed for pH, the EP toxic metals, nickel and thallium. This allows confirmation of the presence/absence of LDR material. The test methods employed are listed in Table A-3. Sampling is performed using a coliwasa sampler. Because this is defined as a nonroutine wastestream, every unique drum or batch will be sampled.

Nonroutine metallic waste is generated primarily by the Laboratory's electroplating operations. At the time of generation, these wastes are identified by the generator as containing heavy metals. The

generator may also provide the approximate metal concentration, if the information is available. This waste will be analyzed for pH, EP toxic metals, nickel and thallium. This allows confirmation of the presence of LDR material and establishes the parameters that are analyzed for at the completion of treatment. The test methods employed are listed in Table A-3. Sampling is performed using a coliwasa sampler. Because this is defined as a nonroutine wastestream, every unique drum or batch will be sampled.

There are five routinely generated acidic wastestreams at Los Alamos: nonmetallic nitric acid, nonmetallic sulfuric acid, nonmetallic acid stream, metallic ferric chloride, and metallic ammonium persulfate. Each of these streams has a confirmed basis for RCRA regulation which establishes the parameters of concern for treatment. All three of the nonmetallic acid streams are routinely analyzed for pH. The metallic ferric chloride is analyzed for pH, chromium, silver, lead, and copper. The metallic ammonium persulfate is analyzed for pH, lead, and mercury. Annually, all of these streams are all reevaluated for pH, all EP toxic metals, nickel, and thallium. This allows confirmation that the waste has not changed in composition and what LDR components are present. Sampling is conducted with a coliwasa sampler. All test methods are listed in Table A-3.

If a nonroutine wastestream becomes a routine waste or a new wastestream is identified, it will follow the pattern established in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.3 Corrosive base waste

Corrosive basic waste is split into two processing categories: labpack waste and process waste. The following discussions treat each as a unique analysis entity.

A.4.3.1 Labpack waste

This wastestream consists of original containers of basic waste. The labels on the containers serve as the primary analytical record. Those bases that can be reused by another component of the Laboratory are redistributed for use as a raw material. Those that can not be reused are generally treated by elementary neutralization. This occurs primarily at the TA-50 Liquid Waste Treatment Plant but could occur throughout LANL in individual laboratories.

A.4.3.2 Process waste

There are three categories of process waste: nonroutine nonmetallic waste, nonroutine metallic waste, and routine waste. Each is discussed separately. Documented KOP will negate the concern for organic LDR compounds. Therefore, references to LDR in this section refers only to inorganic constituents.

Nonroutine nonmetallic waste is periodically generated throughout the Laboratory. This waste will be analyzed for pH, the EP toxic metals, nickel and thallium. This allows confirmation of the presence of LDR material. The test methods employed are listed in Table A-3. Sampling is performed using a coliwasa sampler. Because this is defined as a nonroutine wastestream, every unique drum or batch will be sampled.

Nonroutine metallic waste is generated primarily by the Laboratory's electroplating operations. At the time of generation, these wastes are identified by the generator as containing heavy metals. This waste will be analyzed for pH, EP toxic metals, nickel, thallium, and cyanide. This procedure allows confirmation of the presence of LDR material and establishes the parameters that are analyzed for at the completion of treatment. The test methods employed are listed in Table A-3. Sampling is performed using a coliwasa sampler. Because this is defined as a nonroutine wastestream, every unique drum or batch will be sampled.

There are three routinely generated corrosive base process wastestreams at Los Alamos: ammonium etchant, "Replenisher" solution, and "Cuposit". The Replenisher and Cuposit are tradenames. The ammonium etchant is analyzed for pH, copper, and lead. The Replenisher is analyzed for pH and lead. The Cuposit is analyzed for pH and mercury. Annually, these wastestreams are all reevaluated for pH, all EP toxic metals, nickel, and thallium. This allows confirmation of the presence of LDR substances and that the waste has not changed in composition. Sampling is performed with a coliwasa sampler. Test methods used are listed in Table A-3.

If a nonroutine wastestream becomes a routine waste or a new wastestream is identified, it will follow the pattern established in the above paragraphs. Routine testing parameters will be established and reverified on an annual basis.

A.4.4 Oxidizer waste

Oxidizer waste is split into two processing categories: acid waste and uncomposited labpack waste. Acid oxidizer waste is handled per Section A.4.2.

Oxidizer labpack waste is not composited due to the high fire risk of doing so. They are packaged in overpack containers with absorbent. The entire container is then incinerated. The Laboratory's incinerator cannot generally receive such a package; therefore, most of this waste is and will be shipped offsite. The packing list of bottles and cans in the overpack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.5 Reactive wastes

Reactive waste has only two processing categories: uncomposited labpack waste and routine process waste. (Explosives waste is treated as a separate category of waste and is discussed in Section A.4.7.) The following discussions treat each as a unique analysis entity.

A.4.5.1 Uncomposited labpack waste

Reactive labpack wastes are not composited due to the high fire and explosion risk of doing so. They are packaged in overpack containers with absorbent. The entire container is then incinerated. The Laboratory's incinerator cannot generally receive such a package; therefore, most of this waste is and will be shipped offsite. The packing list of bottles and cans in the overpack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.5.2 Process waste

The only ongoing operation at the Laboratory that generates a reactive process waste is the machining operations. Periodically, the machinists are required to work with lithium hydride and to a lesser degree lithium metal. This results in drums of lithium hydride dust and lithium chips, respectively. Process knowledge and the isolation of these operations when they do occur serves as the analytical record for this wastestream.

If large quantities of reactive waste should be produced elsewhere in the Laboratory, documented process knowledge would also be used as the analytical record.

A.4.6 Inorganic wastes

Inorganic waste is split into two processing categories: uncomposited labpack waste and process waste. The following discussions treat each as a unique analysis entity.

A.4.6.1 Uncomposited labpack waste

These wastes are generally solid material and therefore do not lend themselves to compositing. They will be packaged in overpack containers with absorbent. The entire container is then usually destined for offsite land disposal. The packing list of bottles and cans in the overpack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.6.2 Process waste

Four categories of inorganic process waste exist: liquid waste, primary metal waste, nonroutine solid waste, and routine solid waste. Inorganic liquid waste is generally acidic or basic and is thus treated under the scenarios described in Sections A.4.2 and A.4.3.

Process knowledge is considered adequate for the further treatment/disposal/recycle of wastestreams such as lead and mercury. In both cases the metal is available as a hazardous waste but that knowledge alone suffices to allow for proper storage, treatment, and disposal.

Nonroutine solid waste is periodically generated throughout the Laboratory. This waste will be analyzed for EP toxic metals, nickel, and thallium. This allows confirmation of the presence of inorganic LDR material. The absence of organic LDR will be established by either documented KOP or analyses. The test methods employed are listed in Table A-3. Sampling is performed using a core sampler if possible or a grab sampler if it is not possible to penetrate the waste with a core sampler. Because this is defined as a nonroutine wastestream, every unique drum or batch will be sampled.

There is one routinely generated inorganic solid waste at the Laboratory. It is the barium contaminated sand from the explosives burning operation. Barium is the only established parameter of concern for treatment and therefore is the only parameter routinely analyzed for. Annually, a sample will be analyzed for the other listed metals. Sampling is conducted with a core sampler. Test methods are listed in Table A-3.

If a nonroutine wastestream becomes a routine waste or a new wastestream is identified, it will follow the pattern established in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.7 Explosives Waste

Due to the limited number of areas producing explosives waste and the safety problems associated with analyzing explosives waste, process knowledge of the waste sent for treatment by open burning or open detonation is the waste analysis record. Table A-4 lists the various explosives used at the Laboratory. Open burning/open detonation is conducted under interim status per HWMR-5 Part VI, Section 265.382.

A.4.8 Contaminated Solid Waste

The waste covered by this category is generally classified as debris. Contaminated soil would be addressed under the respective chemical category as outlined in the above sections. The contaminant of concern is known for all waste in this category but the substrate can not be readily analyzed. Therefore, until the item in question is cleaned it is treated as a hazardous waste. The types of waste covered by this provision would be tanks and rags.

A.4.9 Waste Treatment Residuals

Waste treatment residuals are the liquid and solid wastestreams resulting from the treatment of a hazardous waste. There are currently four types of residual streams: the treated liquid and precipitate

from chemical treatment operations at either TA-50 or -54 and the scrubber water and ash from the incinerator. Barium contaminated sand is also a treatment residue but because it receives further chemical treatment it is discussed in Section A.4.6.2.

The liquid from chemical treatment operations is tested to insure that (a) treatment is complete and (b) remaining chemical concentrations are within the discharge guidelines established under the NPDES permit for the TA-50 radioactive treatment system. Sections A.4.2 and A.4.3 discussed the procedure used to establish those parameters that would be tested for at the conclusion of treatment. If documented KOP can not exclude the presence of F-listed solvents, then each batch of treatment supernate will be tested for the compounds listed in 261.3.(a).2.iv.A and B. Samples from the Batch Waste Treatment Unit are taken from a sampling loop. Samples from the treatment tanks at TA-54 will be taken by either coliwasa or grab sample. Test methods used are provided in Table A-3. The scrubber water from the incinerator will always be within the discharge guidelines established under the NPDES permit for the TA-50 radioactive treatment system thereby negating chemical analysis. The scrubber will be analyzed annually to verify this.

Solids from the chemical treatment operations and the ash from the incinerator are tested for the EP toxic metals that were established before treatment to be present. As necessary, these wastes are then cemented or otherwise solidified. The solidified matrix may again be sampled by removing a sample from the mixture before curing. After curing, it is tested for the same EP toxic metals. Assuming there are no listed materials present, this would allow a determination to be made as to whether the waste remained a hazardous waste or not. This procedure would be followed for each batch of solids requiring processing.

A.4.10 Unknown Material

Occasionally, chemicals of an unknown nature require disposal. These wastes are handled on a case-by-case basis. The individual waste may be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. This information is used to restrict the choices of initial waste analysis to a small population of chemicals.

For purposes of managing unknown wastes a small volume is defined at LANL as less than one liquid gallon (or approximately four liters). The rationale for the small volume designation is that this is the minimum quantity of sample which is needed to test if the waste is hazardous. At and below this limit the sample is actually consumed in the analytical procedure. Small volumes of unknown wastes are analyzed for pH, flashpoint, and reactivity. This allows the material to be categorized for further handling.

Volumes greater than one gallon or four liters of a single unknown waste require a more detailed analytical scheme. These wastes are tested for reactivity, corrosivity, ignitability, EP toxic metals, and any other analyses indicated by the initial data gathered on the material. Sufficient detail must be reported to allow the assignment of the proper EPA Hazardous Waste Number to the waste. All test methods used are outlined in Table A-3.

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

CHEMICAL WASTE DISPOSAL REQUEST
RETURN FORM TO WASTE MANAGEMENT, MS J593
Telephone Number 667-7579

Requested By (Name A)	Telephone Number	Group		Date Sent		Date Tracking Number
Waste Generator (Name B)	Telephone Number	Tech Area	Building	Area/Wing	Room	Date Picked Up/Initials

Line Number	Number of Containers	Volume of Each Container	CHEMICAL NAME[1]	HAZARD[2]
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

I hereby certify that the information supplied above is correct.

Generator Signature	Date

[1]CHEMICAL NAME - Name of single compound, names of all compounds in mixture, trade-name and/or number of commercial product. For trade-name products, attach the manufacturer's MSDS.

[2]For HAZARD insert the appropriate letter: C - corrosive, I - ignitable, R - radioactive, T - toxic, X - reactive, S - solid, L - liquid, G - gas.

HB Form Number 10 3A Part A (4/88)

Requested By (Name A)	Telephone Number	Group		Date Sent		Date Tracking Number
Waste Generator (Name B)	Telephone Number	Tech Area	Building	Area/Wing	Room	

Line Number	RGM	Code	DOT Proper Shipping Name	DOT Hazard Class	UN/NA No.	HSE-7 Code	EPA Codes	Handling Code	Weight	Form Number
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

I hereby certify that the information supplied above is correct according to the applicable regulations.

Reviewer Signature	Date

HS Form Number 10-3A Part B (4/88)

Figure A-1 (cont.)

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REACTIVITY CODE NO.	REACTIVITY CODE NAME	1	2	3	4	5	6	7	8	9	10	11	12	13
1	[illegible]													
2	[illegible]													
3	[illegible]													
4	[illegible]													
5	[illegible]													
6	[illegible]													
7	[illegible]													
8	[illegible]													
9	[illegible]													
10	[illegible]													
11	[illegible]													
12	[illegible]													
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27	[illegible]													
28	[illegible]													
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30	[illegible]													
31	[illegible]													
32	[illegible]													
33	[illegible]													
34	[illegible]													
100	[illegible]													
102	[illegible]													
103	[illegible]													
104	[illegible]													
105	[illegible]													
106	[illegible]													
107	[illegible]	← EXTREMELY REACTIVE												
		1	2	3	4	5	6	7	8	9	10	11	12	13

Figure A-2 Hazardous Waste Compatability Chart

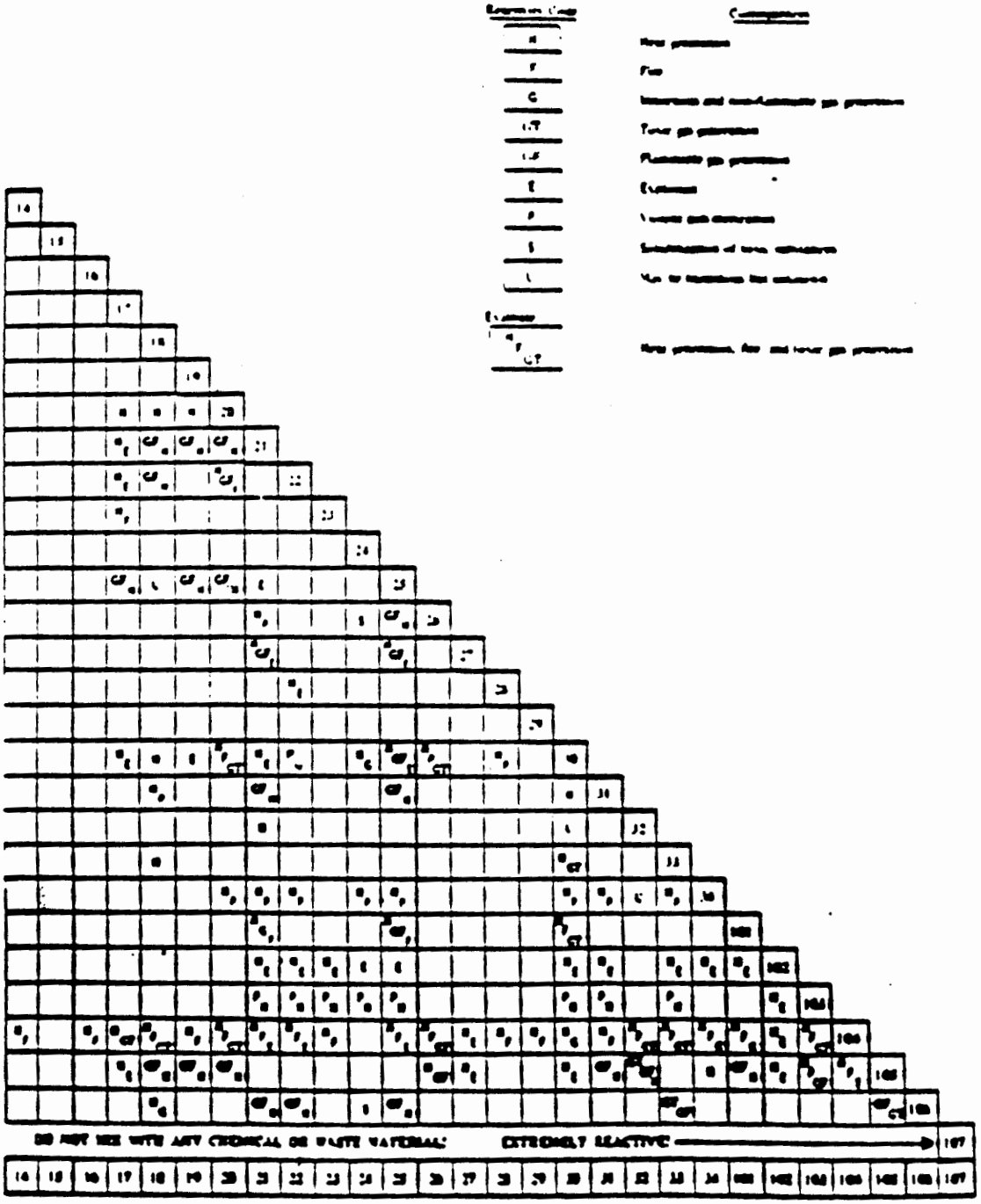

Figure A-2 (cont.)

TABLE A-1
WASTESTREAMS, ANALYTICAL PARAMETERS, AND RATIONALE

Wastestream	Analytical Parameters	Rationale Reference
Organic Waste		
-Uncomposited labpack	Packing list	A.4.1.1
-Drummed	pH, EP toxic metals, TOX, TOC, ash content, viscosity, heat value, sulfur, chemical composition	A.4.1.2
-Composited labpacks and drums	List of chemicals, pH, flashpoint, ash content, viscosity, heat value, TOX, TOC	A.4.1.3, A.4.1.4
Corrosive Acid		
-Labpack	pH, as necessary	A.4.2.1
-Nonroutine, nonmetallic process waste	pH, EP toxic metals, nickel, thallium	A.4.2.2
-Nonroutine metallic process waste	pH, EP toxic metals, nickel, thallium	A.4.2.2
-Routine nonmetallic process waste	pH	A.4.2.2
-Ferric chloride	pH, chromium, silver, lead, copper	A.4.2.2
-Ammonium Persulfate	pH, lead, mercury	A.4.2.2
Corrosive Base		
-Labpack	pH, as necessary	A.4.3.1
-Nonroutine nonmetallic process waste	pH, EP toxic metals, nickel, thallium	A.4.3.2

TABLE A-1 (CONT)
WASTESTREAMS, ANALYTICAL PARAMETERS, AND RATIONALE

Wastestream	Analytical Parameters	Rationale Reference
-Nonroutine metallic process waste	pH, EP toxic metals, nickel, thallium	A.4.3.2
-Ammonium etchant	pH, copper, lead	A.4.3.2
-"Replenisher"	pH, lead	A.4.3.2
-"Cuposit"	pH, mercury	A.4.3.2
Oxidizer -Labpacks	Packing list	A.4.4
Reactive -Labpacks	Packing list	A.4.5.1
-Process Waste	Knowledge of process	A.4.5.2
Inorganic -Labpack	Packing list	A.4.6.1
-Primary Metals	Knowledge of process	A.4.6.2
-Nonroutine Solid	EP toxic metals, nickel, thallium	A.4.6.2
-Barium Sand	Barium	A.4.6.2
Explosives	Knowledge of process	A.4.7
Contaminated Debris	Knowledge of process	A.4.8
Waste Treatment Residues -Chemical Treatment Liquids/Solids	Previously established parameters	A.4.9

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TABLE A-1 (CONT)
WASTESTREAMS, ANALYTICAL PARAMETERS, AND RATIONALE

Wastestream	Analytical Parameters	Rationale Reference
-Incinerator Ash	Previously established parameters	A.4.9
-Incinerator Scrubber Water	Knowledge of process	A.4.9
Unknowns		
-Small Volume (<1 gal.)	pH, flashpoint, reactivity	A.4.10
-Large Volume	All parameters necessary to identify waste completely	A.4.10

TABLE A-2

Packaging Segregation Scheme

STORAGE CATEGORY	PACKAGING CATEGORY	RGN
Organics (1)	A	4, 5, 9, 13, 14, 16, 17, 19, 26, 29, 31, 32, 101
	B	6, 7, 8, 27, 28
	C	12, 20
	D	34, 18
Oxidizers (2)	A	2
	B	104
	C	30
Acids (3)	N/A	1, 3
Bases (4)	N/A	10, 11, 33, 105
Reactives (5)	N/A	21, 22, 25, 102, 107 - ALL STORED INDIVIDUALLY - NO COMBINING ALLOWED
Nonreactive Metals (6)	N/A	11, 15, 23, 24, 33 - 11 and 33 would only be allowed in labpack, solid quantities -
Others		The following must be evaluated on a case-by-case basis to determine which of the above categories is appropriate: 25, 102, 103.

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference[1]
Ignitability	Pensky-Martens Closed-Cup Method	(L) SW1010 (L) ASTM D93-80
Reactivity	Numerous methods and tests[2]	(L,S) SW Section 2.1.3
pH	Electrometric	(L) SW9040
EP Toxicity	EP Toxicity Extraction[3] and Graphite Furnace AA Spectroscopy	(L,S) SW1310
Arsenic		(L) SW7060
Barium		(L) SW7081, SW7080
Cadmium		(L) SW7131, SW7130
Chromium		(L) SW7191, SW7190
Lead		(L) SW7421, SW7420
Selenium		(L) SW7740
Silver		(L) SW7761, SW7760
Mercury	EP Toxicity Extraction[3] and Manual Cold Vapor Technique	(L,S) SW1310
Organochlorine Pesticides	EP Toxicity Extraction[3] and Gas Chromatography	(L) SW8080
Chlorinated Herbicides		(L) SW8150
Toxicity Characteristic Leachng Procedure (TCLP)		(L,S) 40 CFR Part 268, Appendix I
Chemical Composition	95% organic composition by GC/FID	(L) SW 8100
Trace Organic Analysis	Any of the following:	

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TABLE A-3 (CONT)
WASTE ANALYSIS PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference[1]
	Volatile organic compounds-GC/MS	(L) SW8240
	Semivolatile organic compounds-GC/MS	
	-Packed column	(L) SW8250
	-Capillary column	(L) SW8270
Heat Value	Bomb calorimeter	(L) A006, ASTM D240
Organic Chlorine	Halide titration of combustion residue	(L,S) A004, ASTM D2361
Ash Content	Residue after combustion in muffle furnace	(L) A001, ASTM D482 (S) A001, ASTM D3174
Cyanide-Free and Total	Distillation and colorimetric (UV)	(L) SW9012
Chrome	Colorimetric method for hexavalent chromium	(L) SW7196
Sulfide	Colorimetric titration	(L) SW9030
Total Metals	Digestion and inductively coupled plasma method	SW3020
Arsenic		(L) SW6010
Barium		(L) SW6010
Beryllium		(L) SW6010
Cadmium		(L) SW6010
Chromium		(L) SW6010
Lead		(L) SW6010
Nickel		(L) SW6010
Selenium		(L) SW6010
Silver		(L) SW6010
Thallium		(L) SW6010
Zinc		(L) SW6010

TABLE A-3 (CONT)
WASTE ANALYSIS PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference (1)
Mercury	Manual Cold Vapor Technique	(L) SW7470
	(S) SW7471	
Free Liquids	Paint Filter Liquids Test	(S) SW9095

(1) "A" refers to Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, February 1984.
"ASTM" refers to American Society for Testing Material Standards.
"SW" refers to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, EPA, November 1986.
"L" refers to liquid waste.
"S" refers to solid waste.

(2) Methods for cyanide and sulfide gas generation are pending. SW-846 methods will be used when they become available. Methds recommended by the EPA will be used in the interim.

(3) If EP Toxicity and other analyses do not permit identification of an unknown chemical waste, digested metal samples (per SW3020) will be analyzed for the metals noted.

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TABLE A-4

ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS

NAME OR CODE	COMPOSITION
A1 ANFO[a]	Ammonium nitrate/fuel oil/aluminum power
AN	Ammonium nitrate
ANFO	Ammonium nitrate/fuel oil
Baratol	76 wt% Barium nitrate/24 wt% TNT
BDNPA	Bis(dinitropropyl) acetal
BDNPF	Bis(dinitropropyl) formal
Black powder	74 wt% Potassium nitrate/15.6 wt% charcoal/10.4 wt% sulfur
Boracitol	60 wt% Boric acid/40 wt% TNT
BTX	5,7-Dinitro-1-picrylbenzotriazole
Composition A-3	91 wt% RDX/9 wt% beeswax
Composition A-4	97 wt% RDX/3 wt% beeswax
Composition A-5	98.5 wt% RDX/1.5 wt% beeswax
Composition B and B-3	60 wt% RDX/40 wt% TNT
Composition C-3	88 wt% RDX/12 wt% wax
Composition C-4	91 wt% RDX/2.1 wt% polyisobutylene/1.6 wt% motor oil/5.3 wt% de(2-ethylhexyl) sebacate
Cyclotol, 75/25	75 wt% RDX/25 wt% TNT
Cyclotol, 70/30	70 wt% RDX/30 wt% TNT
DATB	Diaminotrinitrobenzene
DBA-1[a]	AN/$NaNO_3$/TNT/H_2O/thickener
Detasheet C	63 wt% PETN/8 wt% NC/29 wt% elastomeric binder
Detasheet D	75 wt% PETN/25 wt% elastomeric binder
	NOTE: Although this material may be red in color, it is an explosive and not an inert material.
DINGU	Dinitroglycoluril
DNPA	2,2-Dinitropropyl acrylate polymer
DNT	Dinitrotoluene
EDC-8[b]	76 wt% PETN/24 wt% Silicone rubber, MS 2420
EDC-28[c]	94 wt% RDX/6 wt% FPC 461
EDC-32[d]	85 wt% HMX/15 wt% Viton A
EDC-37[e]	91 wt% HMX/1 wt% nitrocellulose/8 wt% K-10 liquid
*EDC-38[f]	94.5 wt% HMX/3.5 wt% K-10 Liquid/2 wt% Polyurethane
HBX-1	40 wt% RDX/38 wt% TNT/17 wt% Al/5 wt% Wax/0.5 wt% $CaCl_2$

TABLE A-4

ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(CONTINUED)

NAME OR CODE	COMPOSITION
High Energy Propellants[g]	Solid propellants generally used in missile systems
HMX	Cyclotetramethylenetetranitramine
HNS	Hexanitrostilbene
K-10[h]	65.3 wt% dinitroethylbenzene/34.7 wt% trinitroethylbenzene
LX-04	85 wt% HMX/15 wt% Viton A
LX-07	90 wt% HMX/10 wt% Viton A
LX-14	95.5 wt% HMX/4.5 wt% Estane 5702 F-1
Methane/oxygen[h]	Explosive mixtures of methane and oxygen gases
NC	Nitrocellulose, cellulose nitrate
Nitromethane	Nitromethane
NQ	Nitroguanidine
NTO	1,2,4-nitro-triazole-5-one
Octol	75 wt% HMX/25 wt% TNT
PBX-9001	90 wt% RDX/8.5 wt% polystyrene/1.5 wt% dioctyl phthalate
PBX-9007	90 wt% RDX/9.1 wt% polystyrene/0.5 wt% dioctyl phthalate/0.4 wt% resin
PBX-9010	90 wt% RDX/10 wt% Kel-F 3700 elastomer
PBX-9011	90 wt% HMX/10 wt% Estane 5703 F-1
PBX-9205	92 wt% RDX/6 wt% polystyrene/2 wt% dioctyl phthalate
PBX-9206	92 wt% HMX/8 wt% Kel-F 3700 elastomer
PBX-9401	94.2 wt% RDX/3.6 wt% polystyrene/2.2 wt% trioctyl phosphate
PBX-9404	94 wt% HMX/3 wt% nitrocellulose/3 wt% chloroethyl phosphate
PBX-9405	94 wt% RDX/3 wt% nitrocellulose/3 wt% chloroethyl phosphate
PBX-9407	94 wt% RDX/6 wt% Exon 461
PBX-9501	95 wt% HMX/2.5 wt% Estane/2.5 wt% BDNPA/F
PBX-9502	95 wt% TATB/5 wt% Kel-F 800
PBX-9503	80 wt% TATB Class 2)/15 wt% HMX (Class 2)/5 wt% Kel-F 800
PBXW-113	88 wt% HMX/12 wt% rubber/plasticizer binder
Pentolite	50 wt% PETN/50 wt% TNT

TABLE A-4

ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(CONTINUED)

NAME OR CODE	COMPOSITION
PETN	Pentaerythritol tetranitrate
Picric Acid	Du Pont 85 wt% pure
PYX	2,6-Bis(picrylamino)-3,5-dinitropyridine
RDX	Cyclonite, cyclotrimethylenetrinitramine
Smokeless Powder (Single Base)	Standard military grades. Single or multi-perforated grains of colloided nitrocellulose. Stabilizers, plasticizers, inorganic nitrates, and other modifying agents may also be present.
Smokeless Powder (Double Base)	Standard military grades. Single or multi-perforated grains of colloided nitrocellulose containing nitroglycerine or nitroglycol. Stabilizers, plasticizers, inorganic nitrates, and other modifying agents may also be present.
STRATABLAST C[a]	Slurry blasting explosive
TAGN[h]	Triaminoguanidine nitrate
TAL-1005E[a]	Slurry blasting explosive
TATB	Triaminotrinitrobenzene
Tetryl	2,4,6-Trinitrophenylmethylnitramine
TNS	Trinitrostilbene
TNT	Trinitrotoluene
TNT/NC	80 wt% TNT/20 wt% NC
Tritonal	80 wt% TNT/20 wt% aluminum powder
XTX-8003	80 wt% Recrystallized PETN/20 wt% Sylgard 182
XTX-8004	80 wt% RDX/20 wt% Sylgard 182

[a]For transportation only to and from M- and WX-Division Groups and storage by group WX-3.
[b]EDC-8 is the United Kingdom's version of XTX-8003.
[c]EDC-28 is the United Kingdom's version of PBX-9407.
[d]EDC-32 is the United Kingdom's version of LX-04.
[e]For shipping, storage, and experimental evaluation of quantities less than 5 g and for assembly of finished charges into test devices only.
[f]For shipping, storage, and analytical evaluation of molding powder and assembly of finished pieces into test devices.
[g]After approval by the Explosives Development Committee.
[h]For shipping, storage, and experimental evaluations on less than 5-g quantities.

A.5. Verification Analyses

A.5.1. Knowledge of Process

One in each one hundred Knowledge of Process (KOP) determinations based on a list compiled by the generator as wastes are accumulated in a compositing container will be verified by quantitative chemical analysis. Factory sealed containers and original containers redistributed for use within the facility will not be included in this analysis. Detection of hazardous constituents above one percent by volume, not recorded in the KOP documentation, or variations in concentration greater than

twenty five percent from the estimate $\frac{C_{meas} - C_{est}}{C_{est}} 100 \geq 25$

shall be cause for rejection of the KOP and shall require an investigation into the cause. A written record of the investigation shall be retained with the facility record. Any individual who twice fails to properly document KOP constituents shall be permanently prohibited from KOP certification. An entry to this effect shall be made in the facility record.

Lab packed chemicals in original containers which have been accpted by an off site disposal or treatment facility need not be verified unless rejected by the off site treatment facility.

A.5.2. Annual Verification

All routinely generated waste streams will be annually analyzed to verify they have not changed. Any information which indicates a change in the process which generates the waste and may affect the waste, shall cause the waste to be analyzed not later than the next time the waste is generated. All such analyses shall be recorded in the facility record.

A.5.3. Discharges to the Industrial Wastewater System

In those instances when knowledge of process cannot be used to document the absence of listed hazardous waste solvents in the effluent from the Batch Waste Treatment Unit (BWTU), the Permittee may use the exclusion described in HWMR-5, Part II, Section 261.3(a)(2)(iv). A weekly composite sample will be analyzed from the headworks of the radioactive liquid waste treatment plant at TA-50-1 for the constituents cited in HWMR-5, Part II, Section 261.3(a)(2)(iv)(A) and HWMR-5, Part II, Section 261.3(a)(1)(iv)(B). The average concentration of each category ((A) and (B)) will then be computed from the analytical results and the volume of flow at the headworks will be calculated. In an effort to ensure conservency, the lowest weekly volume and the highest weekly concentration of the composite samples from the most recent 3 week period will be used to compare with each batch's concentration from the BWTU.

A sample from the BWTU effluent will also be taken and analyzed for the same constituents referenced in HWMR-5, Part II, Section 261.3(a)(2)(iv). This sample will be taken from the known volume of effluent present in the BWTU prior to discharge. Effluent will then be temporarily stored in Tuff Tanks(@) while awaiting analytical results. The combination of the TA-50-1 average and the weekly average of the BWTU effluent samples will be evaluated to determine if the cited exclusion can be achieved.

In order to obtain the final concentration of solvents entering the headworks, the weight of solvents in each respective category ((HWMR-5, Part II, Section 261.3(a)(2)(iv)(A) and HWMR-5, Part II, Section 261.3(a)(2)(iv)(B)) for both the BWTU and the TA-50-1 plant will be totaled. The cumulative solvent weight will then be divided by the lowest weekly volume of liquid to be entered into the TA-50-1 plant. This value would then represent the resultant mixture's maximum concentration as it enters TA-50-1 (see equation below). No effluent from the BWTU will be discharged to the TA-50-1 plant if the conditions necessary for the exclusion cannot be satisfied.

The waste generator will document pursuant to Permit Attachment A that process knowledge of the individual waste streams indicates either the absence or presence of spent solvents. If process knowledge confirms the absence of such compounds, the wastes will be discharged without composite weekly samples being collected from the BWTU.

V = Volume (l)
C = concentration (mg/l)

$$C_{final} = \frac{[V_{BWTU} \times C_{BWTU} + C_{TA\text{-}50} \times V_{TA\text{-}50}]}{V_{BWTU} + V_{TA\text{-}50}}$$

APPENDIX O

MAY 17, 1993 MEMO - MANIFESTING WASTE AND INTERNAL MANIFEST

Menehune Marine Services, Ltd.

7004 Kopner Court, Lanham, MD 20706-4612

phone: 301-552-9774 fax: 301-552-3450

Quality and Compliance Assurance Services

May 17, 1993

MEMO

To: John Kelly, LANL, EM-7 ph:505-667-7879 fax: 505-665-3961

From: John Cece

Subj: LANL Use of the Uniform Hazardous Waste Manifest

The attached paper is intended to provide background, references and discussion of LANL use of the uniform hazardous waste manifest.

Please review the paper and call/fax me any comments, corrections, omissions, etc.

Given that MAT-2 and EM-7 agree on the contents and the policy, I'll recommend that the paper be archived in the LANL Packaging and Transportation Manual (PTMAM).

Thanks for your cooperation.

Annemarie,

This is a background document, written by a hired ~~cont~~ consultant, explaining the lab's position.

John.

LANL 'LANL34'

draft

LANL Use of the

Uniform Hazardous Waste Manifest

This paper addresses the use of the Uniform Hazardous Waste Manifest (UHWM) under the following conditions:

Case 1. when making intra-laboratory transfers of hazardous wastes from various tech areas to TA-54, wholly within the main site, for purposes of consolidation?

Case 2. when making shipments of hazardous wastes from Fenton Hill (TA-57) to TA-54 (the route for the shipment includes roadways not on government property; and the shipment is from a separate generator site)

BACKGROUND

For purposes of hazardous waste generation and registration, the LANL consists of two hazardous waste generation sites:

- the main site (42 sq. miles) EPA generator no. NM0890010515
- the Fenton Hill site (TA-57) EPA generator no. NMD986676807

The Fenton Hill site is located several miles from the main site. LANL collects 'hazardous waste' at various collection points at each of these sites.

Intra-laboratory transfer of waste from collection points at the main site are transferred by UCal employees using government furnished vehicles traversing roads wholly on government property to TA-54 for consolidation, i.e., the waste never leaves the "site."

All waste collected at Fenton Hill must be transported several miles to TA-54 for consolidation. The vehicle carrying the waste must traverse roads that are not always on government property. The waste goes to TA-54, on the main site, for consolidation. Accordingly, it could be said that the waste collected at Fenton Hill is transported "...for offsite treatment, storage, or disposal..."

REFERENCES

Subpart B - The Manifest
40 CFR 262.20 General requirements.

(a) A generator who transports, or offers for transportation, hazardous waste for offsite treatment, storage, or disposal must prepare a Manifest...

49 CFR 171.2 Hazardous waste.

(a) No person may offer for transportation or transport a hazardous waste (as defined in §171.8 of this subchapter) in interstate or intrastate commerce except in accordance with the requirements of this subchapter. etc.

49 CFR 171.8 Definitions and abbreviations.

"Hazardous waste", for the purposes of this chapter, means any material that is subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency specified in 40 CFR Part 262.

49 CFR 173.30B Hazardous waste manifest.

(a) No person may offer, transport, transfer, or deliver a hazardous waste (waste) unless an EPA form 8700-22 and 8700-22A (when necessary) hazardous waste manifest (manifest) is prepared in accordance with 40 CFR 262.20 and is signed, carried, and given as required of that person by this section...

(h) A hazardous waste manifest required by 40 CFR 262, containing all of the information required by this subpart, may be used as the shipping paper required by this subpart.

DISCUSSION

Case 1:

In the case of the intra-laboratory transfer of hazardous waste from various technical areas (at the main site) to TA-54 for purposes of consolidation, it is clear that the generator, LANL, is not transporting hazardous waste offsite for the purpose of treatment, storage, or disposal. Although there is some treatment and storage at TA-54, the first step, and purpose of getting it to TA-54, is collection and consolidation. Therefore, it's LANL's opinion that a UHWM is not needed for this operation. However, if the material meets the requirement of a DOT hazardous material, etc., the material must be properly classified, packaged, etc., in accordance with 49 CFR 100-199, because the materials are being transported over roadways to which the public has access.

Case 2:

The case of the shipment of hazardous waste from Fenton Hill (TA-57) to TA-54 appears to be somewhat different. Since Fenton Hill has a separate EPA waste generator registration number, it seems clear that LANL "transports ... hazardous waste ... offsite ..." (40 CFR 262.20). Here, site refers to Fenton Hill.

One could ask, "Why does Fenton Hill have a separate number?" Was this imposed by EPA? LANL may wish to consider inclusion of Fenton Hill with the main site. In any event, the reasons for Fenton Hill having a separate generator number should be outlined herein.

Based upon discussions with several LANL personnel, it appears that there are no other LANL 'sites' in a situation similar to Fenton Hill.

It's understood that LANL hazardous waste generated at NTS is covered by another generator number. REECo?

POLICY

It shall be LANL policy that:

1. the Chemical Waste Disposal Request (CWDR), (Form M-1), accompany waste that is transported from technical areas on the main site, including the airport (TA-57), to TA-54. Since these materials are transported on roadways to which the public has unlimited access, they must be shipped in compliance with DOT Hazardous Materials Regulations. As the shipping papers, the CWDR must meet the requirements of 49 CFR, Subpart C - Shipping Papers. Additionally, packages must be marked and labeled, and vehicles placarded, as required by 49 CFR.

2. the Uniform Hazardous Waste Manifest accompany waste that is transported from Fenton Hill (TA-57) to TA-54. Additionally, packages must be marked and labeled, and vehicles placarded, as required by 49 CFR.

Hazardous Waste Facility Permit

PERMITTEE: U.S. Department of Energy
University of California Regents

ID NUMBER: NM0890010515

LOCATION: Los Alamos National Laboratory,
Los Alamos, NM 87545

PERMIT NUMBER:
NM 0890010515-1

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6901, *et seq.*), and the New Mexico Hazardous Waste Act (§§ 74-4-1 *et seq.* NMSA 1978), a permit is issued to the U.S. Department of Energy's Los Alamos Area Office and the University of California Regents, doing business as Los Alamos National Laboratory, (hereafter called the Permittee) to operate a hazardous waste incinerator, container storage and tank treatment and storage facility at the location stated above.

The Permittee must comply with all the terms and conditions of this permit. This permit consists of the conditions contained herein including the attachments. Applicable provisions of regulations cited are those which are in effect on the effective date of this permit. New Mexico Hazardous Waste Management Regulations (HWMR-5, as amended 1989). This permit shall become effective in accordance with HWMR-5, Part IX, sections 902.F. and 902.G. and shall run for a period of ten years.

This permit is based on the provisions of HWMR-5. This permit is also based on the assumption that all information contained in the permit application is accurate and that the facility will be operated as specified in the application. The permit application consists of information submitted on March 27, 1986; revised on November 13, 1986 and November 25, 1987; and supplemented on November 8, 1988 and through numerous technical discussions.

Any inaccuracies found in the information may be grounds for the termination or modification of this permit and potential enforcement action.

Signed this 8th day of November, 1989

by _____
Richard Mitzelfelt, Director, N.M.E.I.D.

New Mexico
Health and Environment Department
Environmental Improvement Division

Excerpt from Permit
discussing use of CWDR as shipping paper.

CONTAINER MANAGEMENT
ATTACHMENT F

F.1 Container Packaging, Sampling, and Labeling

F.1.1 Container Packaging and Transport

When chemical substances are declared to be in excess, the originating group completes a Chemical Waste Disposal Request (Form H-1) and sends the form to the Waste Management Group (HSE-7). The request lists the chemical waste the generating group needs to dispose of, the quantity and physical form of the wastes, and other pertinent information such as the condition of the containers. Material Safety Data Sheets (MSDS's) and existing analytical data may also be available. The containers described will range from two ounce bottles of unusable chemical to 330-gallon Tuff-Tanks of plating material.

The Chemical Waste Disposal Request form is reviewed for adequacy of information and assignation of segregation codes, DOT information, and EPA codes. It is then used by HSE-7 personnel as the shipping form when the waste is collected. HSE-7 personnel then visit the generating site to package the waste for transport to TA-54, Area L. All waste is transferred in accordance with the Laboratory's On-Site Transportation Manual.

Small containers of waste (<5 gallon size), will be overpacked in either a DOT approved cardboard box or plastic or metal drum with absorbent material (referred to as labpacks). Vermiculite will be the most commonly used absorbent; however, the organic waste is compatible with absorbents such as corncobs and sawdust. These absorbents may be used for this category of waste since in cases of contamination of the absorbent incinerators prefer to receive a more combustible material than vermiculite. Containers that will be composited at TA-54, Area L will be sorted and packaged separately from those that will remain in labpacks for storage.

Drums and Tuff-Tanks will be visually inspected for integrity before transport. If the drum is unacceptable it will be repackaged or overpacked prior to transport. The wastes are transported on either a three-ton or one-ton flat bed truck.

Upon arrival at TA-54, Area L, the wastes are unloaded from the transport vehicle. Labpack waste will be temporary placed at the packaging building for labeling or compositing. Drums and Tuff-Tanks will be placed on either the sampling pad or storage pad for sampling and labeling.

F.1.2 Drum labeling, recording, and sampling system

Each unique package of waste, meaning labpack or drum, is labeled with the following information.

- chemical group number
- unique record number
- date of generation (if this information is not already on the container, the date from the Chemical Waste Disposal Request Form is used.)
- either an EPA hazardous waste label or the words hazardous waste

This information and the Chemical Disposal Request Form is provided to the resident data analyst. This individual creates a second record as part of the Hazardous Waste Database. All records are then maintained by the data analyst in accordance with the requirements of this permit.

Sampling of the waste is then performed as outlined in Permit Attachment A. The sampling pad is restricted to one family of chemicals at a time, for example organics. The group allowed at the time will be posted on the pad. This ensures that incompatible chemicals do not react in the containment basin of the

Responsibility (Name A)	Telephone Number	Group		Date Sent	Date Tracking Number
Waste Generator (Name B)	Telephone Number	Truck Area	Building	Area/Bldg	Room

Site Number	[illegible]	Code	DOT Proper Shipping Name	DOT Hazard Class	[illegible]	[illegible]	RCRA Codes	Handling Code	Weight	Page Number
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

I hereby certify that the information supplied above is correct according to the applicable regulations.

Reviewer Signature	Date

[illegible] Form Number 10-31 Page [illegible]

Figure A-1 (cont.)

SENT BY:Xerox Telecopier 7021 ; 8- 9-93 ; 3:47PM ; 6058850888→ 15558863750;# 7
1-5150100400000

EN BY:Xerox Telecopier 7021 ; 8- 8-93 ; 3:47PM ; 5058850000→ 15058853750;# 3

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

CHEMICAL WASTE DISPOSAL REQUEST
RETURN FORM TO WASTE MANAGEMENT, MS J591
Telephone Number 667-7979

Requestor's Name (Print)	Telephone Number	Group		Date Sent		Waste Tracking Number
Waste Generator (Name)	Telephone Number	Bldg. Area	Building	Area/Bldg	Room	Waste Place (Bldg/Room)

Line Number	Number of Containers	Volume of Each Container	CHEMICAL NAME[1]	HAZARD[2]
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

I hereby certify that the information supplied above is correct.

Generator Signature	Date

[1] CHEMICAL NAME - Name of single component, names of all components in mixtures, trade names and/or number of commercial product. For trade name products, attach the manufacturer's MSDS.

[2] For HAZARD insert the appropriate letter: C - corrosive, I - ignitable, R - reactive, T - toxic, X - reactive, S - solid, L - liquid, G - gas.

HS Form Number 10-04 Rev A (4/89)

Figure 1-1 Hazardous Waste Disposal Request Form

EM-7 WASTE MANIFEST

*** IN CASE OF EMERGENCY CALL 505-667-6211 ***

EPA ID #: NM0890010515	CWDR #: 1005007
S H I P T O	S H I P F R O M
EM-7 PHONE 505-667-7579	Requestor: PARDINGTON-PURTYMUN
GEOCHEMICAL AND MIXED WASTE OPERATIONS	Z #: 106557
LOS ALAMOS NATIONAL LABORATORY	Group: LS1
ATTN: RAY THUMA/JOHN KELLY	TA: 43
LOCATION	Building: HRL1
TA-54 X AREA L X AREA G ___	Room: B126
TA-50 ___ BLDG 1 ___ BLDG 37 ___	Phone: 51536
TRANSPORTER EM-7	

ITEM	HM	DOT SHIPPING DESCRIPTION	CONTAINERS NO./TYPE	TOTAL QUANTITY	UNIT WT/VOL
1	X	WASTE FLAMMABLE LIQUID, POISONOUS, N.O.S. (METHANOL) 3, UN1992, II F003	1 DF	4	P
			EMERGENCY RESPONSE GUIDE #: 28		
2	X	"RQ" WASTE MERCURY (DOT) 8, UN2809, III D009	1 DF	1	P
			EMERGENCY RESPONSE GUIDE #: 60		

HMTF REVIEW
APPROVED ☑
DISCREPANCY ☐
01756
6-18-93
DG

ADDITIONAL DESCRIPTIONS FOR MATERIALS LISTED ABOVE

SPECIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION
PLACARDS REQUIRED: NONE

I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT AND THAT THIS TRANSFER CONTAINS NO HAZARDOUS MATERIALS OTHER THAN THOSE LISTED.

PRINTED/TYPED NAME	SIGNATURE	DATE
Paige Purtymun	X [signature]	6/18/93

THIS IS TO CERTIFY THAT THE ABOVE-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

TRANSPORTER ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

APPENDIX P

DOCUMENTS PROVIDED FOR AUGUST 5, 1993 SHIPMENT

Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST COPY

HSE-8 USE ONLY
Reference Number 02602

Complete both sides of this form using a black or blue pen. Inadequate information will result in processing delays.
Send completed form to: ATTN: WPRF, MS K490

Division/Group	Telephone	Mail Stop	Technical Area	Building	Room
WX-3	7-8393	C934	TA-16	38H & 30G	103

☑ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☐ Analysis Attached

Choose one or more of the items below which best describes your waste:

☑ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☑ Solvent	☐ Paint Waste	☐ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☐ Waste Rags	☐ Laboratory Trash	☐ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
Mixed ethanol and acetone waste used primarily to clean tools. The waste will also contain residual plastics materials components.

General Description Of Waste (check at least one block for each column):

FORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☐ Solid	☑ Less Than 100	☐ 2.0 or Less	☐ Unstable	☐ <50 ppm
☐ Cemented Sludge	☐ 100 to 139	☐ 2.1 to 12.4	☐ Reacts With Water	☐ 50-500 ppm
☐ Semi-Solid/Sludge	☐ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☐ >500 ppm
☐ Absorbed Liquid	☐ Greater Than 200	☑ Not Applicable	☐ Sulfides	☑ No PCBs
☑ Liquid	☐ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☑ Non-Reactive	
☐ Suspended Solids				
☐ Powder or Ash				

Indicate Known Radioactivity Of Your Waste:
☑ Not Radioactive (Go To Next Section)

☐ < 2.0 nC/g	☐ Alpha
☐ > 2.0 nC/g	☐ Beta
☐ > 10.0 nC/g	☐ Gamma
☐ > 100.0 nC/g	☐ Tritium

List Known Radioisotopes:
☐ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

GENERATOR CERTIFICATION

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Generator's Name (Last, First Mi)	Z Number	Generator's Signature	Date
Sandoval, Cynthia W.	096496	Cynthia W. Sandoval	11-13-91
If Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional).	Print Group Waste Coordinators Name (Last, First Mi)		Mail Stop

030M00411813

eavy Metals (indicate whether the following heavy metals exist in your waste, at the posted concentration):

	None			KOP	Analysis	TCLP	Other
Arsenic	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Barium	☑	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Cadmium	☑	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
Chromium	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Lead	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Mercury	☑	☐ <0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐
Nickel	☑	☐ <134.0 ppm	☐ ≥ 134.0 ppm	☐	☐ →	☐	☐
Selenium	☑	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
Silver	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Thallium	☑	☐ <130.0 ppm	☐ ≥ 130.0 ppm	☐	☐ →	☐	☐

rganic Compounds (indicate if the following organic compounds exist in your waste, at the posted concentration):

	None			KOP	Analysis	TCLP	Other
Benzene	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Carbon Tetrachloride	☑	☐ <0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Chlorobenzene	☑	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Chloroform	☑	☐ <6.0 ppm	☐ ≥ 6.0 ppm	☐	☐ →	☐	☐
Cresol	☑	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
1,4-Dichlorobenzene	☑	☐ < 7.5 ppm	☐ ≥ 7.5 ppm	☐	☐ →	☐	☐
1,2-Dichloroethane	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
1,1-Dichloroethylene	☑	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
2,4-Dinitrotoluene	☑	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
Hexachlorobenzene	☑	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
Hexachlorobutadiene	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Hexachloroethane	☑	☐ < 3.0 ppm	☐ ≥ 3.0 ppm	☐	☐ →	☐	☐
Methyl Ethyl Ketone	☑	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
Nitrobenzene	☑	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
Pentachlorophenol	☑	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Pyridine	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Tetrachloroethylene	☑	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
Trichloroethylene	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
2,4,5-Trichlorophenol	☑	☐ < 400.0 ppm	☐ ≥ 400.0 ppm	☐	☐ →	☐	☐
2,4,6-Trichlorophenol	☑	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
Vinyl Chloride	☑	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐

IECK ONE

☑ Additional hazardous components in the waste are listed below: ☐ There are no additional hazardous constituents in this waste.

	Compound Name	Concentration		Compound Name	Concentration
1.	Ethanol		5.		
2.	Acetone		6.		
3.			7.		
4.			8.		

HSE-8/HSE-7 USE ONLY (Do Not Write Below This Line)

STE CLASSIFICATION

☐ Non-Radioactive, Non-Hazardous
- ☐ Solid Waste
- ☐ Non-Regulated Chemical Waste
- ☐ Sanitary Waste
- ☐ Other Non-Disposable Waste

☐ Radioactive
- ☐ Low-Level Radioactive Waste
- ☐ Transuranic Waste
- ☐ Special Nuclear Material

☑ Hazardous or Mixed
- ☑ Hazardous Waste
- ☐ Mixed Low-Level Waste
- ☐ Mixed Transuranic Waste

azardous or Mixed Waste Codification:

te Code 1	Waste Code 2	Waste Code 3	Waste Code 4	Waste Code 5	Waste Code 6	Waste Code 7
F003						

-8 Reviewer's Signature	Date	Cost Center/ProgramCode For HSE Analysis Backcharge
[signature]	11/15/91	

CWDR REWIEW WORKSHEET

CWDR # : 1005099 DATE : 6/28/93 REVIEW BY: AL STADELMAIER

LABPACK : BULK : X OTHER :

ITEMS : A SIZE : 30_GAL.

LIQUID : X SOLID : GAS :

EM7 CODE : 00 LOCATION: B1 RGN : 101

****

SHIP NAME : WASTE FLAMMABLE LIQUIDS, Poisonous N.O.S.
: (ACETONE, METHANOL)
:

DOT HAZARD CLASS/DIV : 3 DOT I.D. NO#: UN1992 PACKING GROUP : II

****

SECONDARY: Poison
: PLACARDS REQUIRED:

ADDITIONAL DESCRIPTION: ERG NO# : ~~27~~ 28

****

RCRA CODE : F003
:

IF LABPACK

ITEM: F003	EPA: METHANOL
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:

COMMENTS : _____

: _____

DATA ENTRY BY: MV DATE: 7/8/93

DOT CHECKED BY: RPK DATE: 7/6/93

LOS ALAMOS
NATIONAL LABORATORY

RECEIVED JUN 2 2 1993

EM-7 USE ONLY
CWDR Identification Number ~~02601~~ 1005099

MAIL TO: CWDR, MAIL STOP J593

CHEMICAL WASTE DISPOSAL REQUEST (CWDR)

THE WASTE MANAGEMENT GROUP (EM-7) WILL NOT PROCESS THIS FORM UNLESS ALL APPLICABLE BOXES HAVE BEEN COMPLETED, APPROPRIATE DOCUMENTS ATTACHED, AND CERTIFICATION STATEMENTS HAVE BEEN SIGNED. ITEM-BY-ITEM INSTRUCTIONS ARE ON THE LAST PAGE OF THIS FORM. CALL 665-4000 FOR ADDITIONAL ASSISTANCE IN COMPLETING THIS FORM.

93036430

1. Division/Group	Program Code
WX-3	9603

	Technical Area	Building	Room
2. Waste Generated At: 306	TA-16	306	All rooms ~~103~~
3. Waste Accumulated At: 306	TA-16	306	103

4. Area Designation: ☑ Satellite ☐ Less Than 90 Days (*Start Date* ___/___/___) ☐ Other _____

Was the waste generated or accumulated in a Radiation Material Management Area *(RMMA)*?	☐ Yes	☑ No
Is waste stored in a security area?	☑ Yes	☐ No
Is waste classified or a property numbered item?	☐ Yes	☑ No
Is waste generated from an environmental restoration project?	☐ Yes	☑ No
If materials are new or unused, has material recycle been tried? N.A.	☐ Yes	☐ No
Have waste minimization procedures from Waste Minimization Plan been followed? N.A.	☐ Yes	☐ No

List volume of waste reduced to date (*for calendar year*) _____

WASTE GENERATOR CERTIFICATION: I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

5. Generator Name *(Print)*		Signature	
Diana P. Armijo		Diana P. Armijo	
Z Number	Telephone	Mail Stop	Date
96836	667-6820	C930	6/15/93

WASTE MANAGEMENT COORDINATOR CERTIFICATION STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

6. Waste Coordinator Name *(Print)*		Signature	
Cynthia W. Sandoval		Cynthia W. Sandoval	
Z Number	Telephone	Mail Stop	Date
96496	7-8393	C930	6/15/93

7. List all "Spent or "Process" waste(s) requested for pickup below. Attach a WPF for each different waste listed. If you need additional space use the "Spent or Process Waste Continuation Sheet."

ITEM	NUMBER OF CONTAINERS	VOLUME PER CONTAINER	UNIT [1]	GROSS WEIGHT PER CONTAINER	UNIT [2]	TYPE OF CONTAINER [3]	DESCRIPTION OF WASTES AS DESCRIBED IN WPF	WPF NUMBER
A	1	30	GAL	45	lb	Dm	Solvent Contaminated kimwipes	02601
B								
C								
D								
E								
F								
G								
H								

REFER TO PAGE 4 FOR DETAILED INSTRUCTIONS

8. List all "New" or "Unused" Chemical(s) for pickup below.
Itemize below by compound or chemical name. If you need additional space use the "New of Unused Waste Continuation Sheet." If compound is listed as a trade-name product, attach Material Safety Data Sheet.

ITEM	NUMBER OF CONTAINERS	VOLUME PER CONTAINER	UNIT [1]	GROSS WEIGHT PER CONTAINER	UNIT [2]	COMPOUND OR PRODUCT NAME	WASTE FORM [4]					
							S	L	G	FS	A	P
01												
02												
03												
04												
05												
06												
07												
08												
09												
10												
11												
12												
13												
14												
15												
16												
17												
18												

[1] Units for Volume:	[2] Units for Weight:	[3] Type of Container:	[4] Waste Form:
G = Gallons L = Liquids F = Cubic Feet M = Cubic Meters	P = Pounds K = Kilograms	DM = Metal Drums TP = Portable Tanks CY = Cylinders CF = Fiber or Plastic Boxed BG = Glass Bottle or Container O = Other Specify _____ DF = Fiber or Plastic Drums DT = Dump Truck CW = Wooden Boxes BP = Plastic Bottle or Container PB = Plastic Bag	S = Solid L = Liquid G = Gas FS = Factory Sealed A = Aerosol P = Powder or Ash

Alamos
mos National Laboratory
amos, New Mexico 87545

WASTE PROFILE REQUEST

COPY

HSE-8 USE ONLY
Reference Number 00001

mplete both sides of this form using a black or blue pen. Inadequate information will result in processing delays
nd completed form to: ATTN: WPRF, MS K490

sion/Group	Telephone	Mail Stop	Technical Area	Building	Room
INX-3	7-8393	C934	TA-16	304 & 306	103

☐ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☐ Analysis Attached

oose one or more of the items below which best describes your waste:

☑ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☑ Solvent	☐ Paint Waste	☐ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☑ Waste Rags	☐ Laboratory Trash	☐ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
Kimwipes or rags soaked with ethanol or acetone used primarily for cleaning tooling. Kimwipes may also be contaminated with residual plastics raw materials

neral Description Of Waste (check at least one block for each column):

ORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☑ Solid	☑ Less Than 100	☐ 2.0 or Less	☐ Unstable	☐ <50 ppm
☐ Cemented Sludge	☐ 100 to 139	☐ 2.1 to 12.4	☐ Reacts With Water	☐ 50-500 ppm
☐ Semi-Solid/Sludge	☐ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☐ >500 ppm
☑ Absorbed Liquid	☐ Greater Than 200	☑ Not Applicable	☐ Sulfides	☑ No PCBs
☐ Liquid	☐ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☑ Non-Reactive	
☐ Suspended Solids				
☐ Powder or Ash				

ndicate Known Radioactivity Of Your Waste:
☑ Not Radioactive (Go To Next Section)

☐ <2.0 nC/g	☐ Alpha
☐ >2.0 nC/g	☐ Beta
☐ >10.0 nC/g	☐ Gamma
☐ >100.0 nC/g	☐ Tritium

List Known Radioisotopes:
☐ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

NERATOR CERTIFICATION

ed upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified o n is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submit e information, including the possibility of fines and imprisonment for knowing violations.

t Generator's Name (Last, First Mi)	Z Number	Generator's Signature	Date
Sandoval, Cynthia W	096496	Cynthia W Sandoval	11/13
our Group's Waste Coordinator is the custodian of your waste nagement documentation, provide the name and mail stop of this on (optional).	Print Group Waste Coordinators Name (Last, First Mi)		Mail Stop

n 1346 (4/91) RECEIVED NOV 15 1991 Page 1 of 2 Complete Reverse

Metals (indicate whether the following heavy metals exist in your waste, at the posted concentration):

	None			KOP	Analysis	TCLP	Other
ic	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
m	☑	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
ium	☑	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
nium	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
ury	☑	☐ <0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐
l	☑	☐ <134.0 ppm	☐ ≥ 134.0 ppm	☐	☐ →	☐	☐
ium	☑	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
um	☑	☐ <130.0 ppm	☐ ≥ 130.0 ppm	☐	☐ →	☐	☐

: Compounds (indicate if the following organic compounds exist in your waste, at the posted concentration):

	None			KOP	Analysis	TCLP	Other
ne	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
n Tetrachloride	☑	☐ <0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
benzene	☑	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
form	☑	☐ <6.0 ppm	☐ ≥ 6.0 ppm	☐	☐ →	☐	☐
l	☑	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
chlorobenzene	☑	☐ < 7.5 ppm	☐ ≥ 7.5 ppm	☐	☐ →	☐	☐
chloroethane	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
chloroethylene	☑	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
nitrotoluene	☑	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
hlorobenzene	☑	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
hlorobutadiene	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
hloroethane	☑	☐ < 3.0 ppm	☐ ≥ 3.0 ppm	☐	☐ →	☐	☐
l Ethyl Ketone	☑	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
enzene	☑	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
chlorophenol	☑	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
e	☑	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
hloroethylene	☑	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
roethylene	☑	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Trichlorophenol	☑	☐ < 400.0 ppm	☐ ≥ 400.0 ppm	☐	☐ →	☐	☐
Trichlorophenol	☑	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
chloride	☑	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐

ONE

tional hazardous components in the waste are listed below: ☐ There are no additional hazardous constituents in this waste.

Compound Name	Concentration		Compound Name	Concentration
Ethanol		5.		
Acetone		6.		
		7.		
		8.		

HSE-8/HSE-7 USE ONLY (Do Not Write Below This Line)

ASSIFICATION

- ☐ adioactive, Non-Hazardous
- ☐ lid Waste
- ☐ n-Regulated Chemical Waste
- ☐ nitary Waste
- ☐ her Non-Disposable Waste

- ☐ Radioactive
  - ☐ Low-Level Radioactive Waste
  - ☐ Transuranic Waste
  - ☐ Special Nuclear Material

- ☐ Hazardous or Mixed
  - ☑ Hazardous Waste
  - ☐ Mixed Low-Level Waste
  - ☐ Mixed Transuranic Waste

us or Mixed Waste Codification:

1	Waste Code 2	Waste Code 3	Waste Code 4	Waste Code 5	Waste Code 6	Waste Code 7
3						

...ver's Signature	Date	Cost Center/ProgramCode For HSE Analysis Backcharge
[illegible]	11/15/91	

CWDR REWIEW WORKSHEET

CWDR # : 1005099 DATE : 6/28/93 REVIEW BY: AL STADELMAIER

LABPACK : BULK : X OTHER :

ITEMS : A SIZE : 30_GAL.

LIQUID : SOLID : X GAS :

EM7 CODE : 00 LOCATION: LP1 RGN : 101

****

SHIP NAME : WASTE FLAMMABLE SOLIDS, N.O.S.
: (METHANOL, ACETONE)
:

DOT HAZARD CLASS/DIV : 4.1 DOT I.D. NO#: UN1325 PACKING GROUP : II

****

SECONDARY: PLACARDS REQUIRED:
:

ADDITIONAL DESCRIPTION: ERG NO# : 32

****

RCRA CODE : F003
:

IF LABPACK

ITEM: F003	EPA: METHANOL
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:
ITEM:	EPA:

COMMENTS : _____

: _____

DATA ENTRY BY: RV DATE: 7/8/93

DOT CHECKED BY: RPT DATE: 7/8/93

J36 00411 8/9

If any

LOS ALAMOS
NATIONAL LABORATORY

CHEMICAL WASTE DISPOSAL REQUEST (CWDR)

RECEIVED JUN 2 2 1993

EM-7 USE ONLY Page 1 of 2
CWDR Identification Number ~~02602~~ 1005099

MAIL TO: CWDR, MAIL STOP J593

THE CHEMICAL AND MIXED WASTE OPERATIONS OF EM-7 WILL NOT PROCESS THIS FORM UNLESS ALL APPLICABLE BOXES HAVE BEEN COMPLETED, APPROPRIATE DOCUMENTS ATTACHED, AND CERTIFICATION STATEMENTS HAVE BEEN SIGNED. ITEM-BY-ITEM INSTRUCTIONS ARE ON THE LAST PAGE OF THIS FORM. CALL 665-4000 FOR ADDITIONAL ASSISTANCE IN COMPLETING THIS FORM.

93036429-

1. Division/Group	Program Code
WX-3	9603

	Technical Area	Building	Room
2. Waste Generated At:	TA-16	~~304~~ 306	All bays
3. Waste Accumulated At: 304	TA-16	~~304~~ 306	103

per phone call with J Cesarino 6-22-93

4. Area Designation:

Is the waste accumulated at: ☑ Satellite ☐ Less Than 90 Days (*Start Date* ___/___/___) ☐ Other _____

Was the waste generated or accumulated in a Radioactive Materials Management Area *(RMMA)*?	☐ Yes	☑ No
Is waste stored in a security area?	☑ Yes	☐ No
Is waste classified or a property numbered item?	☐ Yes	☑ No
Is waste generated from an environmental restoration project?	☐ Yes	☑ No
If materials are new or unused, has material recycle been tried? N.A.	☐ Yes	☐ No
Have waste minimization procedures from Waste Minimization Plan been followed? N.A.	☐ Yes	☐ No

List volume of waste reduced to date (*for calendar year*) _____

WASTE GENERATOR CERTIFICATION: To the best of my knowledge, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

5. Generator Name *(Print)*		Signature	
Diana P. Armijo		Diana Armijo	
Z Number	Telephone	Mail Stop	Date
96836	667-6820	C930	6/15/93

WASTE MANAGEMENT COORDINATOR CERTIFICATION STATEMENT: My signature certifies that all information on this form has been reviewed and is correct to the best of my knowledge.

6. Waste Coordinator Name *(Print)*		Signature	
Cynthia W. Sandoval		Cynthia W. Sandoval	
Z Number	Telephone	Mail Stop	Date
96496	7-8393	C930	6/15/93

7. List all "**Spent** or "**Process**" waste(s) requested for pickup below. Attach a WPF for each different waste listed. If you need additional space "Spent or Process Waste Continuation Sheet."

ITEM	NUMBER OF CONTAINERS	VOLUME PER CONTAINER	UNIT [1]	GROSS WEIGHT PER CONTAINER	UNIT [2]	TYPE OF CONTAINER [3]	DESCRIPTION OF WASTES AS DESCRIBED IN WPF	WPF NUMBER
A	1	30	GAL	80	lb	Dm	mixed ethanol and acetone waste	02602
B							used primarily to clean tools.	
C							the waste will also contain residual	
D							plastics materials components	
E								
F								
G								
H								

REFER TO PAGE 4 FOR DETAILED INSTRUCTIONS

8. List all "**New**" or "**Unused**" Chemical(s) requested for pickup below.
Itemize below by trade-name product or chemical name. If you need additional space use the "New or Unused Waste Continuation Sheet." If material is listed as a trade-name product, attach Material Safety Data Sheet.

ITEM	NUMBER OF CONTAINERS	VOLUME PER CONTAINER	UNIT [1]	GROSS WEIGHT PER CONTAINER	UNIT [2]	COMPOUND OR PRODUCT NAME	WASTE FORM [4]					
							S	L	G	FS	A	P
01												
02												
03												
04												
05												
06												
07												
08												
09												
10												
11												
12												
13												
14												
15												
16												
17												

[1] Units for Volume:
G = Gallons
L = Liters
F = Cubic Feet
M = Cubic Meters
ML = Milliliters
FL = Fluid Ounce
P = Pint

[2] Units for Weight:
P = Pounds
K = Kilograms
GR = Grams
OZ = Ounce

[3] Type of Container:
DM = Metal Drum
TP = Portable Tank
CY = Cylinder
CF = Fiber or Plastic Box
BG = Glass Bottle or Container
O = Other Specify _____
DF = Fiber or Plastic Drum
DT = Dump Truck
CW = Wooden Box
BP = Plastic Bottle or Container
PB = Plastic Bag

[4] Waste Form:
S = Solid
L = Liquid
G = Gas
FS = Factory Sealed
A = Aerosol
P = Powder or Ash

GENERAL INSTRUCTIONS FOR COMPLETING THE CWDR FORM

The CWDR form is available from your Waste Management Coordinator (WMC) or by requesting forms from EM-7 at 665-4000. **Photocopies of this form WILL NOT be accepted.** All information must be typed or printed in black ink. Illegible or incomplete information, missing signatures, or photocopied forms will delay waste disposal. If there are any discrepancies or inconsistencies, the form will be returned to your WMC for assistance in correcting the problems. If you need additional assistance in completing this form, contact your WMC. Call EM-7 at 665-4000 for further clarification.

INSTRUCTIONS FOR THE WASTE GENERATOR

Complete ALL sections on pages 1 and the applicable section(s) on page 2. Use page 3 for applicable radionuclide information for any waste listed on page 2.

SECTION 1. Name of division/group requesting disposal of waste and program code for tracking purposes.

SECTION 2. Location where waste was generated.

SECTION 3. Location where waste is accumulated.

SECTION 4. Area Designation:
Answer all the questions about the area where the waste is generated or accumulated. For further assistance in waste minimization, recycling, and waste reduction, call Waste Minimization at 665-8293.

SECTION 5. Provide all the information requested. Read the "Generator Certification" statement before signing it.

SECTION 6. To be completed by your WMC.

SECTION 7. "Spent" or "Process" waste are those materials that have been used, and as a result of that use, have become contaminated by physical or chemical impurities and can no longer serve the purpose for which they were intended. Acceptable units and type of containers are listed in the footnotes on the bottom of page 2 of 4 (use ONLY the choices given). For any waste listed in this section a Waste Profile Form (WPF) is required. If you need additional space, use the "Spent or Process Waste Continuation Sheet."

NOTE: The first time disposal is requested on a waste stream, the original WPF must be attached to the CWDR. Keep a photocopy for your records. Turnaround time for future waste pick-ups referencing the same WPF can be improved if a copy of the WPF is attached with each CWDR.

SECTION 8. A "New" or "Unused" chemical is a product either in its original container or in a secondary container that has not been used, changed, or contaminated by any process. A chemical or trade-name product that has been partially used and has not been altered or had materials added also meets this definition. Attach an MSDS to this form if the item is a trade-name product. Acceptable units and hazard codes are listed in footnotes on the bottom of page 2 of 4 (use ONLY the choices given). If you need additional space, use the "New or Unused Waste Continuation Sheet."

SECTION 9. If any waste listed in section 7 or 8 is radioactive or suspect radioactive, provide the radionuclide information provided in this section. Reference the listed item in section 7 or 8 with the item in section 9. Footnotes are explained on the bottom of page 3 of 4.

NOTE: Waste generated and/or accumulated in an RMMA is considered, at miminum, suspect radioactive. Refer to AR 10-3 for definitions of "suspect" radioactive and RMMA. If a waste is suspect radioactive, only the "radionuclide" is required to be listed with no amount (see example 1).

For radioactive waste, include all the required information. Enter the information accurately in relation to the decimal points. Do not alter the decimal point positions (see example 2).

Submit the CWDR and all applicable documents to your WMC for review. Consult your WMC for procedures about disposal of classified or property numbered items. Keep a photocopy of this request and any attachments for your files.

INSTRUCTIONS FOR THE WASTE MANAGEMENT COORDINATOR

1. Review and verify "to the best of my knowledge" that all the required information has been provided and is correct.

2. Provide the information requested in section 6.

3. Make photocopies of your files of all forms and attachments being sent to EM-7.

4. Mail the CWDR and all other applicable documents to EM-7, MS J593.

5. If you need clarification, call EM-7 at 665-4000.

APPENDIX Q

MANIFESTS WITHOUT LDR NOTIFICATIONS

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P.O. BOX 82178
BATON ROUGE, LOUISIANA 70884-2178

OCT 01 1992

718.1M296

PLEASE PRINT OR TYPE (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890090357 — Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 12)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663, MS C990
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7575

A. State Manifest Document Number: LA A 6026559

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: LAD981059017

C. State Transporter's ID: 40756

D. Transporter's Phone: (504) 774-3642

7. Transporter 2 Company Name: Custom Environmental Transport

8. US EPA ID Number: LAD981059017

E. State Transporter's ID:

F. Transporter's Phone: 504-774-3642

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (LA), INC.
WEST BOLINGER ROAD
BATON ROUGE, LA 70817

10. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

G. State Facility's ID:

H. Facility's Phone: 504-778-1234

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Combustible Liquid, N.O.S. DOT 2770 Combustible Liquid, NA1993	001	DF	0004	2	D001
b. Waste Acid, Liquid, N.O.S. DOT 2770 Corrosive Material, NA1760	001	DF	0004	2	D002
c.					
d.					

J. Additional Descriptions for Materials Listed Above: BR33400
11a) Roofing Mastic
11b) Water, Nitric, Hydrofluoric
11c)
11d)

K. Handling Codes for Wastes Listed Above: M043

15. Special Handling Instructions and Additional Information
[illegible] PROTECTIVE GEAR WHEN HANDLING. IN EMERGENCY, [illegible] 1-800-424-9300 AND MENTION "LAD 981." IF SPILLED IN LOUISIANA, [illegible] CALL THE DEPT. OF PUBLIC SAFETY AT 1-504-925-6595. [illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimize the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Andrew J. Montoya — Signature: Andrew J. Montoya — Month 07 Day 14 Year 92

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Jimmy Brackens — Signature: Jimmy Brackens — Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Curtis E. Barron — Signature: Curtis E. Barron — Month 09 Day 11 Year 92

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Year

GENERATOR — TRANSPORTER — FACILITY

IF SPILLED IN LOUISIANA CALL THE LOUISIANA HAZMAT UNIT AT 504/925-6595 (DAY OR NIGHT)

0030 00 4427

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P.O. BOX 82178
BATON ROUGE, LOUISIANA 70884-2178

OCT 01

718.1M296

PLEASE PRINT OR TYPE (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

IF SPILLED IN LOUISIANA CALL THE LOUISIANA HAZMAT UNIT AT 504/925-6595 (DAY OR NIGHT)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. / Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE COCLAVESON

4. Generator's Phone (505) 667-7577

A. State Manifest Document Number
LA A 6026559

B. State Generator's ID
99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number

C. State Transporter's ID 40756

D. Transporter's Phone (504) 774-3642

7. Transporter 2 Company Name
Custom Environmental Transport

8. US EPA ID Number
LAD981059017

E. State Transporter's ID

F. Transporter's Phone 504-774-3642

9. Designated Facility Name and Site Address

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone
504-778-1234

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Combustible Liquid, N.O.S. Combustible Liquid, NA1993					D001
b. Waste Acid, Liquid, N.O.S. Corrosive Material, NA1760					D002
c.					
d.					

J. Additional Descriptions for Materials Listed Above BR33400
11a) Roofing Mastic
11b) Water,Nitric,Hydrofluoric
11c)
11d)

K. Handling Codes for Wastes Listed Above
M043

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Andrew J. Montoya | Signature | Month 1 7 | Day 1 4 | Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Jimmy Brockens | Signature | Month | Day

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Curtis E. Barron | Signature | Month | Day | Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month | Day | Year

7.18.1 M 296

ROLLINS ENVIRONMENTAL INC.

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

PART 1: Generator and Manifest Information

[illegible]

[illegible] P.O. BOX 1001 MS1200

[illegible] MARMOR, NM 87545

[illegible]

State Manifest [illegible]: REE [illegible]

[illegible]

Pursuant to 40 CFR 268.7 I am notifying the following facility(check one):

(X) Rollins Environmental Services(LA) ( ) Rollins Environmental Services(TX)
( ) Rollins Environmental Services(NJ) ( ) OPC ( ) TET;

that under the above REE stream number and State Manifest Number(s), I am shipping to you a waste identified by the EPA waste numbers (listed on page 2) which are subject to the EPA Land Disposal Restrictions. These wastes were prepared in accordance to 40 CFR 268.42 and are (check 1a,1b or both)

(✓) 1a. Lab packs containing only waste listed in 40 CFR 268, Appendix IV, and may contain appropriate non-RCRA solid waste. (Check statement 2-Part III). These lab packs must be treated in accordance with 268.42(b) by INCIN*, followed by treatment of D004-D008, D010, D011 metals per 268.41(a). These lab packs contain the below checked metals:

( ) D004 ( ) D005 ( ) D006 ( ) D007 ( ) D008 ( ) D010 ( ) D011

( ) 1b. Lab packs containing only organic wastes listed in 40 CFR 268, Appendix V, and may contain appropriated non-RCRA solid waste. (Check statement 3-Part III) These lab packs must be treated in accordance with 268.42(b) by INCIN.*

PART III: Authorized Representative (Check 2,3 or both as indicated above and sign)

( ) 2. I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes specified in Appendix IV to Part 268 or solid waste not subject to regulations under Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

( ) 3. I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic wastes specified in Appendix V to Part 268 or solid waste not subject to regulation under Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

Signature: Andrew J. Montoya Date: 07-16-92

Print or Type Name: Andrew T. Montoya

Title: Staff Member

NCIN=Incineration in a RCRA subpart O facility

All information must be completed and signed by generator.

7.18.1 M296

ROLLINS CHEMPAK INC.

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

State Manifest #(s):

RES Stream #: BR3D400

APPENDIX IV WASTE CODES

D001 D002

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 5 6

2. Page 1 of 1

Information in the shaded ar is not required by Federal l

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552694

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-45

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Fluorine, Compressed ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ Zone A 2.3, UN1045 (Poison Inhalation Hazard)	0 0 1	C Y	0 0 0 1 0	P	920130
X	b. Waste Compressed Gas, N.O.S. (Hydrogen Fluoride, Nitrogen) 2.2, UN1956	0 0 1	C Y	0 0 1 0 0	P	920130
X	c. Waste Compressed Gas, Flammable, N.O.S. (Hydrogen) 2.1, UN1954	0 0 2	C Y	0 0 2 0 0	P	920130
X	d. Waste Methane Mixture, Compressed 2.1, UN1971	0 0 1	C Y	0 0 0 0 1	P	920130

J. Additional Descriptions for Materials Listed Above
11a) H053589-~~05~~09D001,P056
11b) H053594-03, U134
11c) H058740-02, D001
11d) H058740-02, D001

K. Handling Codes for Wastes Listed Above
T06

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE ~~INFORMATION IS ATTACHED.~~

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 20 11B: 12
11C: 22 11D: 17

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~XXXXXXXXXXXXXXXXX~~ John Kelly
Signature: John C. Kelly
Month Day Year: 10 22 92

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George Jones
Signature: George Jones
Date: Month Day Year: 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Ed Stch RES(TX)
Printed/Typed Name: Edward A. Stehley
Signature
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N.M.0.8.9.0.0.1.0.5.1.5 | Manifest Document No. 9.2.7.5.7

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505)667-7579

A. State Manifest Document Number № 00552695

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D.E.D.9.8.0.9.1.8.8.5.8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T.X.D.0.5.5.1.4.1.3.7.8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
	a. Carbon Dioxide 2.2, UN1013	0.0.1	C.Y	0.0.0.1.0	P	120130
	b. Compressed Gas, N.O.S. 2.2, UN1956 (Nitrogen, Methane)	0.0.2	C.Y	0.0.0.0.2	P	120130
	c. Compressed Gas, N.O.S. (Hexane, Air) 2.2, UN1956	0.0.1	C.Y	0.0.0.0.1	P	120130
	d. Compressed Gas, N.O.S. (Isobutane, Air) 2.2, UN1956	0.0.2	C.Y	0.0.0.0.2	P	120130

J. Additional Descriptions for Materials Listed Above all) H058741-01
11a)
11b) EMpty, L/C Nitrogen Mixture
11c)
11d)

K. Handling Codes for Wastes Listed Above
T06

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS
11A: 21 11B: 12
11C: 12 11D: 12

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name: John Kelly | Signature: John C. Kelly | Month Day Year: 11 01 22 19

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name: George Jones | Signature: George Jones | Month Day Year: 10 22

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

19. Discrepancy Indication Space

FACILITY

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) | Date

Printed/Typed Name | Signature | Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 5 8

2. Page 1 of 1

Information in the shaded area is not required by Federal law

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505)667-7579

A. State Manifest Document Number № 00552696

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
	a. Compressed Gas, N.O.S. (Nitrogen, Methane) 2.2, UN1956	015	CY	00015	P	120130
	b. Nitrogen, Compressed 2.2, UN1066	001	CY	00001	P	120130
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above (all) H058741-01
11a)
11b)
11c)
11d)

K. Handling Codes for Wastes Listed Above
T06 ✓

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 12 11B: 12
11C: 11D:

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Printed/Typed Name: John Kelly | Signature: John C. Kelly | Month Day Year: 10 22 92

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name: George Jones | Signature: George Jones | Month Day Year: 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

19. Discrepancy Indication Space

FACILITY

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES (TX) | Date

Printed/Typed Name | Signature | Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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Form approved. OMB No. 2050-0039, expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 5 9

2. Page 1 of 1

Information in the shaded a[illegible] is not required by Federal [illegible]

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552697

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4[illegible]

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Compressed Gas, Flammable, N.O.S. 2.1, UN1954 (Adhesive)	0 0 1	D F	0 0 0 0 3	P	978400
X	b. Waste Compressed Gas, Flammable, N.O.S. 2.1, UN1954 (Adhesive)	0 0 1	D F	0 0 0 0 2	P	978400
X	c. Waste Compressed Gas, ~~N.O.S.~~ Flammable, N.O.S. 2.1, UN1954 (Adhesive)	0 0 1	D F	0 0 0 0 1	P	978400
	d. Compressed Gas, N.O.S. 2.2, UN1956 (Adhesive)	0 0 2	D F	0 0 0 0 2	P	178400

J. Additional Descriptions for Materials Listed Above a-c) H055546-18
11a) D001, Flammable Adhesive
11b) D001, Adhesive/Sealant
11c) D001, Adhesives
11d) Aerosols, H055548-18

K. Handling Codes for Wastes Listed Above
T07

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL 24-HOUR EMERGENCY# (505) 667-7080.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 22 11B: 22
11C: 22 11D: 12

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and nation[illegible] government regulations, including applicable state regulations.
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Printed/Typed Name ~~Kel~~ John Kelly | Signature John C. Kelly | Month Day Year 10 22 92

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name George Jones | Signature George Jones | Month Day Year 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) | Date

Printed/Typed Name Edward A. Stable | Signature [illegible] | Month Day Year 10 27 92

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 6 0

2. Page 1 of 1

Information in the shaded area is not required by Federal law

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552698

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Aerosols, Flammable Gas, 2.1, UN1950 (Paint)	001	DF	00015	P	978400
X	b. Waste Compressed Gas, N.O..S. 2.2, UN1956 (Dichlorodifluoromethane)	001	DF	00001	P	978400
X	c. Waste Compressed Gas, Flammable, N.O.S. 2.1, UN1954 (Paint)	001	DF	00021	P	978400
X	d. Waste Compressed Gas, ~~N.O.S.~~ Flammable, N.O.S. 2.1, UN1954 (Paint)	003	DF	00035	P	978400

J. Additional Descriptions for Materials Listed Above all) H055548-18
11a) D001, Spray Paints
11b) U075, Dichlorodifluoromethane
11c) D001, Spray Paints
11d) D001, Spray Paints

K. Handling Codes for Wastes Listed Above
T07

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL 24-HOUR EMERGENCY# (505) 667-7080.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 12 11B: 12
11C: 22 11D: 22

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~XXXXXXXXXXXXXXXX~~ John Kelly
Signature: John C. Kelly
Month Day Year: 10 22 92

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George Jones
Signature: George Jones
Date: Month Day Year: 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name: Edward A. Stobley
Signature
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 — Manifest Document No. 9 2 7 6 1

2. Page 1 of 1

Information in the shaded a is not required by Federal

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552699

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Hazardous Waste, Liquid, N.O.S. ORM-E, NA9189	001	DF	00001	P	978400
X	b. Hazardous Waste, Solid, N.O.S. ORM-E, NA9189	013	DF	00256	P	978400
X	c. Waste 1,1,1-Trichloroethane ORM-A, UN2831	004	DF	00240	P	978400
X	d. Waste Acetic Acid Solution Corrosive Material, UN2790	001	DF	00003	P	978400

J. Additional Descriptions for Materials Listed Above all) H058742-60
11a) F001,F002,F005, Water w/<100ppb Solvents
11b) D001,D006,F001,F003,F002,F005,D011,D002,D008,D010, Lab
11c) U226
11d) D002, Stop Bath, pH=2

K. Handling Codes for Wastes Listed Above
Trash w/Alcohol, Silver Ox
T07

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL 24-HOUR EMERGENCY# (505) 667-7080.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 31 11B: 31
11C: 74 11D: 60

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and a classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and natior government regulations, including applicable state regulations.
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Printed/Typed Name JCK ~~ANNEMARIE GUSTAVSSON~~ John Kelly — Signature John C. Kelly — Month Day Yea 10 22 95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name George Jones — Signature George Jones — Month Day Yea 10 22 9

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Yea

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES (TX) — Date

Printed/Typed Name — Signature — Month Day Yea

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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Form approved. OMB No. 2050-0039, expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N.M.0.8.9.0.0.1.0.5.1.5 | Manifest Document No. 9.2.7.6.2

2. Page 1 of 1

Information in the shaded area is not required by Federal law

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505)667-7579

A. State Manifest Document Number № 00552700

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D.E.D.9.8.0.9.1.8.8.5.8

C. State Transporter's ID 40756

D. Transporter's Phone (713 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T.X.D.0.5.5.1.4.1.3.7.8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Acid Liquid, N.O.S. Corrosive Material, NA1760 (Hydrochloric Acid)	005	DF	0022 0	P	978400
X	b. Waste Acid Liquid, N.O.S. Corrosive Material, NA1760 (Hydrochloric, Silver Nitrate)	001	DF	0006 0	P	978400
X	c. Waste Alkaline Liquid, N.O.S. Corrosive Material, NA1719 (Potassium hydroxide)	004	DF	0014 0	P	978400
X	d. Waste Cement Flammable Liquid, NA1133	001	DF	0000 3	P	978400

J. Additional Descriptions for Materials Listed Above all) H058742-60
11a) D002, Hydrochloric Acid Solution
11b) D002,D011
11c) D002, Activator w/Potassium Hydroxide
11d) D001, PVC Plastic Cement

K. Handling Codes for Wastes Listed Above
T07✓

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL 24-HOUR EMERGENCY# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 60 11B: 60
11C: 60 11D: 26

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name John Kelly | Signature John C. Kelly | Month Day Year 10 22 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name George JONES | Signature George Jones | Month Day Year 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES (TX) | Date

Printed/Typed Name Edward A. Stehley | Signature | Month Day Year 10 27 92

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 6 3

2. Page 1 of 1

Information in the shaded areas is not required by Federal la

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number
№ 00552701

B. State Generator's ID
99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number
D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-45

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number
T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID
HW-50089-001

H. Facility's Phone
713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Corrosive Liquid, Poisonous, N.O.S. Corrosive Material, UN2922 (Sodium Hydroxide, Cyanide)	0 0 1	D F	0 0 0 0 2	P	978400
X	b. Waste Flammable Liquid, Corrosive, N.O.S. Flammable Liquid, UN2924	0 0 2	D F	0 0 0 0 7	P	978400
X	c. Waste Flammable Liquid, Poisonous, N.O.S. Flammable Liquid, UN1992 (Phenol, Chloroform)	0 0 1	D F	0 0 0 2 5	P	978400
X	d. Waste Hydrochloric Acid, Solution Corrosive Material, UN1789	0 0 1	D F	0 0 0 3 5	P	978400

J. Additional Descriptions for Materials Listed Above all) H058742-60
11a) D002,D003, Cyanide Solution, pH=13
11b) D001,D002,F003, Metoh w/10% Sulfuric Acid
11c) D001,D022
11d) D002, Hydrochloric Acid Solution w/Iron

K. Handling Codes for Wastes Listed Above
T01

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE ~~INFORMATION IS ATTACHED. LANL 24-HOUR EMERGENCY# (505) 667-7080.~~

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 59 11B: 29
11C: 28 11D: 60

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name ~~JK~~ ~~XXXXXXXXXXXXXXXX~~ John Kelly
Signature John C. Kelly
Month Day Year 11 0 2 2 1 9

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name George JONES
Signature George Jones
Date Month Day Year 10 22 9

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name Edward A. Stobley
Signature
Date Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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Form approved. OMB No. 2050-0039, expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 6 4

2. Page 1 of 1

Information in the shaded area is not required by Federal law

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552702

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

GENERATOR

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Magnesium, Metal Flammable Solid, UN1869 (Dangerous When Wet)	0 0 1	D F	0 0 0 0 1	P	978400
X	b. Waste Nitric Acid (Less than 40%) Corrosive Material, NA1760	0 0 1	D F	0 0 0 0 1	P	978400
X	c. Waste Paint Related Material Flammable Liquid, UN1263	0 0 2	D F	0 0 0 5 0	P	978400
X	d. Waste Flammable Liquid, N.O.S. Flammable Liquid, UN1993	0 2 2	D F	0 0 6 6 0	P	978400

J. Additional Descriptions for Materials Listed Above all) H058742-60
11a) D001,D003, Magnesium Metal Turnings
11b) D002
11c) F003,F005,D007,D008,D001, Epoxy Phenolic Coating
11d) D001,F003,~~E~~ F003,F002,F005, Varnish w/Xylene

K. Handling Codes for Wastes Listed Above
T07 ✓

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE ~~INFORMATION IS ATTACHED.~~ LANL 24-HOUR EMERGENCY# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS:
11A: 76 11B: 60
11C: 26 11D: 27

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name JCK ~~XXXXXXXXXXXXXXXXXX~~ John Kelly | Signature John C. Kelly | Month Day Year 1 0 2 2 9 2

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name George Jones | Signature George Jones | Month Day Year 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

FACILITY

19 Discrepancy Indication Space

20 Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) | Date

Printed/Typed Name | Signature

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 6 5

2. Page 1 of 1

Information in the shaded are is not required by Federal la

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663, MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552074

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-45

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Rollins Environmental Service (TX), Inc.
2027 Battleground Road
Deer Park, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone (713) 930-2300

GENERATOR

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Corrosive Liquid, N.O.S. Corrosive Material, UN1760	005	DF	00076	P	978400
X	b. Waste Combustible Liquid, N.O.S. Combustible Liquid, NA1993	006	DF	00145	P	978400
X	c. Waste ORM-A, N.O.S. ORM-A, NA1693	001	DF	00050	P	978400
X	d. Waste Nitric Acid, ~~Other Than Fuming~~ (Over 40%) Oxidizer, UN2031 (~~Poison Inhalation Hazard~~)	007	DF	00062	P	978400

J. Additional Descriptions for Materials Listed Above a-c) H058742-60
11a) D002,D007,D011,D005,D006,D008, Sulfuric W/Trace Chrome
11b) D001,F003, Kerosene Waste
11c) F001, Freon TF Azeotrope
11d) D001,D002 H0-58742-63

K. Handling Codes for Wastes Listed Above
T07

15. Special Handling Instructions and Additional Information
FOR EMERGENCIES, CONTACT (505) 667-6211. AVOID CONTACT WITH HAZARDOUS MATERIAL. AVOID BREATHING VAPORS. CONTAIN WASTE. IF UNABLE TO DELIVER, RETURN TO THE GENERATOR. LANL 24-HOUR EMERGENCY# (505) 667-7080.
11a) 60 11b) 27 11c) 58 11d) 44

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name: John Kelly | Signature: John C. Kelly | Month Day Year: 10 12 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials | Date
Printed/Typed Name: George Jones | Signature: George Jones | Month Day Year: 10 12 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) | Date
Printed/Typed Name | Signature | Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 7 6 6

2. Page 1 of 1

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3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663, MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number № 00552075

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-450(

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Rollins Environmental Service (TX), Inc.
2027 Battleground Road
Deer Park, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone (713) 930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Sulfuric Acid, Fuming 8, UN1831 P.G.I., Hazard Zone B	001	DF	00010	P	978400
X	b. Waste Flammable Liquid, N.O.S. Flammable Liquid, UN1993	001	DF	00001	P	978400
X	c. Waste Poison B, Liquid, N.O.S. Poison B, UN2810 (Phenol, Chloroform, isoamyl alcohol)	002	DF	00038	P	978400
	d. Soda Lime, Solid Corrosive Material, UN1907	001	DF	00001	P	178400

J. Additional Descriptions for Materials Listed Above HO58742-60(a-c
11a) D002
11b) D001,D028, Laser Dye w/Dichloroethane
11c) D022, Solution w/Phenol
11d) HO-58743-60

K. Handling Codes for Wastes Listed Above
T07

15. Special Handling Instructions and Additional Information
FOR EMERGENCIES, CONTACT (505) 667-6211. AVOID CONTACT WITH HAZARDOUS MATERIAL. AVOID BREATHING VAPORS. CONTAIN WASTE. IF UNABLE TO DELIVER, RETURN TO THE GENERATOR. LANL 24-HOUR EMERGENCY# (505) 667-7080.

11a) 39 11b) 27
11c) 55 11d) 60

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: John Kelly | Signature: John C. Kelly | Month Day Year: 10 22 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name: George Jones | Signature: George Jones | Month Day Year: 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) | Date

Printed/Typed Name | Signature | Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 — Manifest Document No. 9 2 7 6 7

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663, MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: № 00552076

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Rollins Environmental Service (TX), Inc.
2027 Battleground Road
Deer Park, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: H W-50089-001

H. Facility's Phone: (713) 930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
	a. NON-REGULATED WASTE, LIQUID	018	DF	0040 2	P	178400
	b. NON-REGULATED WASTE, SOLID	027	DF	0116 0	P	178400
	c. Combustible Liquid, N.O.S. Combustible Liquid, NA1993	001	DF	00001	P	178400
	d. ORM-A, N.O.S. ORM-A, NA1693	001	DF	00030	P	178400

J. Additional Descriptions for Materials Listed Above all) H058743-60
11a) Superconductor Solution
11b) Lab Trash
11c) 1-Methyl 2-Pyrrolidone
11d) Freon TF Azeotrope

K. Handling Codes for Wastes Listed Above
T07

15. Special Handling Instructions and Additional Information
FOR EMERGENCIES, CONTACT (505) 667-6211. AVOID CONTACT WITH HAZARDOUS MATERIAL. AVOID BREATHING VAPORS. CONTAIN WASTE. IF UNABLE TO DELIVER, RETURN TO THE GENERATOR. LANL 24-HOUR EMERGENCY# (505) 667-7080.
11a) -- 11b) -- 11c) 27 11d) 58

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~XXXXXXXXXXXXXXXX~~ John Kelly — Signature: John C. Kelly — Month Day Year: 10 22 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name: George Jones — Signature: George Jones — Month Day Year: 10 22 92

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) — Date

Printed/Typed Name: Edward L. Stable — Signature — Month Day Year: 10 28 92

HO/CYL
CG #09

ROLLINS ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 8754
4. *RES Reference # (BR/HO/L/W/MO/OP):* 53589-09 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories):
D001, P056

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representative.

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified i III below, complete Part III rather than Part II.)

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ____ ____ F004; ____ F005; ____ F039.

____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

X 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technolog Attachment 3, is ____ INCIN; X DEACT; X ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have signe required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. A D001-D011 waste which (a) ____ does (b) X does not meet the definition of a "California List" wast definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclosing

____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the en Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" wast definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclosin

____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" sectic Attachment 1, which I am enclosing.

____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Attac 2, which I am enclosing.

____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of Atta 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under the reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only c or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K1 K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg/ mg/l, or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any

TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHMENT

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A : Aerosols
ALK : Alkaline
C : Corrosive
CB : Cadmium Battery
CS : Calcium Sulfate Subcategory
E : Explosives
H : Hydrated
HW : High Mercury (>260 mg/kg)
HZ : High Zn (>15%) Subcategory
LB : Lead Acid Battery
LA : Low Arsenic (<1%) Subcategory
LIQ : Liquid
LM : Low Mercury (<260 mg/kg) Subcategory
LZ : Low Zinc (<15%)
NAGH : No Ash Subcategory
NCS : Non-Calcium Sulfate Subcategory
NWW : Nonwastewater
OX : Oxidizer
R : Reactive
RC : Reactive Cyanides Subcategory
RS : Reactive Sulfides Subcategory
S : Solid
WR : Water Reactive
X : Numerical Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

ADGAS ⇒ NEUTR : Venting of Compressed Gases followed by neutralization. (INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
IWERC : Incineration of Organics and Mercury Contaminated Wastes
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable)
COLUMN 2 : Waste has Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste has Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Dates of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES:
1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RES not permitted).
3. Waste exmit listed since November 8, 1984 and not in the table below are currently not regulated under LDR.
4. Some non-dioxin wastes which are marked "Do Not Accept" below may be acceptable at some RES plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 GAS		DEACT		
D001LIQ (10% TOC		DEACT		
D001LIQ)10% TOC		INCIN		
D001OX		DEACT		
D001R		DEACT		
D002ACID		DEACT		
D002ALK		DEACT		
D002C		DEACT		
DC33E	DO NOT ACCEPT			
D003R		DEACT		
D003RC			X	
D003RS		DEACT		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006	X			
D006CB	DO NOT ACCEPT			
D007	X			
D008LB	DO NOT ACCEPT			
D008	X			
D009HW	DO NOT ACCEPT			
D009LW	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D013			X	
D014			X	
D015			X	
D016			X	
D017			X	
F001	X		X	
F002	X		X	
F003	X		X	
F004	X		X	
F005	X	INCINR	X	
F006	X		X	
F007	X		X	
F008	X		X	
F009	X		X	
F010			X	
F011	X		X	
F012	X		X	
F019	X		X	
F020	DO NOT ACCEPT			
F021	DO NOT ACCEPT			
F022	DO NOT ACCEPT			
F023	DO NOT ACCEPT			
F024	X	INCIN	X	
F025			X	
F026	DO NOT ACCEPT			
F027	DO NOT ACCEPT			
F028	DO NOT ACCEPT			
F039	X		X	5/8/92
K001	X		X	
K002	X			
K003	X			
K004	X			
K005	X			

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K006H	X			
K007	X			
K008	X			
K009			X	
K010			X	
K011			X	
K013			X	
K014			X	
K015	X		X	
K016			X	
K017			X	
K018			X	
K019			X	
K020			X	
K021	X		X	
K022	X		X	
K023			X	
K024			X	
K025		INCIN		
K026		INCIN		
K027		INCIN		
K028	X		X	
K029			X	
K030			X	
K031	X			5/8/92
K032			X	
K033			X	
K034			X	
K035			X	
K036			X	
K037			X	
K038			X	
K039		INCIN		
			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K041			X	
K042			X	
K043	DO NOT ACCEPT			
K044		DEACT		
K045		DEACT		
K046	X			
K047		DEACT		
K048	X		X	
K049	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ	DO NOT ACCEPT			
K061LZ	X			
K062	X			
K069CS	X			
K069NCS	DO NOT ACCEPT			
K071HW	DO NOT ACCEPT			
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099	DO NOT ACCEPT			
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	CAPAC VARIA DEFER EFF
K102	X		X	
K103			X	
K104			X	
K105			X	
K106HW	DO NOT ACCEPT			
K106LW	X			
K113		INCIN		
K114		INCIN		
K115	X	INCIN		
K116		INCIN		
P001		INCIN		
P002		INCIN		
P003		INCIN		
P004			X	
P005		INCIN		
P006		INCIN		
P007		INCIN		
P008		INCIN		
P009		INCIN		
P010	X			
P011	X			5
P012	X			5
P013	X		X	
P014		INCIN		
P015	DO NOT ACCEPT			
P016		INCIN		
P017		INCIN		
P018		INCIN		
P020			X	
P021			X	
P022		INCIN		
P023		INCIN		
P024			X	
P026		INCIN		
P027		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P028		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		ADGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P065HW	DO NOT ACCEPT			
P065LW	X	IWERC		5/8/92
P066		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	CAP
P068		INCIN		
P069		INCIN		
P070		INCIN		
P071			X	
P072		INCIN		
P073	X			
P074	X		X	
P075		INCIN		
P076		ADGAS		
P077			X	
P078		ADGAS		
P081		INCIN		
P082		INCIN		
P084		INCIN		
P085		INCIN		
P087	DO NOT ACCEPT AFTER 5/			
P088		INCIN		
P089			X	
P092HW	DO NOT ACCEPT			
P092LW	X	IWERC		
P093		INCIN		
P094			X	
P095		INCIN		
P096		INCIN		
P097			X	
P098			X	
P099	X		X	
P101			X	
P102		INCIN		
P103	X			
P104	X		X	
P105		INCIN		
P106			X	
P108		INCIN		

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

PART I:Generator and Manifest Information

Generator Name: LOS ALAMOS NATIONAL LABORATORY

Address: LOS ALAMOS NATIONAL LABS
PO BOX 1663, MS J593
LOS ALAMOS , NM 87545

Telephone: (505)667-7579 EPA ID#: NM0890010515

State Manifest #(s): RES Stream #: BR33400

PART II:Waste Subject to Land Disposal Restrictions:

-Pursuant to 40 CFR 268.7 I am notifying the following facility(check one):

(X) Rollins Environmental Services(LA) ( ) Rollins Environmental Services(TX)
( ) Rollins Environmental Services(NJ) ( ) OPC ( ) TET;

that under the above RES stream number and State Manifest Number(s), I am shipping to you a waste identified by the EP numbers (listed on page 2) which are subject to the EPA Land Disposal Restrictions. These wastes were prepared in acco to 40 cfr 268.42 and are (check 1a,1b or both)

(X) 1a. Lab packs containing only waste listed in 40 CFR 268, Appendix IV, and may contain appropriate non-RCRA soli (Check statement 2-Part III). These lab packs must be treated in accordance with 268.42(b) by INCIN*, followed b of D004-008, D010, D011 metals per 268.41(a). These lab packs contain the below checked metals:

(X) D004 ( ) D005 (X) D006 ( ) D007 ( ) D008 ( ) D010 (X) D011

( ) 1b. Lab packs containing only organic wastes listed in 40 CFR 268, Appendix V, and may contain appropriated non-R waste. (Check statement 3-Part III) These lab packs must be treated in accordance with 268.42(b) by INCIN.*

PART III: Authorized Representative - (Check 2,3 or both as indicated above and sign)

(X) 2. I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab contains only the wastes specified in Appendix IV to Part 268 or solid waste not subject to regulations under Par I am aware that there are significant penalties for submitting a false certification, including the possibility o or imprisonment.

( ) 3. I certify under penalty of law that I personally have examined and am familiar with the waste through analysis or through knowledge of the waste and that the lab pack contains only organic wastes specified in Appendix V to P solid waste not subject to regulation under Part 261. I am aware that there are significant penalties for sub certification, including the possibility of fine or imprisonment.

Signature: John C. Kelly Date: 10/22/92

Print or Type Name: John C. Kelly

Title: Staff Member

INCIN=Incineration in a RCRA subpart O facility

All information must be completed and signed by generator.

004433

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

State Manifest #(s): RES Stream #: BR33400

APPENDIX IV WASTE CODES

D001	D002	D004	D006	D011	F003	F005

7.18.1M297

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039. expires 09-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 4 9 2

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505)667-7579

A. State Manifest Document Number 00130121

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
X	a. "RQ, Waste Combustible Liquid, N.O.S. Combustible Liquid, NA1993 (Polychlorinated Biphenyls)	0 1 9	D M	0 X 6 4 0 (KH) 3 (KH)	K ~~P~~	910550
	b. Polychlorinated Biphenyls	0 0 1	D M	0 0 ~~1 2 0~~ 58 (KH)	K ~~P~~ (KH)	113730
	c. "RQ", Hazardous Substance, N.O.S., Solid ORM-E, NA9188 (Polychlorinated Biphenyls)	0 0 2	D M	0 0 6 1 1	K ~~P~~ (KH)	173880
	d. Polychlorinated Biphenyls	0 0 2	D M	0 0 2 7 8	K ~~P~~ (KH)	173880

J. Additional Descriptions for Materials Listed Above
a) H059361-49, D001
b) H059080-40
c) H059082-39
d) H059082-39

K. Handling Codes for Wastes Listed Above
a, b) T-06
c, d) T-07

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC at 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 27 11B: --
11C: 31 11D: --

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations. LANL 24-HOUR EMERGENCY# (505) 667-7080.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 07 13 09

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: R. Thomas
Signature: R. Thomas
Date: Month Day Year: 07 13 09

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space Per my phone conversation with Paul Newberry of Chempak, the above quantity has been changed to reflect the actual amount received by RES(TX) INC Kdanna 9-2-09

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX) INC
Printed/Typed Name
Signature
Date: Month Day Year

7.18.1 M297

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039. expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 4 9 0

2. Page 1 of 1

Information in the shaded are is not required by Federal la

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00130119

B. State Generator's ID 99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Corrosive LIquid, N.O.S. Corrosive Material, UN1760 (E7768)	0 0 2	D F	0 0 0 2 3	P	978400
X	b. Waste Poison B Solid, N.O.S. Poison B, uN2811 (E7768)	0 0 1	D F	0 0 0 0 3	P	978400
X	c. Waste Combustible Liquid, N.O.S. Combustible Liquid, NA1993 (E7768)	0 0 1	D F	0 0 0 1 0	P	978400
	d. NON-REGULATED WASTE, LIQUID (E7768)	0 0 1	D F	0 0 0 3 5	P	178400

J. Additional Descriptions for Materials Listed Above H058742-60 Abe
a) D002, Photo Bleach P-222
b) D003,D011,P104,P098, Potassium Cyanide, Silver
c) D001,F003, Di-Iodomethane/Acetone
d) Hydraulic Oil H058743-60

K. Handling Codes for Wastes Listed Above
707

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC at 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 60 11B: 53
11C: 27 11D: --

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and nationa government regulations, including applicable state regulations. LANL 24-HOUR EMERGENCY# (505) 667-7080.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and selec the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Ye: 07 30 9

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: R. Thomas
Signature: R. Thomas
Date: Month Day Y 07 30 9

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name:
Signature:
Date: Month Day Ye

7.18.1M297

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No 2050-0039. expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 4 8 9

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00130118

B. State Generator's ID 99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Denatured Alcohol Flammable Liquid, NA1986 (E7768)	0 0 2	D F	0 0 0 5 0	P	978400
X	b. Waste Propyl Alcohol Solution Flammable Liquid, UN1274 (E7768)	0 0 1	D F	0 0 0 1 0	P	978400
X	c. Waste Flammable Liquid, N.O.S. Flammable Liquid, UN1993 (E7768)	0 0 7	D F	0 0 1 9 0	P	978400
X	d. Waste Paint Flammable Liquid, UN1263 (E7768)	0 0 1	D F	0 0 0 1 0	P	978400

J. Additional Descriptions for Materials Listed Above H058742-60
a) D001
b) D001, 2-Propanol/P.V.Acetate
c) F003,F005,D038,D001,D022, Organic Solvent Mixture
d) D001, Enamel Paint

K. Handling Codes for Wastes Listed Above
T07

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC at 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 28 11B: 26
11C: 27 11D: 26

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations. LANL 24-HOUR EMERGENCY# (505) 667-7080.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 07 30 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: R. Thomas
Signature: R. Thomas
Date: Month Day Year: 07 30 19

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name:
Signature:
Date: Month Day Year:

7.18.1M297

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 4 8 8

2. Page 1 of 1

Information in the shaded are is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00130117

B. State Generator's ID 99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Hazardous Waste Liquid, N.O.s. ORM-E, NA9189 (E7768)	001	DF	00050	P	978400
X	b. Hazardous Waste Solid, N.O.S. ORM-E, NA9189 (E7768)	008	DF	00278	P	978400
X	c. Hazardous Waste Solid, N.O.S. ORM-E, NA9189	001	DM	00005	P	978400
X	d. Waste Acid Liquid, N.O.S. Corrosive Material, UN1760 (E7768)	001	DF	00030	P	978400

J. Additional Descriptions for Materials Listed Above H058742-60
a) D001,D035, Rags w/Lacquer Thinner
b) D008,U007,F001,F003,F005,D003,D007,D038,D004,D001, Rags w/Solvent
c) D008, Lead Solder Spools
d) D002,D007, Kodak System Cleaner

K. Handling Codes for Wastes Listed Above
TOTV

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC at 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 31 11B: 31
11C: 31 11D: 60

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and nationa government regulations, including applicable state regulations. LANL 24-HOUR EMERGENCY# (505) 667-7080.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 07 30 9

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: R. Thomas
Signature: R. Thomas
Date: Month 07 Day 30 Year 9

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name:
Signature:
Date: Month Day Year

7,18.1 M 297

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 4 8 7

2. Page 1 of 1

Information in the shaded area is not required by Federal law

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505)667-7579

A. State Manifest Document Number 00130116

B. State Generator's ID 99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Compressed Gas, N.O.S. Flammable Gas, UN1954 (Poison Inhalation Hazard) (E7768)	0 0 1	D F	0 0 0 1 0	P	970501
X	b. Waste Compressed Gas, N.O.S. Flammable Gas, UN1954 (Poison Inhalation Hazard) (E7768)	0 0 4	D F	0 0 0 7 0	P	970501
	c. Compressed Gas, N.O.S. Non-Flammable Gas, UN1956 (Poison Inhalation Hazard) (E7768)	0 0 1	D F	0 0 0 3 0	P	170501
	d.					

J. Additional Descriptions for Materials Listed Above H055546-18, H055548-18
11a) H055546 - D001, ~~XXXXXXX~~ Aerosol
11b) H055548 - D001,D008, Aerosol
11c) H055548 - Aerosol
11d)

K. Handling Codes for Wastes Listed Above
T07 ✓

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC at 1-800-424-9300 & MENTION "LAB PACK".
EMERGENCY RESPONSE INFORMATION IS ATTACHED.

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 22 11B: 22
11C: 12 11D: --

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations. LANL 24-HOUR EMERGENCY# (505) 667-7080.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 07 30 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: R. Thomas
Signature: R. Thomas
Date: Month Day Year: 07 30 19

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name:
Signature:
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 — Manifest Document No. 9 2 2 5 7

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00103304

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Flammable Liquid, N.O.S. Flammable Liquid, UN1993	0 3 9	D F	0 0 4 9 7	P	978400
X	b. Waste Flammable Liquid, N.O.S. Flammable Liquid, UN1993	0 0 4	D M	0 0 0 1 4	P	978400
X	c. Waste Flammable Liquid, Corrosive, N.O.S. Flammable Liquid, UN2924	0 0 1	D F	0 0 0 4 0	P	978400
X	d. Waste Paint Flammable Liquid, UN1263	0 0 1	D F	0 0 0 0 4	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D001,F003,F002,D022,D003,F001,D011,D005,U110,U056,D018,D019,U002,U220,D008,F005,D007
11b) D001,U154,F003
11c) D001,D002
11d) D001

K. Handling Codes for Wastes Listed Above
T-07

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK".
EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# - (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 27 11B: 27
11C: 29 11D: 26

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 05 09 92

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed Typed Name: George J. Lombard
Signature: George J. Lombard
Date: 05 09 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed Typed Name:
Signature:
Date:

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
Printed Typed Name:
Signature:
Date:

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

OCT 01 1992

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Form Approved. OMB No. 2050-0039, expires 09-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No: N M 0 8 9 0 0 1 0 5 1 5
Manifest Document No.: 9 2 2 4 2

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
(SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130049

B. State Generator's ID: 99935

5. Transporter 1 Company Name: Custom Environmental Transport

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Flammable Liquid, Corrosive, N.O.S. Flammable Liquid, UN2924	001	DM	0 0 0 0 7	P	978400
X	b. Waste Hexane Flammable Liquid, UN1208	0 0 1	DF	0 0 0 0 3	P	978400
X	c. Waste Hydrobromic Acid Corrosive Material, UN1788	0 0 1	DF	0 0 0 0 2	P	978400
X	d. Waste Hydrochloric Acid, Solution Corrosive Material, UN1789	0 0 1	DF	0 0 0 2 0	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D002, D001, F003
11b) D001
11c) D002
11d) D002

K. Handling Codes for Wastes Listed Above
T-67

15. Special Handling Instructions and Additional Information
RETURN TO GENERATOR. AVOID CONTACT, IF UNDELIVERABLE, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK".
EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# - (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS.:
11A: 27 11B: 27
11C: 60 11D: 60

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 0 5 1 0 5 1 9 2

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 0 5 1 0 5 1 9 2

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (TX)
Printed/Typed Name:
Signature:
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

OCT 01 1992

7.18.1M285

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Form approved. OMB No. 2050-0039, expires 09-30-9

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NM0890010519 Manifest Document No. 92243

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
Los Alamos National Laboratory
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130050

B. State Generator's ID: 99935

5. Transporter 1 Company Name: Custom Environmental Transport

6. US EPA ID Number: DED980918858

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: TXD055141378

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12 Containers No.	Type	13. Total Quantity	14 Unit Wt/Vol	I. Waste No.
X	a. Waste Barium Oxide ORM-B, UN1884	002 ~~001~~	DF	00002 ~~00001~~	P	978400
X	b. Waste Calcium, Metal Flammable Solid, UN1401 (dangerous when wet)	001	DF	00007	P	978400
X	c. Waste Ethyl Ether Flammable Liquid, UN1155	001	DF	00001	P	978400
X	d. Waste Flammable Liquid, Corrosive, N.O.S. Flammable Liquid, UN2924	005 ~~006~~	DF	00040 ~~00042~~	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D005
11b) D001, D003
11c) D001, U117
11d) D001, D002, F003

K. Handling Codes for Wastes Listed Above
T-07d

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# - (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS.:
11A: 53 11B: 90
11C: 26 11D: 29

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 05 05 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 05 05 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space
1 of Item 11d Rejected — non conforming waste.

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RESIGN
Printed Typed Name
Signature
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 4 4

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
Los Alamos National Laboraotry
P.O. BOX 1663; MS J593
Los Alamos, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130051

B. State Generator's ID: 99935

5. Transporter 1 Company Name: Custom Environmental Transport

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: XXXXXX 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Ammonium Hydroxide Corrosive Material, NA2672	0 0 3	DF	0 0 0 5 6	P	978400
X	b. Waste Arsenic, Solid Poison B, UN1558	0 0 1	DF	0 0 0 0 1	P	978400
X	c. Waste Arsenical Mixture Poison B, UN1556	0 0 1	DF	0 0 0 1 0	P	978400
X	d. Waste Arsenical Mixture Poison B, UN1556	0 0 1	DM	0 0 0 0 1	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D002
11b) D004, Arsenic Granules
11c) D004
11d) D003, D004

K. Handling Codes for Wastes Listed Above
T-07

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# - (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS: 11A: 60 11B: 53 11C: 53 11D: 53

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name, and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 05 15 89

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 05 15 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (1 x)
Date:
Printed/Typed Name:
Signature:
Month Day Year:

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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OCT 01 1992

Form approved OMB No. 2050-0039, expires 03-31-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N M 0 8 9 0 0 1 0 5 1 5
Manifest Document No.: 9 2 2 4 5

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone: (505) 667-7579

A. State Manifest Document Number: 00130052

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address:
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Acid Liquid, N.O.S. Corrosive Material, UN1760	0 1 2	D F	0 0 0 9 7	P	978400
X	b. "RQ" Waste Acid Liquid, N.O.S. Corrosive Material, UN1760	0 0 1	D F	0 0 0 0 8	P	978400
X	c. Waste Acrolein, Inhibited Flammable Liquid, UN1092	0 0 1	D M	0 0 0 0 1	P	978400
X	d. Waste Alkaline Liquid, N.O.S. Corrosive Material, NA1719	0 0 1	D F	0 0 0 0 1	P	978400

J. Additional Descriptions for Materials Listed Above: HO51626-60
11a) D002,D005,D007,D010
11b) D002
11c) D001,P003
11d) D002, Sodium Hydroxide

K. Handling Codes for Wastes Listed Above: T-07

15. Special Handling Instructions and Additional Information: IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS.:
11A: 60 11B: 60
11C: 30 11D: 60

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day: 10 5

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Month Day: 10 6
Date:

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day:
Date:

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (TX)
Date:
Printed/Typed Name:
Signature:
Month Day:

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 — Manifest Document No. 9 2 2 4 6

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505)667-7579

A. State Manifest Document Number: 00130053

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No	Type	13. Total Quantity	14. Unit Wt. Vol	I. Waste No.
X	a. "RQ" Hazardous Waste Solid, N.O.S. (D008) ORM-E, NA9189	0 0 2	D F	0 0 0 0 7	P	978400
X	b. ~~"RQ"~~ Hazardous Waste Solid, N.O.S. ~~(D008,D011)~~ 823 ORM-E, NA9189	~~0 0 1~~ 24 - 25	D F	~~0 0 0 1 1~~ 0 0 0 1 5 ~~1 1 6~~	P	978400
X	c. Waste 1,1,1 - Trichloroethane ORM-A, UN2831	0 0 3	D F	0 0 0 4 4	P	978400
X	d. Waste Acetic Anhydride Corrosive Material, UN1715	0 0 1	D F	0 0 0 0 2	P	978400

J. Additional Descriptions for Materials Listed Above HO51626-60
11a) D006,D008
11b) ~~Film w/Silver~~ TRASH w/MEOH D001, D005, D003, D006, D008, F003, D011, D010, F002, D007
11c) F002,U226,Tap Magic
11d) Resin Core Solder

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 31 11B: 31
11C: 74 11D: 39

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name: Andrew J. Montoya — Signature: Andrew J. Montoya — Month Day: 05 05

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name: George J. Lombard — Signature: George J. Lombard — Month Day: 05 05

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day

19. Discrepancy Indication Space Drum # 1155 from 11h rejected by RES(TX) due to non-contaminated waste. Elat

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RE-TX

Date

Signature — Month Day

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

OCT 01 1992

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 4 7

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00130054

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.	I. Waste No.
X	a. Hazardous Waste Liquid, N.O.S. ORM-E, NA9189	0 1 4	D F	0 0 1 1 6	P	978400
X	b. "RQ" Hazardous Waste Liquid, N.O.S. (Arsenic) ORM-E, NA9189	0 0 1	D F	0 0 0 1 0	P	978400
X	c. "RQ" Hazardous Waste Liquid, N.O.S. (D011) ORM-E, NA9189	0 0 1	D F	0 0 0 ~~2 5~~	P	978400
X	d. "RQ" Hazardous Waste Solid, N.O.S. (D008,D011) ORM-E, NA9189	0 0 2 ~~4~~	D F	0 0 0 2 6	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D004,D006,D007,D008,D005,D010,D011,D019,D001,D003,D018,F003,F002,F005
11b) D004
11c) D011
11d) D005, Trash w/Barium

K. Handling Codes for Wastes Listed Above
T-07

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 31 11B: 31
11C: 31 11D: 31

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name: Andrew J. Montoya | Signature: Andrew J. Montoya | Month Day: 0 5 0 5

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: George J. Lombard | Signature: George J. Lombard | Month Day: 0 5 0 5 | Date

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day | Date

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Date

Signature | Month Day

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N M 0 8 9 0 0 1 0 5 1 5
Manifest Document No.: 9 2 2 4 9

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130056

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11. A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Sodium, Metal Dispersion in Organic Solvent Flammable Solid, Unl429 (Dangerous When Wet)	001	DF	00002	P	978400
X	b. Waste Sulfuric Acid, Spent Corrosive Material, Unl832	001	DF	00002	P	978400
X	c. Waste Tetrahydrofuran Flammable Liquid, UN2056	001	DF	00003	P	978400
X	d. Waste Thallium Salt, Solid Poison B, NA1707	001	DF	00001	P	978400

J. Additional Descriptions for Materials Listed Above: H051626-60
11a) D001,D003
11b) D002
11c) D001,U213
11d) D003

K. Handling Codes for Wastes Listed Above: T07

15. Special Handling Instructions and Additional Information: IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS.: 11A: 40 11B: 139 11C: 26 11D: 53

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 05 09 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: [illegible]
Date: Month Day Year: 06 16 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (TX)
Printed/Typed Name:
Signature:
Date: Month Day Year:

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

OCT 01 1992

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Form approved. OMB No. 2050-0039. Expires 09-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 5 0

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00130057

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Naphthalene ORM-A, UN1334	0 0 1	D M	0 0 0 0 1	P	978400
X	b. Waste Petroleum Naptha, Solution Combustible Liquid, NA1255	0 0 1	D F	0 0 0 1 0	P	978400
X	c. Waste Sodium Hydroxide, Liquid Corrosive Material, UN1824	0 0 2	D F	0 0 0 0 2	P	978400
X	d. Waste Sodium Sulfide, Anhydrous Flammable Solid, UN1385	0 0 1	D F	0 0 0 0 1	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) U165
11b) D001
11c) D002
11d) D001,D003

K. Handling Codes for Wastes Listed Above
T-07

15. Special Handling Instructions and Additional Information IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK". EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# - (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS: 11A: 32 11B: 27 11C: 60 11D: 34

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 05 05 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 05 05 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (TX)
Printed/Typed Name:
Signature:
Date: Month Day Year:

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09-30-9

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 5 1

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130058

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Magnesium, Metal Flammable Solid, UN1869 (Dangerous When Wet)	003	DF	00016	P	978400
X	b. Waste Methylene Chloride ORM-A, UN1593	001	DF	00008	P	978400
X	c. Waste Monoethanol Amine Corrosive Material, UN2491	001	DF	00001	P	978400
X	d. Waste Paint Related, Material Flammable Liquid, UN1263	001	DF	00008	P	978400

J. Additional Descriptions for Materials Listed Above: HO51626-60
11a) D001,D003
11b) U080
11c) D002
11d) D001,D007

K. Handling Codes for Wastes Listed Above: T-07

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DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 76 11B: 74
11C: 60 11D: 26

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Printed/Typed Name: Andrew J. Montoya
Signature: [signature]
Month Day Year: 05 05 92

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: [signature]
Date: Month Day Year: 05 05 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (TX)
Printed/Typed Name:
Signature:
Date: Month Day Year:

GENERATOR
TRANSPORTER
FACILITY

OCT 01 1992

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 5 2

2. Page 1 of 1

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3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130059

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Thioglycolic Acid Corrosive Material, UN1940	001	DF	00001	P	978400
X	b. Waste Trichloroethylene ORM-A, UN1710	003	DF	00021	P	978400
X	c. Waste Water Reactive Solid, N.O.S. Flammable Solid, UN2813	002	DF	00012	P	978400
X	d. Waste Alcohol, N.O.S. Flammable Liquid, UN1987	001	DF	00001	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D002
11b) U228,D040
11c) D001,D002,D003
11d) D001

K. Handling Codes for Wastes Listed Above
T-07

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DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 66 11B: 74
11C: 40 11D: 26

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Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 05 05 19

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 05 05 19

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19
RES (TX)
Printed/Typed Name:
Signature:
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 5 3

2. Page 1 of 1

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3. Generator's Name and Mailing Address (SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130060

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. "RQ" Waste Poison B, Liquid, N.O.S. (D004) Poison B, UN2810 (Phenyl Arsine Oxide)	0 0 1	D F	0 0 0 1 0	P	978400
X	b. Waste Poison B, Solid, N.O.S. (Gold Cyanide) Poison B, UN2811	1 / 0 0 ~~4~~ 3	DM / D F	0 0 0 0 2 / 0 0 0 0 ~~5~~ 3	P / P	ECA / 978400
X	c. Waste Combustible Liquid, N.O.S. Combustible Liquid, NA1993	0 0 7	D F	0 0 1 0 8	P	978400
X	d. Waste Combustible Liquid, N.O.S. Combustible Liquid, NA1993	0 0 1	D M	0 0 0 0 1	P	978400

J. Additional Descriptions for Materials Listed Above HO51626-60
11a) D004
11b) U218,D003,P030,D004
11c) D001,D010
11d) D001

K. Handling Codes for Wastes Listed Above
T-07

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DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 55 11B: 53
11C: 27 11D: 27

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Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 0 5 0 5 9 2

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 0 5 0 5 9 2

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES (TX)
Printed/Typed Name:
Signature:
Date: Month Day Year

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 2 5 4

2. Page 1 of 1

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ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130061

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Oil, N.O.S. Combustible Liquid, NA1270	0 0 1	D F	0 0 0 0 1	P	978400
X	b. Waste ORM-A, N.O.S. ORM-A, NA1693	0 0 8	D F	0 0 0 3 8	P	978400
X	c. Hazardous Waste Liquid, N.O.S. ORM-E, NA9189	0 0 1	D F	0 0 0 1 4	P	978400
X	d. "RQ" Hazardous Waste Liquid, N.O.S. (D010) ORM-E, NA9189	0 0 1	D F	0 0 0 1 0	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a) D010
11b) U226,U211,D019,U080,F001,D002,F002
11c) F001
11d) D010

K. Handling Codes for Wastes Listed Above
T-07

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DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS.:
11A: 27 11B: 58
11C: 31 11D: 31

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Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day Year: 09 30 92

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: George J. Lombard
Signature: George J. Lombard
Date: Month Day Year: 09 30 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RES (TX)
Date
Signature
Month Day Year

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P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

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UNIFORM HAZARDOUS WASTE MANIFEST

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2. Page 1 of 1

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ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number: 00130062

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID: HW-50089-001

H. Facility's Phone: 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. "RQ" Waste Corrosive Liquid, N.O.S. (D011) Corrosive Material, UN1760	002	DF	00013	P	978400
X	b. Waste 1,1,1-Trichloroethane ORM-A, UN2831	001	DF	00001	P	978400
X	c. "RQ" Waste Arsenical, Mixture (D004) Poison B, UN1556	~~002~~	DF	~~00016~~	P	978400
X	d. Waste Poison B, Liquid, N.O.S. Poison B, UN2810	~~004~~	DF	~~00009~~	P	978400

AM 5-5 12

J. Additional Descriptions for Materials Listed Above
11a) D002 H051626-60
11b) U226 Tap Magic
11c) Phenyl Arsenic Oxide
11d) D003

K. Handling Codes for Wastes Listed Above
T-07

15. Special Handling Instructions and Additional Information
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11C: 55 11D: 55

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Printed/Typed Name: Andrew J. Montoya — Signature: Andrew J. Montoya — Month Day Year: 05 05 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name: George J. Lombard — Signature: George J. Lombard — Month Day Year: 05 05 92

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19
RESULT — Date

Printed/Typed Name — Signature — Month Day Year

TEXAS WATER COMMISSION
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UNIFORM HAZARDOUS WASTE MANIFEST

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2. Page 1 of 1

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ATTN: ANNEMARIE GUSTAVSSON
(SEE BOX 15)
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00130063

B. State Generator's ID 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number: D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number: T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001

H. Facility's Phone 713-930-2300

11A HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Flammable Solid, N.O.S. Flammable Solid, UN1325	007	DF	00014	P	978400
X	b. Waste Acid, Liquid, N.O.S. Corrosive Material, NA1760	002	DF	00028	P	978400
X	c. Waste Corrosive Liquid, N.O.S. Corrosive Material, UN1760	010	DF	00067	P	978400
X	d. Waste Corrosive Liquid, N.O.S. Corrosive Material, UN1760	003	DM	00006	P	978400

J. Additional Descriptions for Materials Listed Above H051626-60
11a)D001, D008
11b)D002
11c)D002, D004, D006, D011
11d)D002

K. Handling Codes for Wastes Listed Above
T-07

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11C: 60 11D: 60

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Printed/Typed Name: Andrew J. Montoya | Signature: Andrew J. Montoya | Month Day Year: 05 05 92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name: George J. Lombard | Signature: George J. Lombard | Month Day Year: 05 05 92

18. Transporter 2 Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES (TX)

Date

Printed/Typed Name | Signature | Month Day Year

7.18.1 M285

OCT 01 1992

CHEMPAK

ROLLINS **CHEMPAK** INC.

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

PART I: Generator and Manifest Information

Generator Name: Los Alamos National Laboratory

Address: P.O Box 1663 MS J 593

City: Los Alamos State: NM Zip Code: 87545

Telephone: area code (505)- 667-7579 EPA ID#: NM0890010575

STATE Manifest #(s): _____ RES Stream (one only) # H057626-60

PART II: Waste Subject to Land Disposal Restrictions:

Pursuant to 40 CFR 268.7 I am notifying the following facility (check one):

~~o Rollins Environmental Services (LA)~~ X Rollins Environmental Services (TX)
o Rollins Environmental Services (NJ) o OPC o TET;

that under the above RES stream number and State Manifest Number(s), I am shipping to you a waste identified by the EPA waste numbers circled on attached page 2-list of applicable waste codes-, which are subject to the EPA Land Disposal Restrictions. These wastes were prepared in accordance to 40 CFR 268.42 and are:(Check 1a,1b or both)

X **1a. Lab packs containing only waste listed in 40 CFR 268, Appendix IV, and may contain appropriate non-RCRA solid waste. (Check statement 2-Part III). These lab packs must be treated in accordance with 268.42(b) by INCIN*, followed by treatment of D004-008, D010,D011 metals per 268.41(a). These lab packs contain the below checked metals:**

X D004 X D005 X D006 X D007 X D008 X D010 X D011

o **1b. Lab packs containing only organic wastes listed in 40 CFR 268, Appendix V, and may contain appropriate non-RCRA solid waste. (Check statement 3-Part III) These lab packs must be treated in accordance with 268.42(b) by INCIN.***

PART III: Authorized Representative (Check 2,3 or both as indicated above and sign)

X **2. I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes specified in Appendix IV to Part 268 or solid waste not subject to regulations under Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.**

o **3. I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic wastes specified in Appendix V to Part 268 or solid waste not subject to regulations under Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.**

Signature: Andrew J. Montoya Date: 5-5-92

Print or Type Name: Andrew J. Montoya

Title: Staff Member

* *INCIN=Incineration in a RCRA subpart O facility*

All information must be completed and signed by generator.

APPENDIX IV/V LAB PACKS ONLY

Generator:
Stream number (one only):

Date:

APPENDIX IV WASTE CODES (Circle all that apply)

P001, P002, P003, P004, P005, P006, P007, P008, P009, P013, P014, P015, P016, P017, P018, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P033, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P056, P057, P058, P059, P060, P062, P063, P064, P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P077, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P106, P108, P109, P110, P111, P112, P113, P114, P115, P116, P118, P119, P120, P121, P122, P123

U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U136, U137, U138, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U152, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U213, U214, U215, U216, U217, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249

F001, F002, F003, F004, F005, F006, F010,

K001, K002, K008, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K028, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047, K048, K049, K050, K051, K052, K060, K061, K069, K071, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K113, K114, K115, K116

D001, D002, D003, D004, D005, D006, D007, D008, D010, D011, D012, D013, D014, D015, D016, D017
D019 D018 D040 D022

APPENDIX V Waste Codes (Circle all that apply)

P001, P002, P003, P004, P005, P007, P008, P009, P014, P015, P016, P017, P018, P020, P021, P022, P023, P024, P026, P027, P028, P030, P031, P033, P034, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P057, P058, P059, P060, P062, P063, P064, P065, P066, P067, P068, P069, P070, P071, P072, P075, P077, P081, P082, P084, P085, P088, P089, P093, P094, P095, P097, P098, P101, P102, P105, P106, P108, P109, P111, P112, P116, P118, P123

U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U135, U137, U138, U140, U141, U142, U143, U147, U148, U149, U150, U152, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U206, U207, U208, U209, U210, U211, U213, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249

F001, F002, F003, F004, F005, F010,

K001, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047, K048, K049, K050, K051, K052, K054, K060, K065, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K136,

7.18.1M299

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P.O. BOX 82178
BATON ROUGE, LOUISIANA 70884-2178

PLEASE PRINT OR TYPE (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663, MS J515
LOS ALAMOS, NM 7544

4. Generator's Phone (505) 667-7279

A. State Manifest Document Number
LA A 6026570

B. State Generator's ID
99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number

C. State Transporter's ID 40756

D. Transporter's Phone (713) 930-4500

7. Transporter 2 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone (504) 774-3647

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (LA), INC.
13351 SCENIC HIGHWAY
BATON ROUGE, LA 70807

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone 504-778-1234

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Waste~~ Poison B Solid, N.O.S. Poison B, UN2811	002	DF	02000	P	NR
b. Waste Acid Liquid, N.O.S. Corrosive Material, UN1760	001	DF	00015	P	D002
c. Waste Oleum (Fuming Sulfuric Acid) Corrosive Material, NA1831 (Poison Inhalation Hazard)	001	DF	00015	P	D002
d. Waste Paint Related Material Flammable Liquid, UN1263	003	DF	00150	P	D001

J. Additional Descriptions for Materials Listed Above
BR33400
11a) Trash With Metal Beryllium
11b) D007,D006,D007,D008,D009, Samples w/10% Nitric Acid
11c)
11d) D009,D008, Epoxy Enamel, Hg <260 ppm

K. Handling Codes for Wastes Listed Above
M043

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT AND WEAR PROTECTIVE GEAR WHEN HANDLING. IN EMERGENCY, CALL CHEMTREC AT 1-800-424-9300 AND MENTION "LAB PACK." IF SPILLED IN LOUISIANA, CALL THE DEPT. OF PUBLIC SAFETY AT 1-504-925-6595. [illegible] LANL 24-HOUR EMERGENCY (505) [illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimize the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya | Signature: Andrew Montoya | Month 08 Day 18 Year 91

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John Slaughter | Signature: John Slaughter | Month 08 Day 18 Year 91

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Herbert Manuel | Signature: H. Manuel | Month [illegible] Day [illegible] Year [illegible]

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month Day Year

IF SPILLED IN LOUISIANA CALL THE LOUISIANA [illegible] AT 5[illegible]-65[illegible] (DAY OR NIGHT)

7.18.1M299

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P.O. BOX 82178
BATON ROUGE, LOUISIANA 70884-2178

PLEASE PRINT OR TYPE (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J595
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-757

A. State Manifest Document Number: LAA 6026570

B. State Generator's ID: 99935

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number

C. State Transporter's ID: 40756

D. Transporter's Phone: (713) 930-4500

7. Transporter 2 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

8. US EPA ID Number

E. State Transporter's ID:

F. Transporter's Phone: (504) 774-364

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (LA), INC.
2351 SCENIC HIGHWAY
BATON ROUGE, LA 70807

10. US EPA ID Number: LAD 008125217

G. State Facility's ID:

H. Facility's Phone: 504-778-1234

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. ~~Waste~~ Poison B Solid, N.O.S. Poison B, UN2811	002	DF	00200	P	NR
b. Waste Acid Liquid, N.O.S. Corrosive Material, UN1760	001	DF	00015	P	D002
c. Waste Oleum (Fuming Sulfuric Acid) Corrosive Material, NA1831 (Poison Inhalation Hazard)	001	DF	00010	P	D002
d. Waste Paint Related Material Flammable Liquid, UN1263	006	DF	00150	P	D001

J. Additional Descriptions for Materials Listed Above: 23400
11a) Trash with Metal Beryllium
11b) D005,D006,D007,D008,D009 (Samples with Nitric Acid)
11c) [illegible]
11d) D009,D008, Epoxy Enamel, Hg <260 ppm

K. Handling Codes for Wastes Listed Above: M043

15. Special Handling Instructions and Additional Information
IF UNDELIVERABLE, RETURN TO GENERATOR. AVOID CONTACT AND WEAR PROTECTIVE GEAR WHEN HANDLING. IN EMERGENCY, CALL CHEMTREC AT 1-800-424-9300 AND MENTION "LAB PACK." IF SPILLED IN LOUISIANA, CALL LA DEPT. OF PUBLIC SAFETY AT 1-504-925-6595.
DOT EMERGENCY RESPONSE GUIDE REFERENCE NUMBERS: 11A: 53 11B: 50 11C: 39 11D: 80
ADDITIONAL CHARGES INFORMATION IS ATTACHED. LANL 24-HOUR EMERGENCY: (505) 667-7

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya | Signature: Andrew J. Montoya | Month Day: 08 04

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: John Slonaker | Signature: John Slonaker | Month Day: 08 04

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: Herbert Manuel | Signature: H. R. Manuel | Month Day: 08 04

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Signature | Month Day

IF SPILLED IN LOUISIANA CALL THE LOUISIANA HAZMAT UNIT AT 504/925-6595 (DAY OR NIGHT)

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P.O. BOX 82178
BATON ROUGE, LOUISIANA 70884-2178

7.18.1M299

PLEASE PRINT OR TYPE (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No 2050-0039 Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address

[illegible]

4. Generator's Phone ([illegible])

A. State Manifest Document Number: LAA 6026571

B. State Generator's ID: [illegible]

5. Transporter 1 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name: CUSTOM ENVIRONMENTAL TRANSPORT

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone: (504) 776-3640

9. Designated Facility Name and Site Address

[illegible]

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone: 504-776-[illegible]

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Corrosive Liquid, N.O.S. Corrosive Material, [illegible]					D002
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above BR33400

11a) D007,D004,D006,D008,D009,D010,D011, Lab Trasn w/Hydrogen Fluoride,Fluorine

11b)

11c)

11d)

K. Handling Codes for Wastes Listed Above

M043

15. Special Handling Instructions and Additional Information

[illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[signature]	[illegible]	[illegible]	[illegible]

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
John Slonaker	[signature]			

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Herbert Manuel	[signature]	[illegible]	[illegible]	[illegible]

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except [illegible]

TEXAS WATER COMMISSION
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087

03D 00431

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form approved. OMB No. 2050-0039, expires 09-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N M 0 8 9 0 0 1 0 5 1 5 | Manifest Document No. 9 2 6 8 7

2. Page 1 of 1

Information in the shaded are is not required by Federal la

3. Generator's Name and Mailing Address
(SEE BOX 15)
ATTN: ANNEMARIE GUSTAVSSON
LOS ALAMOS NATIONAL LABORATORY
P.O. BOX 1663; MS J593
LOS ALAMOS, NM 87545

4. Generator's Phone (505) 667-7579

A. State Manifest Document Number 00103374
B. State Generator's ID 99935

5. Transporter 1 Company Name
CUSTOM ENVIRONMENTAL TRANSPORT

6. US EPA ID Number D E D 9 8 0 9 1 8 8 5 8

C. State Transporter's ID 40756
D. Transporter's Phone (713) 930-450

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
ROLLINS ENVIRONMENTAL SERVICES (TX) INC.
2027 BATTLEGROUND ROAD
DEER PARK, TX 77536

10. US EPA ID Number T X D 0 5 5 1 4 1 3 7 8

G. State Facility's ID HW-50089-001
H. Facility's Phone 713-930-2300

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	
X	a. Waste Flammable Liquid, N.O.S. Flammable Liquid, UN1993	0 1 2	D F	0 0 2 4 4	P	978400
X	b. Waste Oxidizer, N.O.S. Oxidizer, UN1479	0 0 2	D F	0 0 0 0 7	P	978400
X	c. Waste Corrosive Liquid, N.O.S. Corrosive Material, UN1760	0 0 3	D F	0 0 0 2 0	P	978400
X	d. Waste Poison B Liquid, N.O.S. Poison B, UN2810	0 0 1	D F	0 0 0 2 0	P	978400

J. Additional Descriptions for Materials Listed Above
11a) D001,F003,U002,F002,F005,D011, Enamel
11b) D001,D003,D005,D006,D007, Tribium
11c) D002, Photo Fixer w/sulfuric
11d) D022, 10% Phenol Solution

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
RETURN TO GENERATOR. AVOID CONTACT, IF UNDELIVERABLE, CALL CHEMTREC AT 1-800-424-9300 & MENTION "LAB PACK".
EMERGENCY RESPONSE INFORMATION IS ATTACHED. LANL# (505) 667-7080

DOT EMERGENCY RESPONSE GUIDE REFERENCE NOS:
11A: 27 11B: 35
11C: 60 11D: 55

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and nation government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and selec the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Andrew J. Montoya
Signature: Andrew J. Montoya
Month Day: 09 24 9

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DAVID L LONG
Signature
Date: Month Day: 09 24 9

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
RES(TX)
Printed/Typed Name
Signature
Date: Month Day

APPENDIX R

LDR NOTIFICATIONS MISSING MANIFEST NUMBERS

HO / Bulks

ROLLINS ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS ~~NATIONAL LAB~~ *State:* NM *Zip:* 875
4. *RES Reference #* (BR/HO/L/W/MO/OP): 33400 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories

D002, F002

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or ___ nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representati

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identifi III below, complete Part III rather than Part II.)

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that under th RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

X 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; X F002; ___ ____ F004; ____ F005; ____ F039.

X 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

X 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required techno Attachment 3, is ____ INCIN; X DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, fc ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

X 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have si required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. A D001-D011 waste which (a) ____ does (b) X does not meet the definition of a "California List" w definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclc

____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" w definition below). If (a), I have also checked the "California List section of Attachment 1, which I am encl

____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" s Attachment 1, which I am enclosing.

____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of A 2, which I am enclosing.

____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of A 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists on or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg/l, or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing a following materials at a concentration equal to or greater than specified: PCB's, 50 ppm; or (in mg/l) free cyanides, 1000; As, 500; Cd, 10 Pb, 500; Hg, 20; Ni, 134; Se, 100; Tl, 130.

R

RES-50-423 REV. 6/91

NON-WASTEWATERS

ADDITIONAL NOTIFICATION FOR F001-F005, F039 AND CALIFORNIA LIST WA

For Part II, Line 1 of the LDR Notification (F001-F005, F039)

This waste must be treated to meet the following treatment standards (check the appropriate line and constituents):

____ F001 X F002 ____ F003 ____ F004 ____ F005

WASTE CODE	REGULATED HAZARDOUS CONSTITUENT	WASTEWATERS CONCENTRATION (mg/l)	NONWASTEWATERS CONCENTRATION (mg/l)
	TABLE CCWE		
F001 - F005 spent solvents	Acetone	0.05	0.59
	n-Butyl alcohol	5.0	5.0
	Carbon disulfide	1.05	4.81
	Carbon tetrachloride	0.05	0.96
	Chlorobenzene	0.15	0.05
	Cresols (and cresylic acid)	2.82	0.75
	Cyclohexanone	0.125	0.75
	1, 2 - Dichlorobenzene	0.65	0.125
	Ethyl acetate	0.05	0.75
	Ethylbenzene	0.05	0.053
	Ethyl ether	0.05	0.75
	Isobutanol	5.0	5.0
	Methanol	0.25	0.75
	Methylene chloride	0.2	0.96
	Methyl ethyl ketone	0.05	0.75
	Methyl isobutyl ketone	0.05	0.33
	Nitrobenzene	0.66	0.125
	Pyridine	1.12	0.33
	Tetrachloroethylene	0.079	0.05
	Toluene	1.12	0.33
	1, 1, 1, - Trichloroethane	1.05	0.41
	1, 1, 2 - Trichloro-1, 2, 2 - Trifluorethane	1.05	0.96
	Trichloroethylene	0.062	0.091
	Trichlorofluoromethane	0.05	0.96
	Xylene	0.05	0.15
	TABLE CCW		
F001 - F005 spent solvents	1, 1, 2, Trichloroethane	0.030	7.80
	Benzene	0.070	3.70
F001 - F005 spent solvents (Pharmaceutical Industry Wastewater Subcategory)	Methylene chloride	0.44	NA
	REQUIRED METHOD		
F005	2-Nitropropane	INCIN	INCIN
F005	2-Ethoxyethanol	INCIN	INCIN

____ For F039, as indicated on the reverse side of this Attachment

California List : For Part II, Line 6, 7, or 8 of the LDR Notification:

This waste must be treated as indicated below if it meets the definition of a "California List" waste and (a) no other treatment is in effect for the California List constituent; or (b) it is a liquid hazardous waste ≥ 50 ppm PCBs, or ≥ 134 mg/l Ni, or ≥ 13 Tl; or (c) it is a D001-D011 waste and a treatment standard for the California List constituent is not otherwise in effect. Che appropriate line below.

____ HOC ≥ 1000 ppm: incinerate in a RCRA incinerator

____ liquids, PCB ≥ 50 ppm: incinerate in a TOSCA/RCRA incinerator

____ liquid, pH ≤ 2: Neutralize

____ liquid, free cyanides ≥ 1000 ppm: *

____ liquid, As ≥ 500 mg/l: *

____ liquid, Cd ≥ 100 mg/l: *

____ liquid, Cr ≥ 500 mg/l: *

____ liquid, Pb ≥ 500 mg/l: *

____ liquid, Hg ≥ 120 mg/l: *

____ liquid, Ni ≥ 134 mg/l: *

____ liquid, Se ≥ 100 mg/l: *

____ liquid, Tl ≥ 130 mg/l: *

NOT APPLICABLE

* Treat to below California List concentration, or to non-liquid form.

R

BATON ROUGE
NON-REG

ROLLINS
ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 8754
4. *RES Reference # (BR/HO/L/W/MO/OP):* 37362 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories)

none

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or ✓ nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representativ

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identifie III below, complete Part III rather than Part II.)

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ___ ____ F004; ____ F005; ____ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

_____ 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technol Attachment 3, is ____ INCIN; ____ DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

_____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have sig required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

_____ 6. A D001-D011 waste which (a) ____ does (b) ____ does not meet the definition of a "California List" wa definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclos

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" wa definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclos

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" sec Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Att 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of Att 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

✓ Pursuant to 40 CFR 268.7, I am notifying ✓ RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under th reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature: John C. Kelly Date: 10/22/92

Print or Type Name: John C. Kelly

Title: Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 m mg/l, or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any following materials at a concentration equal to or greater than specified: PCB's, 50 ppm; or (in mg/l) free cyanides, 1000; As, 500; Cd, 100; Pb, 500; Hg, 20; Ni, 134; Se, 100; Tl, 130.

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TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHME

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A : Ambrdrous
ALK : Alkaline
C : Corrosive
CB : Cadmium Battery
CS : Calcium Sulfate Subcategory
E : Explosives
H : Hydrated
HW : High Mercury (>260 mg/kg)
HZ : High Zn (>1%) Subcategory
LB : Lead Acid Battery
LA : Low Arsenic (<1%) Subcategory
LIQ : Liquid
LM : Low Mercury (<260 mg/kg) Subcategory
LZ : Low Zinc (<1%)
NAGH : No Ash Subcategory
NCS : Non-Calcium Sulfate Subcategory
NWW : Nonwastewater
OX : Oxidizer
R : Reactive
RC : Reactive Cyanides Subcategory
RS : Reactive Sulfides Subcategory
S : Solid
WR : Water Reactive
X : Hazardous Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

ADGAS +b NEUTR : Venting of Compressed Gases followed by neutralization.
(INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
IMERC : Incineration of Organics and Mercury Contaminated Wastes
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable)
COLUMN 2 : Waste has Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste has Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Dates of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES:
1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RMS not permitted).
3. Waste newly listed since November 8, 1986 and not in the table below are currently not regulated under LDR.
4. Some non-dioxin wastes which are marked "Do Not Accept" below may be acceptable at some RMS plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 GAS		DEACT		
D001LIQ (<10% TOC		DEACT		
D001LIQ >10% TOC		INCIN		
D001HZ		DEACT		
D001R		DEACT		
D002ACID		DEACT		
D002ALK		DEACT		
D002C		DEACT		
D002E		DO NOT ACCEPT		
D002R		DEACT		
D003RC			X	
D003RS		DEACT		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006CB		DO NOT ACCEPT		
D007	X			
D008LB		DO NOT ACCEPT		
D009	X			
D009HW		DO NOT ACCEPT		
D009 B	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K091			X	
K092			X	
K093		DO NOT ACCEPT		
K094		DEACT		
K095		DEACT		
K096	X			
K097		DEACT		
K098	X		X	
K099	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ		DO NOT ACCEPT		
K061LZ	X			
K062	X			
K069CS	X			
K069NCS		DO NOT ACCEPT		
K071HW		DO NOT ACCEPT		
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099		DO NOT ACCEPT		
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)
K102	X		X
K103			X
K104			X
K105			X
K106HW		DO NOT ACCEPT	
K106LW	X		
K112		INCIN	
K114		INCIN	
K113	X	INCIN	
K115		INCIN	
P001		INCIN	
P002		INCIN	
P003		INCIN	
P004			X
P005		INCIN	
P006		INCIN	
P007		INCIN	
P008		INCIN	
P009		INCIN	
P010	X		
P011	X		
P012	X		
P013	X		X
P014		INCIN	
P015		DO NOT ACCEPT	
P016		INCIN	
P017		INCIN	
P018		INCIN	
P020			X
P021			X
P022		INCIN	
P023		INCIN	
P024			X
P025		INCIN	
P027		INCIN	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D013			X	
D014			X	
D015			X	
D016			X	
D017			X	
F001	X		X	
F002	X		X	
F003	X		X	
F004	X		X	
F005	X	INCIN#	X	
F006	X		X	
F007	X		X	
F008	X		X	
F009	X		X	
F010			X	
F011	X		X	
F012	X		X	
F019	X		X	
F020		DO NOT ACCEPT		
F021		DO NOT ACCEPT		
F022		DO NOT ACCEPT		
F023		DO NOT ACCEPT		
F024	X	INCIN	X	
F025			X	
F026		DO NOT ACCEPT		
F027		DO NOT ACCEPT		
F028		DO NOT ACCEPT		
F039	X		X	5/8/92
K001	X		X	
K002	X			
K003	X			
K004	X			
K005	X			
K006A	X			

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K006H	X			
K007	X			
K008	X			
K009			X	
K010			X	
K011			X	
K013			X	
K014			X	
K019	X		X	
K016			X	
K017			X	
K018			X	
K019			X	
K020			X	
K021	X		X	
K022	X		X	
K023			X	
K024			X	
K025		INCIN		
K026		INCIN		
K027		INCIN		
K028	X		X	
K029			X	
K030			X	
K031	X			5/8/92
K032			X	
K033			X	
K034			X	
K035			X	
K036			X	
K037			X	
K038			X	
K039		INCIN		
K040			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P028		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		ADGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P063HW		DO NOT ACCEPT		
P063LW	X	IMERC		5/8/92
P066		INCIN		
P067		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCME)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCM)
P068		INCIN	
P069		INCIN	
P070		INCIN	
P071			X
P072		INCIN	
P073	X		
P074	X		X
P075		INCIN	
P076		ADGAS	
P077			X
P078		ADGAS	
P081		INCIN	
P082		INCIN	
P084		INCIN	
P085		INCIN	
P087		DO NOT ACCEPT AFT	
P088		INCIN	
P089			X
P092HW		DO NOT A	
P092LW	X	IMERC	
P093		INCIN	
P094			
P095		INCIN	
P096			
P097			X
P098			
P099	X		
P101			
P102		INCIN	
P103	X		
P104	X		
P105		INCIN	
P106			
P108		INCIN	
P109		INCIN	

Technology Only For 2-Nitropropane, 2-Ethoxyethanol

Baton Rouge
NON-AIV

ROLLINS ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. Generator Name: LOS ALAMOS NATIONAL LABS EPA I.D. #: NM089001
2. Address: PO BOX 1663, MS J593
3. City: LOS ALAMOS State: NM Zip: 875
4. RES Reference # (BR/HO/L/W/MO/OP): 33400 Manifest #: _____
5. EPA Waste Codes (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories

D007, D008, D009, F003, F005

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or ___ nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representativ

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identifie III below, complete Part III rather than Part II.)

____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); X RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

X 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ___ F002; X ____ F004; X F005; ____ F039.

X 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

____ 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technol Attachment 3, is ____ INCIN; ____ DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, fo ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have sig required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. A D001-D011 waste which (a) ____ does (b) X does not meet the definition of a "California List" wa definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclos

____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" w definition below). If (a), I have also checked the "California List section of Attachment 1, which I am encl

____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" se Attachment 1, which I am enclosing.

____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of At 2, which I am enclosing.

____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of At 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under th reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists onl or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 m mg/l, or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing an following materials at a concentration equal to or greater than specified: PCB's, 50 ppm; or (in mg/l) free cyanides, 1000; As, 500; Cd, 100 Pb, 500; Hg, 20; Ni, 134; Se, 100; Tl, 130.

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RES-50-423 REV. 6/91

NON-WASTEWATERS

ADDITIONAL NOTIFICATION FOR F001-F005, F039 AND CALIFORNIA LIST WA

For Part II, Line 1 of the LDR Notification (F001-F005, F039)

This waste must be treated to meet the following treatment standards (check the appropriate line and constituents):

____ F001 ____ F002 X F003 ____ F004 X F005

WASTE CODE	REGULATED HAZARDOUS CONSTITUENT	WASTEWATERS CONCENTRATION (mg/l)	NONWASTEWATERS CONCENTRATION (mg/l)
	TABLE CCWE		
F001 - F005 spent solvents	Acetone	0.05	0.59
	n-Butyl alcohol	5.0	5.0
	Carbon disulfide	1.05	4.81
	Carbon tetrachloride	0.05	0.96
	Chlorobenzene	0.15	0.05
	Cresols (and cresylic acid)	2.82	0.75
	Cyclohexanone	0.125	0.75
	1, 2 - Dichlorobenzene	0.65	0.125
	Ethyl acetate	0.05	0.75
	Ethylbenzene	0.05	0.053
	Ethyl ether	0.05	0.75
	Isobutanol	5.0	5.0
	Methanol	0.25	0.75
	Methylene chloride	0.2	0.96
	Methyl ethyl ketone	0.05	0.75
	Methyl isobutyl ketone	0.05	0.33
	Nitrobenzene	0.66	0.125
	Pyridine	1.12	0.33
	Tetrachloroethylene	0.079	0.05
	Toluene	1.12	0.33
	1, 1, 1, - Trichloroethane	1.05	0.41
	1, 1, 2 - Trichloro-1, 2, 2 - Trifluorethane	1.05	0.96
	Trichloroethylene	0.062	0.091
	Trichlorofluoromethane	0.05	0.96
	Xylene	0.05	0.15
	TABLE CCW		
F001 - F005 spent solvents	1, 1, 2, Trichloroethane	0.030	7.80
	Benzene	0.070	3.70
F001 - F005 spent solvents (Pharmaceutical Industry Wastewater Subcategory)	Methylene chloride	0.44	NA
	REQUIRED METHOD		
F005	2-Nitropropane	INCIN	INCIN
F005	2-Ethoxyethanol	INCIN	INCIN

____ For F039, as indicated on the reverse side of this Attachment

California List : For Part II, Line 6, 7, or 8 of the LDR Notification:

This waste must be treated as indicated below if it meets the definition of a "California List" waste and (a) no other treatment is in effect for the California List constituent; or (b) it is a liquid hazardous waste ≥ 50 ppm PCBs, or ≥ 134 mg/l Ni, or ≥ Tl; or (c) it is a D001-D011 waste and a treatment standard for the California List constituent is not otherwise in effect. Che appropriate line below.

NON-APPLICABLE

____ HOC ≥ 1000 ppm: incinerate in a RCRA incinerator

____ liquids, PCB ≥ 50 ppm: incinerate in a TOSCA/RCRA incinerator

____ liquid, pH ≤ 2: Neutralize

____ liquid, free cyanides ≥ 1000 ppm: *

____ liquid, As ≥ 500 mg/l: *

____ liquid, Cd ≥ 100 mg/l: *

____ liquid, Cr ≥ 500 mg/l: *

____ liquid, Pb ≥ 500 mg/l: *

____ liquid, Hg ≥ 120 mg/l: *

____ liquid, Ni ≥ 134 mg/l: *

____ liquid, Se ≥ 100 mg/l: *

____ liquid, Tl ≥ 130 mg/l: *

* Treat to below California List concentration, or to non-liquid form.

R

TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHMEN

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A : Anhydrous
ALK : Alkaline
C : Corrosive
CB : Cadmium Battery
CS : Calcium Sulfate Subcategory
E : Explosive
H : Hydrated
HW : High Mercury (>260 mg/kg)
HZ : High Zn (>15%) Subcategory
LB : Lead Acid Battery
LA : Low Arsenic ((1%) Subcategory
LIQ : Liquid
LM : Low Mercury ((260 mg/kg) Subcategory
LZ : Low Zinc ((15%)
NAAN : No Ash Subcategory
NCS : Non-Calcium Sulfate Subcategory
NMM : Nonmetamorphic
OX : Oxidizer
R : Reactive
RC : Reactive Cyanides Subcategory
RS : Reactive Sulfides Subcategory
S : Solid
WA : Water Reactive
X : Nonmerical Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

ADGAS fb NEUTR : Venting of Compressed Gases followed by neutralization. (INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
INERC : Incineration of Organics and Mercury Contaminated Wastes
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable)
COLUMN 2 : Waste has Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste has Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Dates of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES:
1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RES not permitted).
3. Waste newly listed since November 8, 1989 and not in the table below are currently not regulated under LDR.
4. Some non-dioxin wastes which are marked "Do Not Accept" below may be acceptable at some RES plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 CAN		DEACT		
D001LIQ (10% TOC		DEACT		
D001LIQ)10% TOC		INCIN		
D001OX		DEACT		
D001R		DEACT		
D002ACID		DEACT		
D002ALK		DEACT		
D002C		DEACT		
D002E	DO NOT ACCEPT			
D002R		DEACT		
D002RC			X	
D002RS		DEACT		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006	X			
D006CS	DO NOT ACCEPT			
D007	X			
D008LS	DO NOT ACCEPT			
D008	X			
D009WR	DO NOT ACCEPT			
D009LS	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K041			X	
K042			X	
K043	DO NOT ACCEPT			
K044		DEACT		
K045		DEACT		
K046	X			
K047		DEACT		
K048	X		X	
K049	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ	DO NOT ACCEPT			
K061LZ	X			
K062	X			
K069CS	X			
K069NCS	DO NOT ACCEPT			
K071HW	DO NOT ACCEPT			
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099	DO NOT ACCEPT			
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)
K102	X		X
K103			X
K104			X
K105			X
K106WW	DO NOT ACCEPT		
K106LS	X		
K113		INCIN	
K114		INCIN	
K115	X	INCIN	
K116		INCIN	
P001		INCIN	
P002		INCIN	
P003		INCIN	
P004			X
P005		INCIN	
P006		INCIN	
P007		INCIN	
P008		INCIN	
P009		INCIN	
P010	X		
P011	X		
P012	X		
P013	X		X
P014		INCIN	
P015	DO NOT ACCEPT		
P016		INCIN	
P017		INCIN	
P018		INCIN	
P020			X
P021			X
P022		INCIN	
P023		INCIN	
P024			X
P026		INCIN	
P027		INCIN	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D013			X	
D014			X	
D015			X	
D016			X	
D017			X	
F001	X		X	
F002	X		X	
F003	X		X	
F004	X		X	
F005	X	INCIN*	X	
F006	X		X	
F007	X		X	
F008	X		X	
F009	X		X	
F010			X	
F011	X		X	
F012	X		X	
F019	X		X	
F020	DO NOT ACCEPT			
F021	DO NOT ACCEPT			
F022	DO NOT ACCEPT			
F023	DO NOT ACCEPT			
F024	X	INCIN	X	
F025			X	
F026	DO NOT ACCEPT			
F027	DO NOT ACCEPT			
F028	DO NOT ACCEPT			
F039	X		X	5/8/92
K001	X		X	
K002	X			
K003	X			
K004	X			
K005	X			
K006A	X			

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)
K006WW	X		
K007	X		
K008	X		
K009			X
K010			X
K011			X
K013			X
K014			X
K015	X		X
K016			X
K017			X
K018			X
K019			X
K020			X
K021	X		X
K022	X		X
K023			X
K024			X
K025		INCIN	
K026		INCIN	
K027		INCIN	
K028	X		X
K029			X
K030			X
K031	X		
K032			X
K033			X
K034			X
K035			X
K036			X
K037			X
K038			X
K039		INCIN	
K040			X

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P020		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		ADGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P065CC	DO NOT ACCEPT			
P065LS	X	INERC		5/8/92
P066		INCIN		
P067		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)
P068		INCIN	
P069		INCIN	
P070		INCIN	
P071			X
P072		INCIN	
P073	X		
P074	X		X
P075		INCIN	
P076		ADGAS	
P077			X
P078		ADGAS	
P081		INCIN	
P082		INCIN	
P084		INCIN	
P085		INCIN	
P087	DO NOT ACCEPT AFT		
P088		INCIN	
P089			X
P092WW	DO NOT ACCI		
P092LS	X	INERC	
P093		INCIN	
P094			X
P095		INCIN	
P096		INCIN	
P097			X
P098			X
P099	X		X
P101			X
P102		INCIN	
P103	X		
P104	X		X
P105		INCIN	
P106			X
P108		INCIN	
P109		INCIN	

* Technology Only For 2-Nitropropane, 2-Ethoxyethanol

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

PART I:Generator and Manifest Information

Generator Name:LOS ALAMOS NATIONAL LABORATORY

Address: LOS ALAMOS NATIONAL LABS
PO BOX 1663, MS J593
LOS ALAMOS, NM 87545

Telephone:(505)667-7579 EPA ID#: NM0890010515

State Manifest #(s): RES Stream #: H058742 -60

PART II:Waste Subject to Land Disposal Restrictions:

-Pursuant to 40 CFR 268.7 I am notifying the following facility(check one):

( ) Rollins Environmental Services(LA) (X) Rollins Environmental Services(TX)
( ) Rollins Environmental Services(NJ) ( ) OPC ( ) TET;

that under the above RES stream number and State Manifest Number(s), I am shipping to you a waste identified by the EPA numbers (listed on page 2) which are subject to the EPA Land Disposal Restrictions. These wastes were prepared in accorda to 40 cfr 268.42 and are (check 1a,1b or both)

(X) 1a. Lab packs containing only waste listed in 40 CFR 268, Appendix IV, and may contain appropriate non-RCRA solid w (Check statement 2-Part III). These lab packs must be treated in accordance with 268.42(b) by INCIN*, followed by of D004-008, D010, D011 metals per 268.41(a). These lab packs contain the below checked metals:

( ) D004 (X) D005 (X) D006 (X) D007 (X) D008 (X) D010 (X) D011

( ) 1b. Lab packs containing only organic wastes listed in 40 CFR 268, Appendix V, and may contain appropriated non-RCR waste. (Check statement 3-Part III) These lab packs must be treated in accordance with 268.42(b) by INCIN.*

PART III: Authorized Representative- (Check 2,3 or both as indicated above and sign)

(X) 2. I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab contains only the wastes specified in Appendix IV to Part 268 or solid waste not subject to regulations under Par I am aware that there are significant penalties for submitting a false certification, including the possibility of or imprisonment.

( ) 3. I certify under penalty of law that I personally have examined and am familiar with the waste through analysis or through knowledge of the waste and that the lab pack contains only organic wastes specified in Appendix V to Pa solid waste not subject to regulation under Part 261. I am aware that there are significant penalties for submit certification, including the possibility of fine or imprisonment.

Signature: John C. Kelly Date: 10/22/92

Print or Type Name: John C. Kelly

Title: Staff Member

INCIN=Incineration in a RCRA subpart O facility

NOTIFICATION per 40 CFR 268.7 for APPENDIX IV/V LAB PACKS ONLY

State Manifest #(s): RES Stream #: H058742

APPENDIX IV WASTE CODES

D001	D002	D003	D005	D006	D007	D008	D010
D011	F001	F002	F003	F005	U226		

ROLLINS ENVIRONMENTAL SERVICES

HOUSTON
Adhesive Aerosol

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010S
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 8754
4. *RES Reference # (BR/HO/L/W/MO/OP):* 55546-18 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories):

D001

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representative.

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified in III below, complete Part III rather than Part II.)

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that under the above RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ____ F004; ____ F005; ____ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

X 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technology, Attachment 3, is ____ INCIN; X DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

_____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have signed the required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. A D001-D011 waste which (a) ____ does (b) X does not meet the definition of a "California List" waste (see definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclosing.

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment3, as I have checked on the enclosed Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" waste (see definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclosing.

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" section of Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Attachment 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of Attachment 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under the above reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only of or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg/l or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any

TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHMENT

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A : Anhydrous
ALK : Alkaline
C : Corrosive
CB : Cadmium Battery
CS : Calcium Sulfate Subcategory
E : Explosives
H : Hydrated
HW : High Mercury (>260 mg/kg)
HZ : High Zn (>15%) Subcategory
LB : Lead Acid Battery
LA : Low Arsenic (<1%) Subcategory
LIQ : Liquid
LM : Low Mercury (<260 mg/kg) Subcategory
LZ : Low Zinc (<15%)
NASH : No Ash Subcategory
NCS : Non-Calcium Sulfate Subcategory
NWW : Nonwastewater
OX : Oxidizer
R : Reactive
RC : Reactive Cyanides Subcategory
RS : Reactive Sulfides Subcategory
S : Solid
WR : Water Reactive
X : Numerical Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

ADGAS (b NEUTR : Venting of Compressed Gases followed by Neutralization (INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
IMERC : Incineration of Organics and Mercury Contaminated Wastes
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable)
COLUMN 2 : Waste has Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste has Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Dates of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES:
1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RES not permitted).
3. Waste newly listed since November 8, 1989 and not in the table below are currently not regulated under LDR.
4. Some specific wastes which are marked "Do Not Accept" below may be acceptable at some RES plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 GAS		DEACT		
D001LIQ (10x TOC		DEACT		
D001LIQ)10x TOC		INCIN		
D001OX		DEACT		
D001R		DEACT		
D002ACID		DEACT		
D002R K		DEACT		
D002T		DEACT		
D003E		DO NOT ACCEP		
D003R		DEACT		
D003RC			X	
D003RS		DEACT		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006	X			
D006CB		DO NOT ACCEPT		
D007	X			
D008LB		DO NOT ACCEPT		
D008	X			
D009HW		DO NOT ACCEPT		
D009LW	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D013			X	
D014			X	
D015			X	
D016			X	
D017			X	
F001	X		X	
F002	X		X	
F003	X		X	
F004	X		X	
F005	X	INCIN4	X	
F006	X		X	
F007	X		X	
F008	X		X	
F009	X		X	
F010			X	
F011	X		X	
F012	X		X	
F019	X		X	
F020		DO NOT ACCEPT		
F021		DO NOT ACCEPT		
F022		DO NOT ACCEPT		
F023		DO NOT ACCEPT		
F024	X	INCIN	X	
F025			X	
F026		DO NOT ACCEPT		
F027		DO NOT ACCEPT		
F028		DO NOT ACCEPT		
F039	X		X	5/8/92
K001	X		X	
K002	X			
K003	X			
K004	X			
K005	X			
K006A	X			

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K006H	X			
K007	X			
K008	X			
K009			X	
K010			X	
K011			X	
K013			X	
K014			X	
K015	X		X	
K016			X	
K017			X	
K018			X	
K019			X	
K020			X	
K021	X		X	
K022	X		X	
K023			X	
K024			X	
K025		INCIN		
K026		INCIN		
K027		INCIN		
K028	X		X	
K029			X	
K030			X	
K031	X			5/8/92
K032			X	
K033			X	
K034			X	
K035			X	
K036			X	
K037			X	
K038			X	
K039		INCIN		
K040			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K041			X	
K042			X	
K043		DO NOT ACCEPT		
K044		DEACT		
K045		DEACT		
K046	X			
K047		DEACT		
K048	X		X	
K049	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ		DO NOT ACCEPT		
K061LZ	X			
K062	X			
K069CS	X			
K069NCS		DO NOT ACCEPT		
K071HW		DO NOT ACCEPT		
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099		DO NOT ACCEPT		
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAP VAR DEF EFF
K102	X		X	
K103			X	
K104			X	
K105			X	
K106HW		DO NOT ACCEPT		
K106LW	X			
K112		INCIN		
K114		INCIN		
K115	X	INCIN		
K116		INCIN		
P001		INCIN		
P002		INCIN		
P003		INCIN		
P004			X	
P005		INCIN		
P006		INCIN		
P007		INCIN		
P008		INCIN		
P009		INCIN		
P010	X			
P011	X			
P012	X			
P013	X		X	
P014		INCIN		
P015		DO NOT ACCEPT		
P016		INCIN		
P017		INCIN		
P018		INCIN		
P020			X	
P021			X	
P022		INCIN		
P023		INCIN		
P024			X	
P026		INCIN		
P027		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P028		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		ADGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P065HW		DO NOT ACCEPT		
P065LW	X	IMERC		5/8/92
P066		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	CAP VAR DEF EFF
P068		INCIN		
P069		INCIN		
P070		INCIN		
P071			X	
P072		INCIN		
P073	X			
P074	X		X	
P075		INCIN		
P076		ADGAS		
P077			X	
P078		ADGAS		
P081		INCIN		
P082		INCIN		
P084		INCIN		
P085		INCIN		
P087	DO NOT ACCEPT AFTER 5/			
P088		INCIN		
P089			X	
P092HW		DO NOT ACCEPT		
P092LW	X	IMERC		
P093		INCIN		
P094			X	
P095		INCIN		
P096		INCIN		
P097			X	
P098			X	
P099	X		X	
P101			X	
P102		INCIN		
P103	X			
P104	X		X	
P105		INCIN		
P106			X	
P108		INCIN		

HOUSTON
Reg. & NbN Reg Age

ROLLINS
ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010S
2. *Address:* P.O. BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 8754
4. *RES Reference # (BR/HO/L/W/MO/OP):* 55548-18 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories)

D001, U075

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representativ

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified III below, complete Part III rather than Part II.)

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ___ F001; ___ F002; ___ ___ F004; ___ F005; ___ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

X 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technol Attachment 3, is ___ INCIN; X DEACT; ___ ADGAS fb NEUTR; ___ IMERC; ___ STABL; or, for ___ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

X 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ___ an "Appendix IV lab pack" or an ___ "Appendix V lab pack". I have sig required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. A D001-D011 waste which (a) ___ does (b) X does not meet the definition of a "California List" wa definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclosi

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment3, as I have checked on the en Attachment 2. The waste (a) ___ does (b) ___ does not meet the definition of a "California List" wast definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclo

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" sec Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Atta 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of Atta 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under the reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any

TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHMENT

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A : Anhydrous
ALK : Alkaline
C : Corrosive
CB : Cadmium Battery
CS : Calcium Sulfate Subcategory
E : Explosive
H : Hydrated
HW : High Mercury (>=260 mg/kg)
HZ : High Zn (>15%) Subcategory
LB : Lead Acid Battery
LA : Low Arsenic (<1%) Subcategory
LIQ : Liquid
LM : Low Mercury (<260 mg/kg) Subcategory
LZ : Low Zinc (<15%)
NAGH : No Ash Subcategory
NCS : Non-Calcium Sulfate Subcategory
NWW : Nonwastewater
OX : Oxidizer
R : Reactive
RC : Reactive Cyanides Subcategory
RS : Reactive Sulfides Subcategory
S : Solid
WR : Water Reactive
X : Numerical Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

AGGAS /b NEUTR : Venting of Compressed Gases followed by neutralization. (INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
IWERC : Incineration of Organics and Mercury Contaminated Wastes
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable)
COLUMN 2 : Waste has Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste has Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Dates of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES:
1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RES not permitted).
3. Waste newly listed since November 8, 1989 and not in the table below are currently not regulated under LDR.
4. Some nonhazardous wastes which are marked "Do Not Accept" below may be acceptable at some RES plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 GAS		DEACT		
D001LIQ (<10% TOC		DEACT		
D001LIQ (>10% TOC		INCIN		
D001OX		DEACT		
D001R		DEACT		
D002AC10		DEACT		
D002ALK		DEACT		
D002C		DEACT		
D003E	DO NOT ACCEPT			
D003R		DEACT		
D003RC			X	
D003RS		DEACT		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006	X			
D006CS	DO NOT ACCEPT			
D007	X			
D008LS	DO NOT ACCEPT			
D008	X			
D009HW	DO NOT ACCEPT			
D009LW	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K091			X	
K092			X	
K093	DO NOT ACCEPT			
K094		DEACT		
K095		DEACT		
K096	X			
K097		DEACT		
K098	X		X	
K099	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ	DO NOT ACCEPT			
K061LZ	X			
K062	X			
K069CS	X			
K069NCS	DO NOT ACCEPT			
K071HW	DO NOT ACCEPT			
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099	DO NOT ACCEPT			
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPA VARI DEFE EFF.
K102	X		X	
K103			X	
K104			X	
K105			X	
K106HW	DO NOT ACCEPT			
K106LW	X			5
K113		INCIN		
K114		INCIN		
K115	X	INCIN		
K116		INCIN		
P001		INCIN		
P002		INCIN		
P003		INCIN		
P004			X	
P005		INCIN		
P006		INCIN		
P007		INCIN		
P008		INCIN		
P009		INCIN		
P010	X			
P011	X			
P012	X			
P013	X		X	
P014		INCIN		
P015	DO NOT ACCEPT			
P016		INCIN		
P017		INCIN		
P018		INCIN		
P020			X	
P021			X	
P022		INCIN		
P023		INCIN		
P024			X	
P026		INCIN		
P027		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D013			X	
D014			X	
D015			X	
D016			X	
D017			X	
F001	X		X	
F002	X		X	
F003	X		X	
F004	X		X	
F005	X	INCIN0	X	
F006	X		X	
F007	X		X	
F008	X		X	
F009	X		X	
F010			X	
F011	X		X	
F012	X		X	
F019	X		X	
F020	DO NOT ACCEPT			
F021	DO NOT ACCEPT			
F022	DO NOT ACCEPT			
F023	DO NOT ACCEPT			
F024	X	INCIN	X	
F025			X	
F026	DO NOT ACCEPT			
F027	DO NOT ACCEPT			
F028	DO NOT ACCEPT			
F039	X		X	5/8/92
K001	X		X	
K002	X			
K003	X			
K004	X			
K005	X			

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K006H	X			
K007	X			
K008	X			
K009			X	
K010			X	
K011			X	
K013			X	
K014			X	
K015	X		X	
K016			X	
K017			X	
K018			X	
K019			X	
K020			X	
K021	X		X	
K022	X		X	
K023			X	
K024			X	
K025		INCIN		
K026		INCIN		
K027		INCIN		
K028	X		X	
K029			X	
K030			X	
K031	X			5/8/92
K032			X	
K033			X	
K034			X	
K035			X	
K036			X	
K037			X	
K038			X	
K039		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P028		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		AGGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P063HW	DO NOT ACCEPT			
P063LW	X	IWERC		5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	CA VA DE EF
P068		INCIN		
P069		INCIN		
P070		INCIN		
P071			X	
P072		INCIN		
P073	X			
P074	X		X	
P075		INCIN		
P076		AGGAS		
P077			X	
P078		AGGAS		
P081		INCIN		
P082		INCIN		
P084		INCIN		
P085		INCIN		
P087	DO NOT ACCEPT AFTER 5			
P088		INCIN		
P089			X	
P092HW	DO NOT ACCEPT			
P092LW	X	IWERC		
P093		INCIN		
P094			X	
P095		INCIN		
P096		INCIN		
P097			X	
P098			X	
P099	X		X	
P101			X	
P102		INCIN		
P103	X			
P104	X		X	
P105		INCIN		
P106			X	

HOUSTON
NON Reg

ROLLINS
ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I, Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010051
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 87544
4. *RES Reference # (BR/HO/L/W/MO/OP):* 58743-60 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories): None

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representative.

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified in III below, complete Part III rather than Part II.)

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ____ F004; ____ F005; ____ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

_____ 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technol Attachment 3, is ____ INCIN; ____ DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

_____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have sig required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

_____ 6. A D001-D011 waste which (a) ____ does (b) ____ does not meet the definition of a "California List" wa definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclos

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the enc Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" waste definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclo

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" sec Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Att 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of At 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that, under the reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists onl or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg

HO/CYL
CG #01

ROLLINS
ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D. #:* NM0890010S
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 8754
4. *RES Reference # (BR/HO/L/W/MO/OP):* 58741-01 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories):

None

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representative.

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified i III below, complete Part III rather than Part II.)

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that under the s RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I a which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by m.. in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ____ ____ F004; ____ F005; ____ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

_____ 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technolog Attachment 3, is ____ INCIN; ____ DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

_____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have signe required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

_____ 6. A D001-D011 waste which (a) ____ does (b) ____ does not meet the definition of a "California List" wast definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclosin

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment3, as I have checked on the en Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" wast definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclosin

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" sectic Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Attac 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of Atta 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that, under the reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K1 K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg mg/l, or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any following materials at a concentration equal to or greater than specified: PCB's, 50 ppm; or (in mg/l) free cyanides, 1000; As, 500; Cd, 100; (

HO/CYC
CG #02

ROLLINS ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I. Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. Generator Name: LOS ALAMOS NATIONAL LABS EPA I.D. #: NM0890010 5
2. Address: PO BOX 1663, MS J593
3. City: LOS ALAMOS State: NM Zip: 8754
4. RES Reference # (BR/HO/L/W/MO/OP): 58940-02 Manifest #: _____
5. EPA Waste Codes (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories)

D001

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representative.

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified in Part III below, complete Part III rather than Part II.)

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ____ F004; ____ F005; ____ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

X 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technology, Attachment 3, is ____ INCIN; X DEACT; ____ ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

_____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have signed required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. A D001-D011 waste which (a) ____ does (b) X does not meet the definition of a "California List" waste (see definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclosing.

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the enclosed Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" waste (see definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclosing.

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" section of Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Attachment 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of Attachment 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under the reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg/l or greater; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any

TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHMENT 3

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A	:	Anhydrous	LM	:	Low Mercury ((260 mg/kg) Subcategory
ALK	:	Alkaline	LZ	:	Low Zinc ((15%)
C	:	Corrosive	NABM	:	No Ash Subcategory
CB	:	Cadmium Battery	NCB	:	Non-Calcine Sulfate Subcategory
CS	:	Calcine Sulfate Subcategory	NWW	:	Nonwastewater
E	:	Explosives	OX	:	Oxidizer
H	:	Hydrated	R	:	Reactive
HM	:	High Mercury ():260 mg/kg)	RC	:	Reactive Cyanides Subcategory
HZ	:	High Zn ()15%) Subcategory	RS	:	Reactive Sulfides Subcategory
LB	:	Lead Acid Battery	S	:	Solid
LA	:	Low Arsenic ((1%) Subcategory	WR	:	Water Reactive
LIQ	:	Liquid	X	:	Numerical Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

AOGAS (6 NEUTR : Venting of Compressed Gases followed by neutralization. (INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
IMERC : Incineration of Organics and Mercury Contaminated Waste
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable)
COLUMN 2 : Waste ban Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste ban Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Date of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES: 1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RES not permitted).
3. Waste newly listed since November 8, 1984 and not in the table below are currently not regulated under LDR.
4. Some non-dioxin wastes which are marked "Do Not Accept" below may be acceptable at some RES plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 GAS		DEACT		
D001LIQ ((10% TOC		DEACT		
D001LIQ)10% TOC		INCIN		
D001OX		DEACT		
D001R		DEACT		
D002ACID		DEACT		
D002ALK		DEACT		
D002C		DEACT		
D003E	DO NOT ACCEPT			
D003R		DEACT		
D003RC			X	
D003RS		DEACT		
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006	X			
D006CB	DO NOT ACCEPT			
D007	X			
D008LB	DO NOT ACCEPT			
D008	X			
D009HW	DO NOT ACCEPT			
D009LW	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K091			X	
K092			X	
K093	DO NOT ACCEPT			
K094		DEACT		
K095		DEACT		
K096	X			
K097		DEACT		
K098	X		X	
K099	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ	DO NOT ACCEPT			
K061LZ	X			
K062	X			
K069CS	X			
K069NCS	DO NOT ACCEPT			
K071HW	DO NOT ACCEPT			
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099	DO NOT ACCEPT			
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K102	X		X	
K103			X	
K104			X	
K105			X	
K106HW	DO NOT ACCEPT			
K106LW	X			5/8
K113		INCIN		
K114		INCIN		
K115	X	INCIN		
K116		INCIN		
P001		INCIN		
P002		INCIN		
P003		INCIN		
P004			X	
P005		INCIN		
P006		INCIN		
P007		INCIN		
P008		INCIN		
P009		INCIN		
P010	X			5/
P011	X			5/
P012	X			5/
P013	X		X	
P014		INCIN		
P015	DO NOT ACCEPT			
P016		INCIN		
P017		INCIN		
P018		INCIN		
P020			X	
P021			X	
P022		INCIN		
P023		INCIN		
P024			X	
P026		INCIN		
P027		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D013			X	
D014			X	
D015			X	
D016			X	
D017			X	
F001	X		X	
F002	X		X	
F003	X		X	
F004	X		X	
F005	X	INCIN	X	
F006	X		X	
F007	X		X	
F008	X		X	
F009	X		X	
F010			X	
F011	X		X	
F012	X		X	
F019	X		X	
F020	DO NOT ACCEPT			
F021	DO NOT ACCEPT			
F022	DO NOT ACCEPT			
F023	DO NOT ACCEPT			
F024	X	INCIN	X	
F025			X	
F026	DO NOT ACCEPT			
F027	DO NOT ACCEPT			
F028	DO NOT ACCEPT			
F039	X		X	5/8/92
K001	X		X	
K002	X			
K003	X			
K004	X			
K005	X			

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K006H	X			
K007	X			
K008	X			
K009			X	
K010			X	
K011			X	
K013			X	
K014			X	
K015	X		X	
K016			X	
K017			X	
K018			X	
K019			X	
K020			X	
K021	X		X	
K022	X		X	
K023			X	
K024			X	
K025		INCIN		
K026		INCIN		
K027		INCIN		
K028	X		X	
K029			X	
K030			X	
K031	X			5/8/92
K032			X	
K033			X	
K034			X	
K035			X	
K036			X	
K037			X	
K038			X	
K039		INCIN		
[illegible]			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P028		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		AOGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P063HW	DO NOT ACCEPT			
P063LW	X	IMERC		5/8/92
P066		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPA VARI DEFE EFF.
P068		INCIN		
P069		INCIN		
P070		INCIN		
P071			X	
P072		INCIN		
P073	X			
P074	X		X	
P075		INCIN		
P076		AOGAS		
P077			X	
P078		AOGAS		
P081		INCIN		
P082		INCIN		
P084		INCIN		
P085		INCIN		
P087	DO NOT ACCEPT AFTER 5/8			
P088		INCIN		
P089			X	
P092HW	DO NOT ACCEPT			
P092LW	X	IMERC		
P093		INCIN		
P094			X	
P095		INCIN		
P096		INCIN		
P097			X	
P098			X	
P099	X		X	
P101			X	
P102		INCIN		
P103	X			
P104	X		X	
P105		INCIN		
P106			X	
P108		INCIN		

HO/CYL
CG#03

ROLLINS ENVIRONMENTAL SERVICES

LAND DISPOSAL RESTRICTION NOTIFICATION (per 40 CFR 268.7)

INSTRUCTION: Complete Part I, Check and complete Part II or Part III. Complete and sign Part IV.

PART I: Generator, Reference and Manifest Information

1. *Generator Name:* LOS ALAMOS NATIONAL LABS *EPA I.D.#:* NM0890010
2. *Address:* PO BOX 1663, MS J593
3. *City:* LOS ALAMOS *State:* NM *Zip:* 875
4. *RES Reference # (BR/HO/L/W/MO/OP):* 53594-03 *Manifest #:* _____
5. *EPA Waste Codes* (list ALL applicable codes and subcategories for this stream--see reverse side for subcategories)
   U134

6. This stream is a _____ wastewater (<1% total organic carbon and <1% total suspended solids for most wastes) or X nonwastewater. If wastewater, obtain Wastewater Attachments 1, 2, and 3 from your Sales or Customer Service Representative.

PART II: Wastes Subject to Land Disposal Restrictions (If the waste is non-hazardous or a "newly listed waste" identified in III below, complete Part III rather than Part II.)

X Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); X RES(TX); ___RES of LA; ___OPC; ___TET that under the RES Reference and manifest numbers, I am shipping to you a waste identified by the EPA waste code(s) and subcategory(ies) listed in Part I which is subject to the EPA Land Disposal Restrictions, as checked below.

A. Check line 1, 2, 3, 4 and/or 5, as applicable

_____ 1. Treatment standard, as checked by me in Attachment 1, which I am enclosing, for ____ F001; ____ F002; ____ F004; ____ F005; ____ F039.

_____ 2. Numerical treatment standard(s) specified in 40 CFR 268.41(a) (Table CCWE), per Attachment 3.

X 3. Treatment standard(s) expressed as specified technology(ies) in 40 CFR 268.42(a), for which the required technology Attachment 3, is ____ INCIN; ____ DEACT; X ADGAS fb NEUTR; ____ IMERC; ____ STABL; or, for ____ Incineration in a TOSCA-permitted incinerator (RES(TX) only).

_____ 4. Numerical treatment standard(s) specified in 40 CFR 268.43(a) (Table CCW), per Attachment 3.

_____ 5. This waste is (check one) ____ an "Appendix IV lab pack" or an ____ "Appendix V lab pack". I have signed required certification on page 2 of Attachment 2, which I am enclosing.

B. Also check one or more of the following lines if applicable

X 6. 10-22-92 A D001-D011 waste which (a) ____ does (b) ____ does not meet the definition of a "California List" waste definition below). If (a), I have also checked the "California List" section of Attachment 1, which I am enclos

_____ 7. Treatment standard(s) with a "capacity variance" until May 8, 1992, per Attachment 3, as I have checked on the Attachment 2. The waste (a) ____ does (b) ____ does not meet the definition of a "California List" waste definition below). If (a), I have also checked the "California List section of Attachment 1, which I am enclosing

_____ 8. A nickel or thallium "California List" waste (see definition below). I have checked the "California List" se Attachment 1, which I am enclosing.

_____ 9. A specific extension or variance (other than a "capacity variance"), as I have checked on Line C or D of Attac 2, which I am enclosing.

_____ 10. The waste already meets relevant treatment standards. I have signed the required certification on page 2 of A 2, which I am enclosing.

PART III: Wastes NOT Subject to Land Disposal Restrictions

_____ Pursuant to 40 CFR 268.7, I am notifying ___RES(LA); ___RES(NJ); ___RES(TX); ___RES of LA; ___OPC; ___TET that, under the reference and manifest numbers, I am shipping to you a waste which is non-hazardous and/or identified by the EPA waste code(s) in Part I above. The waste is not subject to the Land Disposal Restrictions because the waste is non-hazardous and/or consists only or more of the following EPA waste codes listed since November 8, 1984: D018-43, F032, F034-35, F037-38, K064-66, K088, K090-91, K117-18, K123-26, K131-32, K136, U328, U353, U359 or other codes listed since 5/15/91.

PART IV: Authorized Representative

Signature John C. Kelly Date 10/22/92

Print or Type Name John C. Kelly

Title Staff Member

NOTE: A "California List" waste is (a) a hazardous waste containing Halogenated Organic Compounds at a concentration of 1000 mg/l or more; or (b) a liquid hazardous waste (including free liquids) having a pH equal to or less than 2.0 or containing any

TREATMENT STANDARD REFERENCE TABLE
Nonwastewaters Only

ATTACHMENT

TABLE LEGEND

EPA WASTE CODE SUFFIX:

A : Anhydrous
ALK : Alkaline
C : Corrosive
CB : Cadmium Battery
CS : Calcium Sulfate Subcategory
E : Explosives
H : Hydrated
HW : High Mercury (>260 mg/kg)
HZ : High Zn (>15%) Subcategory
LB : Lead Acid Battery
LA : Low Arsenic (<1%) Subcategory
LIQ : Liquid
LM : Low Mercury (<260 mg/kg) Subcategory
LZ : Low Zinc (<15%)
NRGN : No Ash Subcategory
NCS : Non-Calcium Sulfate Subcategory
NWW : Nonwastewater
OX : Oxidizer
R : Reactive
RC : Reactive Cyanides Subcategory
RS : Reactive Sulfides Subcategory
S : Solid
WR : Water Reactive
X : Numerical Treatment Standard

TECHNOLOGY CODES AND DEFINITIONS OF TECHNOLOGY BASED STANDARDS:

AOGAS (b NEUTR : Venting of Compressed Gases followed by neutralization. (INCIN Acceptable Technology)
DEACT : Deactivation of Hazardous Characteristics (INCIN Acceptable Technology)
IWERC : Incineration of Organics and Mercury Contaminated Wastes
INCIN : Incineration
STABL : Stabilization

COLUMN HEADING DESCRIPTIONS

COLUMN 1 : EPA Waste Code Number and Suffix (if applicable).
COLUMN 2 : Waste has Numerical Treatment Standards Expressed as Concentrations in Waste Extract
COLUMN 3 : Specified Technology Based Standards
COLUMN 4 : Waste has Numerical Treatment Standards Expressed as Waste Concentrations
COLUMN 5 : Deferred Effective Dates of Surface Disposed Wastes Regulated in the Land Disposal Regulations (LDR)

NOTES:
1. Refer to last page of Attachment 3 for "capacity variance date" on soil and debris wastes.
2. Radioactive hazardous mixed wastes not referenced (RES not permitted).
3. Waste newly listed since November 8, 1984 and not in the table below are currently not regulated under LDR.
4. Some non-dioxin wastes which are marked "Do Not Accept" below may be acceptable at some RES plants in lab packs or very small quantities. Check with Plant Technical Manager.

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D001 GAS		DEACT		
D001LIQ (10x TOC		DEACT		
D001LIQ)10x TOC		INCIN		
D001OX		DEACT		
D001R		DEACT		
D002ACID		DEACT		
D002ALK		DEACT		
D002C		DEACT		
D003E		DO NOT ACCEPT		
D003R		DEACT		
D003RC			X	
D003RS		DEACT		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
D003WR		DEACT		
D004	X		X	5/8/92
D005	X			
D006	X			
D006CB		DO NOT ACCEPT		
D007	X			
D008LB		DO NOT ACCEPT		
D008	X			
D009HW		DO NOT ACCEPT		
D009LW	X			5/8/92
D010	X			
D011	X			
D012			X	

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K091			X	
K092			X	
K093		DO NOT ACCEPT		
K094		DEACT		
K095		DEACT		
K096	X			
K097		DEACT		
K098	X		X	
K099	X		X	
K050	X		X	
K051	X		X	
K052	X		X	
K060			X	
K061HZ		DO NOT ACCEPT		
K061LZ	X			
K062	X			
K069CS	X			
K069NCS		DO NOT ACCEPT		
K071HW		DO NOT ACCEPT		
K071LW	X			
K073			X	
K083	X		X	
K084	X			5/8/92
K085			X	
K086	X		X	
K087	X		X	
K093			X	
K094			X	
K095			X	
K096			X	
K097			X	
K098			X	
K099		DO NOT ACCEPT		
K100	X			
K101	X		X	5/8/92

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPA VARI DEFE EFF.
K102	X		X	
K103			X	
K104			X	
K105			X	
K106HW		DO NOT ACCEPT		
K106LW	X			
K113		INCIN		
K114		INCIN		
K115	X	INCIN		
K116		INCIN		
P001		INCIN		
P002		INCIN		
P003		INCIN		
P004			X	
P005		INCIN		
P006		INCIN		
P007		INCIN		
P008		INCIN		
P009		INCIN		
P010	X			
P011	X			
P012	X			
P013	X		X	
P014		INCIN		
P015		DO NOT ACCEPT		
P016		INCIN		
P017		INCIN		
P018		INCIN		
P020			X	
P021			X	
P022		INCIN		
P023		INCIN		
P024			X	
P026		INCIN		
P027		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
K006H	X			
K007	X			
K008	X			
K009			X	
K010			X	
K011			X	
K013			X	
K014			X	
K015	X		X	
K016			X	
K017			X	
K018			X	
K019			X	
K020			X	
K021	X		X	
K022	X		X	
K023			X	
K024			X	
K025		INCIN		
K026		INCIN		
K027		INCIN		
K028	X		X	
K029			X	
K030			X	
K031	X			5/8/92
K032			X	
K033			X	
K034			X	
K035			X	
K036			X	
K037			X	
K038			X	
K039		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) CAPACITY VARIANCE DEFERRED EFF. DATE
P028		INCIN		
P029			X	
P030			X	
P031		INCIN		
P033		INCIN		
P034		INCIN		
P036	X			5/8/92
P037			X	
P038	X			5/8/92
P039			X	
P040		INCIN		
P041		INCIN		
P042		INCIN		
P043		INCIN		
P044		INCIN		
P045		INCIN		
P046		INCIN		
P047		INCIN	X	
P048			X	
P049		INCIN		
P050			X	
P051			X	
P054		INCIN		
P056		AOGAS		
P057		INCIN		
P058		INCIN		
P059			X	
P060			X	
P062		INCIN		
P063			X	
P064		INCIN		
P065HW		DO NOT ACCEPT		
P065LW	X	IWERC		5/8/92
P066		INCIN		

(1) EPA CODE NUMBER	(2) 40 CFR 268.41 (CCWE)	(3) 40 CFR 268.42 TECH	(4) 40 CFR 268.43 (CCW)	(5) C V D E
P068		INCIN		
P069		INCIN		
P070		INCIN		
P071			X	
P072		INCIN		
P073	X			
P074	X		X	
P075		INCIN		
P076		AOGAS		
P077			X	
P078		AOGAS		
P081		INCIN		
P082		INCIN		
P084		INCIN		
P085		INCIN		
P087	DO NOT ACCEPT AFTER			
P088		INCIN		
P089			X	
P092HW		DO NOT ACCEPT		
P092LW	X	IWERC		
P093		INCIN		
P094			X	
P095		INCIN		
P096		INCIN		
P097			X	
P098			X	
P099	X		X	
P101			X	
P102		INCIN		
P103	X			
P104	X		X	
P105		INCIN		
P106			X	
P108		INCIN		

APPENDIX S

INSPECTION LOGS FOR TA-50 AND TA-54, AREA L

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FOR

1 FACILITY	2 ☐ <90 DAY, GENERATOR STORAGE ☑ TREATMENT, STORAGE, DISPOSAL	3 START DATE	4 END DA
TA-54 AREA L		8-2-93	8-6-9

5 ☑ Containers ☐ Landfill ☐ Surface Impoundment ☐ Waste Pile ☐ Thermal Treatment ☐ Chem/Phys/Bio.

☐ Incinerator ☐ Misc. Unit ☐ Tank ☐ UST ☐ Land Treatment ☐ Underground In

PART I - Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI
6 NO USE	CHECK IF NO WASTE IS PRESENT		NA	NA	NA	NA	NA
7 (UN)LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION		OK	OK	OK	OK	OK
8 COMMUNICATION EQUIPMENT (PHONE/RADIO/ALARMS)	PROPERLY FUNCTIONING		OK	OK	OK	OK	OK
9 TANKS (ALL ABOVE GROUND PORTIONS) MONITORING DATA	DISCHARGE CONTROLS CONDITION, LEAKS, LEVEL (6" FREEBOARD), CORROSION		OK	OK	OK	OK	OK
10 SURFACE IMPOUNDMENTS AND CONTAINMENT	FREEBOARD (2 ft) SUDDEN DROPS IN LEVEL		OK	OK	OK	OK	OK
11 PORTA BERM	LEAKS CONDITION		NA	NA	NA	NA	NA
12 EYE WASH SAFETY SHOWERS	LEAKS, FUNCTIONING		AR2	AR2	AR2	OK	OK
13 STRUCTURAL INTEGRITY OF CONTAINERS/TANKS, VALVES, PIPES, AND FLANGES	DETERIORATION AND LEAKS, CORROSION, DAMAGE		AR1	AR1	AR1	AR1	AR1
14 COVER/LID OF CONTAINERS	CLOSED AND SECURED		OK				
15 WARNING SIGNS	POSTED & READABLE (BILINGUAL)		OK				
16 LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		OK				
17 ACCUMULATION START DATE (<90 DAY STORAGE)	PRESENT ON ALL CONTAINERS, TANKS, NONE EXCEED 90 DAYS		OK				
18 RUN ON/OFF CONTROL (AREA L, G, H, P) LANDFILLS, DETONATION PADS	INTEGRITY, EROSION PONDING		OK				
19 COVER INTEGRITY (AREA L, G, H, P) LANDFILLS	EROSION, SUBSIDENCE WATER INTRUSION		OK				
20 SECURITY	CONDITION, FENCE/GATES/LOCKS		OK				

[illegible] drum [illegible]

8-2-93 AR drum [illegible] needs to be replaced

AR 2 eye wash in cylinder area is functional but not properly

AR 3 pallet in Row 30 of MW needs replacing

8-3-93 Pallet replaced in Row 30

8-4-93 AR 3 Rain water in sumps pumped out same day

8-5-93 - AR2 Eye wash cleaned & balanced by B. Means

AR-4 Rain water in sumps pumped out same day

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

1 FACILITY	2	3 START DATE	4 END DATE
TA-50-1-60A, 60D	[ ] <90 DAY, GENERATOR STORAGE [X] TREATMENT, STORAGE, DISPOSAL	08/01/93	

[X] Containers [ ] Landfill [ ] Surface Impoundment [ ] Waste Pile [ ] Thermal Treatment [X] Chem/Phys/Bio. Treat.

[ ] Incinerator [ ] Misc. Unit [ ] Tank [ ] UST [ ] Land Treatment [ ] Underground Inj.

PART I - Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
6 NO USE	CHECK IF NO WASTE IS PRESENT		N/A	N/A	N/A			
7 (UN)LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION		OK	OK	OK			
8 COMMUNICATION EQUIPMENT (PHONE/RADIO/ALARMS)	PROPERLY FUNCTIONING		OK	OK	OK			
9 TANKS (ALL ABOVE GROUND PORTIONS) MONITORING DATA	DISCHARGE CONTROLS CONDITION, LEAKS, LEVEL (6" FREEBOARD), CORROSION		OK	OK	OK			
10 SURFACE IMPOUNDMENTS AND CONTAINMENT	FREEBOARD (2 ft) SUDDEN DROPS IN LEVEL		N/A	N/A	N/A	N/A	N/A	
11 PORTA BERM	LEAKS CONDITION		N/A	N/A	N/A	N/A	N/A	
EYE WASH SAFETY SHOWERS	LEAKS, FUNCTIONING		OK	OK	OK			
13 STRUCTURAL INTEGRITY OF CONTAINERS/TANKS, VALVES, PIPES, AND FLANGES	DETERIORATION AND LEAKS, CORROSION, DAMAGE		OK	OK	OK			
14 COVER/LID OF CONTAINERS	CLOSED AND SECURED		OK	OK	OK			
15 WARNING SIGNS	POSTED & READABLE (BILINGUAL)		OK	OK	OK			
16 LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		OK	OK	OK			
17 ACCUMULATION START DATE (<90 DAY STORAGE)	PRESENT ON ALL CONTAINERS, TANKS, NONE EXCEED 90 DAYS		N/A	N/A	N/A	N/A	N/A	
18 RUN ON/OFF CONTROL (AREA L, G, H, P) LANDFILLS, DETONATION PADS	INTEGRITY, EROSION PONDING		N/A	N/A	N/A	N/A	N/A	
19 COVER INTEGRITY (AREA L, G, H, P) LANDFILLS	EROSION, SUBSIDENCE WATER INTRUSION		N/A	N/A	N/A	N/A	N/A	
SECURITY	CONDITION, FENCE/GATES/LOCKS		OK	OK	OK			
SITE LIGHTING	FUNCTIONS PROPERLY		OK	OK	OK			

000060

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
22 CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER VEGETATION, EROSION		OK	OK	OK			
23 MANAGEMENT OF CONTAINERS	SEGREGATED ACCORDING TO COMPATIBILITY, 2 FT AISLE SPACE		OK	OK	OK			
24 HOSE BIBS, WATER SUPPLY	LEAKS, FUNCTIONING		OK	OK	OK			
25 STORAGE SHED (AREA L)	FLOOR DAMAGE, LIQUID		N/A	N/A	N/A	N/A	N/A	
26 ROAD/WORK SURFACES	CRACKS/POTHOLES		N/A	N/A	N/A	N/A	N/A	
27 WIND SOCK	DAMAGE, FUNCTIONING		N/A	N/A	N/A	N/A	N/A	
28 SHAFT COVER AND RAIL	PRESENT, DAMAGE		N/A	N/A	N/A	N/A	N/A	
29 PALLETS	INTEGRITY, DAMAGE		N/A	N/A	N/A	N/A	N/A	
30 TREATMENT TANKS	PROPER OPERATION, LEAKS		OK	OK	OK			
31 REFRIGERATOR	DAMAGED CONTAINERS		N/A	N/A	N/A	N/A	N/A	
32 SPILL CONTROL, FIRE, AND EMERGENCY EQUIPMENT	PRESENT, AND IN GOOD WORKING ORDER		OK	OK	OK			
33 INCINERATOR EMERGENCY WASTE FEED CUTOFF/ALARMS	PROPER OPERATING CONDITION OF ALL SHUTDOWN CONTROLS		N/A	N/A	N/A	N/A	N/A	
34 INCINERATOR PUMPS VALVES, PIPES. MONITORING CONTROLS	LEAKS/SPILLS/TAMPERING OPERATING WITHIN SPECS.		N/A	N/A	N/A	N/A	N/A	
35 PRESSURE VESSELS (S-SITE)	DETERIORATION AND SAND CONDITION		N/A	N/A	N/A	N/A	N/A	
36 OIL BURN PANS (S-SITE)	DETERIORATION & LEAKS		N/A	N/A	N/A	N/A	N/A	
37 HE BURN PADS (S-SITE)	DETERIORATION VEGETATION, SAND COND., EROSION		N/A	N/A	N/A	N/A	N/A	
38 RADIATION SAFETY	SIGNS, MONITORING ($\alpha\ \beta\ \gamma\ ^3H$)		OK	OK	OK			
39 DATE	DATE OF INSPECTION		8/2/93	8/3/93	8/4/93			
40 TIME	TIME OF INSPECTION		1605	1630	1635			
41 INSPECTOR	INITIALS OF INSPECTOR		[illegible]	[illegible]	[illegible]			

PART II - For any AR (Action Required) in PART I above, describe below: action required, action taken, date of action. Attach additional sheets if necessary.

42 INSPECTOR	43 GROUP	44 DATE	45 TIME

APPENDIX T

LANL RCRA JOB DESCRIPTIONS

Los Alamos
NATIONAL LABORATORY
1943 - 1993

memorandum

Mechanical and Electronic Engineering Division
MEE-12

To/MS: Mary Davies, LAO-1, MS M998
From/MS: Nola Blomker, MEE-12, MS E533
Phone/FAX: 7-7842/FAX 7-3559
Symbol: MEE-12-93-515
Date: August 25, 1993

SUBJECT: REQUESTED INFORMATION- JOHN A. HANLON

The following information in provided as requested on John (Jack) Hanlon:

Job Title: Staff Member

Job Description: Responsible for electro-optical design, fabrication and assembly on the Superconducting Super Collider Detector Program. In this capacity, he oversees the development testing of the detector prototypes in Building 46. He is also the building manager for Bldg. 46.

Training: See attached listing.

If further information is required, please call me.

Att: a/s

Cy: J. A. Hanlon
MEE-12 File

Job Description for John F. Flemming, Jr. (Henry) LANL Z Number 083289

Henry is the technical supervisor for the radio and video shop technicians. He is directly responsible for the operation of this section. The section's function is the installation and maintenance of two-way radio and video systems throughout the Laboratory. He is responsible for providing technical leadership, job assignments, salary recommendations, and performance appraisals. Henry is responsible for the daily operation of the Video Teleconference Center (VTC). He schedules conferences, coordinates with various other DOE and DOD VTC rooms, and operates the room during conferences. In addition, he will have special assignments that use his technical and administrative skills for projects within the group and Laboratory.

Henry's key assignments include:

1. Provide first line supervision to radio section technicians. Write job performance appraisals that are meaningful to technicians.

2. Ensure that customers are served in a timely manner and that they are satisfied with the work performed.

3. Assist with the installation and maintenance of the radio systems. This includes the trunked radio system and the secure Proforce communication system.

4. Maintain, schedule, and operate the VTC. Evaluate new video conference equipment and techniques.

5. Serve as the group ES&H representative.

6. Provide pager sales and support for C-4. Maintain the pager data base.

7. Support activities transitioning the group to a single telephone number point of contact (7-3400) for all group services. These activities may include analyzing and streamlining processes involved in delivering and charging for value added customer services.

8. Continue to increase your understanding of C-4 group operational processes and procedures. Propose and implement applications to support and streamline such processes and procedures.

Also, Henry is expected to perform other duties as required.

Job Title: Elec Tech Supervisor, TEC-7

Johnson Controls World Services Inc.
Laboratory Support Division
Post Office Box 50
Los Alamos, NM 87544-0050

JOHNSON CONTROLS

December 2, 1993
AMHR.94-042

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

ATTN: Mary Davies, MS-M998/LA01

SUBJECT: Craft Job Titles and Current Job Duties

Dear Ms. Davies:

This is additional information to your request on November 29, 1993, regarding the above referenced matter.

Nazario Roybal----Brush Painter Foreman

Mr. Roybal is currently assigned to work in our Construction Department where his responsibilities include the supervision of painters. In this capacity he oversees the painters who paint buildings and structures.

Should you need additional information, please do not hesitate to call.

Sincerely,

Martin V. Dominguez

Martin V. Dominguez
Supervisor, Labor Relations

MVD/df

cc: LR Files

"IN CONFIDENCE"

EMPLOYEE PERFORMANCE APPRAISAL

George H. Brooks 014165
04/01/92 - 03/31/93 TEST/MEAS TEC 5 WX-3
T. H. Feiertag Staff Member

JOB ASSIGNMENT FOR THE PAST REVIEW PERIOD

1. Your primary responsibility continues to be nondestructive testing using the disciplines of radiography, penetrant, magnetic particle, and high speed video. Accepting jobs, entering the information into the job order computer, interacting with customers, closing out job orders in some cases, and transferring parts back to the customers are all parts of this responsibility. The desired result is a high quality, timely inspection for the customer.

2. You will continue to serve as lead technician for ARG during this year. You must continually increase your knowledge of the equipment, especially the linac and vans. A large part of this task will be to pass on your knowledge to Joe Valdez. This will require superior communication ability on your part. The desired result of this task is a high degree of readiness to participate in ARG exercises and missions.

3. You will continue to specialize in field testing. You are our leading expert in concrete radiography and are also expert in the field use of the 6 MeV linac. You need to maintain contact with users of our field capabilities such as IT Division, MP Division, and ATAC. Desired results are prompt response to requests and high quality inspections.

4. As building manager for several buildings including our most important, TA-8-22, you must see that the buildings are kept in good repair. Ordering supplies that are expended during the course of our operations is also important. The desired result is a well maintained and supplied work place.

JOB FACTORS

Job Knowledge - Possess a knowledge of customer fabrication techniques and inspection needs. Understand the operation and maintenance of all of the equipment used for your inspections. Understand the reading of the film that you create and reporting the results so that the customer obtains the necessary knowledge of his parts.

Quantity of Work - It is essential that you do your share of the necessary tasks so that the customers obtain their results in prompt fashion and so that your building and equipment are kept in good operating order.

"IN CONFIDENCE"

EMPLOYEE PERFORMANCE APPRAISAL

James D. (Don) Hastings 113208
02/08/93 - 03/31/93 STAFF MEMBER WX-3
Thomas H. Feiertag, Staff Member

JOB ASSIGNMENT FOR THE PAST REVIEW PERIOD

1. Participate in all TA-55 (pit and hemishell) related radiography. Take TA-55 safety training. Become the main point of contact for questions relating to the TA-55 Radiographic Facility.

2. Become a full fledged member of the ARG NDT team. Pursue the portable neutron radiography initiative started by Larry Bryant. The goal is to reinforce our ARG team at a time when several members might be lost to retirement.

3. Become an active member of the NDT Unit, learn to operate all the Unit's equipment, report on film reading, assist in training and ES&H matters and participate in the many different types of inspections which comprise our mission.

4. This is a time of great opportunity for being of service to the civilian side of the nation. You must look for opportunities for such service and persevere in overcoming the obstacles, both financial and bureaucratic, which keep us from providing these services. Our goal is to convert at least 20% of our efforts to non-military work.

JOB FACTORS

1. Job Knowledge - Possess a knowledge of customer fabrication techniques and inspection needs. Understand the operation and maintenance of all of the equipment used for your inspections. Understand the reading of the film that you create and report the results so that the customer obtains the necessary knowledge of his parts.

2. Quantity of Work - It is essential that you do your share of the necessary tasks so that the customers obtain their results in prompt fashion and so that your building and equipment are kept in good operating order.

3. Quality of Work - For our work to be of value to the customer, it is important for the inspection results and reports to be of consistent high quality. The quality of our results ultimately effects the quality of our customers products and therefore the quality of the entire Laboratory effort.

APPENDIX U

JCI PERSONNEL TRAINING PROGRAM

JCI Museum
Johnson Controls World Services Inc
Laboratory Support Division
Post Office Box 50
Los Alamos, NM 87544-0050

JOHNSON CONTROLS

November 29, 1993
AMHR.94-041

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

ATTN: Mary Davies, MS-M998/LA01

SUBJECT: Craft Job Titles and Current Job Duties

Dear Ms. Davies:

This will confirm our telephone conversation today where you requested the above information. As I explained to you we do not have specific job descriptions for our craft employees in the traditional sense because the job duties of craft employees generally fall within the job jurisdictional lines established between the numerous building and construction trade unions. Additionally, craft employees are also constantly transferred from department to department where specific job duties and responsibilities generally differ. For a broader scope of duties and responsibilities we use the established definition of the job descriptions as determined by the U.S. Department of Labor. I will provide a copy if you feel there is a need for one.

With regard to the three employees you requested information, I have listed them by name, job title and a brief description of their current job duties:

Pauline Flynn-----NTS Journeyman Ironworker

Edward Lucero-----NTS Journeyman Ironworker

These two employees currently work in our Nevada Test Site Department where they perform welding, cutting, hole drilling, burning, grinding, and fabrication and assembly of iron, plus they operate the over head crane when necessary.

Donna Salazar-----Maintenance Brush Painter-Roller

Donna currently works in the Maintenance Department where she performs general painter duties in the field and shop, road stripping and fabricating of signs.

Should you need additional information or clarification, please do not hesitate to call my office.

Sincerely,

Martin V. Dominguez
Supervisor, Labor Relations

MVD/df

cc: LR Files

APPENDIX V

LANL PERSONNEL TRAINING RECORDS

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
8:50:06 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 00
ROUP : 0030 JCI
-NO/NAME: 079226 ROYBAL NAZARIO V

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
CRA TSDF WORKERS AND SUPERVISORS	7781	4	04/29/93	JCI			11.50		C
ADIOLOGICAL WORKER 2	7454	23	04/06/93	JCI			16.00		C
ADIATION SAFETY-TA-53 TRAINING	4432	85	03/29/93	JCI			1.50		C
ESPIRATORS: AIR-PURIFYING	3549	543	12/14/92	JCI			2.50		C
AZARDOUS WASTE GENERATOR REQUIREMENTS FOR TEMPORARY STORAGE	3597	28	11/13/92	JCI			2.00		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	75	09/10/92	JCI			1.00		C
.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	75	09/10/92	JCI			.25		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	75	09/10/92	JCI			.50		C
AZARDOUS WASTE GENERATOR REQUIREMENTS FOR TEMPORARY STORAGE	3597	26	07/08/92	JCI			2.00		C
ESPIRATORS: AIR-PURIFYING	3549	374	01/30/92	JCI			2.50		C
ESPIRATORS: AIR-PURIFYING	3549	306	08/26/91	JCI		5750	2.50		C
IR PURIFYING RESPIRATORS	3549	122	09/27/90	JCI		5750	2.50		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	102	09/10/90	JCI			.50		C
IR PURIFYING RESPIRATORS	3549	108	08/28/90	JCI		5750	2.50		C
INUAL SECURITY REFRESHER	1425	39	02/06/90	JCI		6613	2.00		C
R PURIFYING RESPIRATORS	668	352	09/28/89	JCI		5750	2.00		C
IR PURIFYING RESPIRATORS	668	183	09/01/88	JCI		5750	2.00		C
IR PURIFYING RESPIRATORS	668	191	08/31/88	JCI		5750	2.00		C
PLOSIVES SAFETY & HAZARD TRAINING	7883	10	06/11/87	JCI			3.00		C
N-DISCLOSURE SECURITY AGREEMENT	1427	33	05/04/87	JCI		6613	1.00		C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	JCI		6613	1.00		C

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
8:30:10 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 79
ROUP : 7905 CLS-5
-NO/NAME: 098066 GODARD JODY A B

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
RESSURE SAFETY ORIENTATION	769	25	04/21/93	CLS-5			4.00		C
SUBSTANCE ABUSE AWARENESS FOR EMPLOYEES - CLS PERSONNEL	7767	1	02/19/93	CLS-5	6303	X597	2.00		C
EXUAL HARASSMENT PREVENTION TRAINING FOR EMPLOYEES	5429	28	02/03/93	CLS-5			1.50		C
PR - ADULT	3583	1151	01/28/93	CLS-5			4.00		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	84	11/09/92	CLS-5			.50		C
.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	84	11/09/92	CLS-5			.25		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	84	11/09/92	CLS-5			1.00		C
OCKOUT/TAGOUT PROCEDURES FOR AUTHORIZED EMPLOYEES	6713	58	10/07/92	CLS-5			2.50		C
AZARDOUS WASTE GENERATOR REQUIREMENTS FOR TEMPORARY STORAGE	3597	27	05/28/92	CLS-5			2.00		C
IRE EXTINGUISHER TRAINING: FIGHT OR FLIGHT	5224	218	01/08/92	CLS-5			.50		C
ARD OF AUTHORITY - HAZARDOUS WASTE MANAGEMENT - VIDEO	4462	9	11/05/91	CLS-5			.25		C
LL HANDS COLLOQUIUM-S. HECKER-CLS	5620	1	08/21/91	CLS-5	7950	X776	1.50		C
AZARDOUS WASTE GENERATOR TRAINING - HSE	4419	144	08/20/91	CLS-5			3.00		C
RGONOMICS: TERMINALS, COMPUTERS, AND VDTS	3594	34	07/17/91	CLS-5			2.00		C
LECTRICAL SAFETY AWARENESS	2377	78	07/17/91	CLS-5			3.00		C
ESPIRATORS: AIR-PURIFYING	3549	270	06/18/91	CLS-5			2.50		C
ASER SAFETY UPDATE	3565	3	05/28/91	CLS-5	5750		1.00		C
SHA SAFETY TRAINING	4418	12	05/21/91	CLS-5			32.00		C
PILL PREVENTION CONTROL AND COUNTERMEASURES (VIDEO TAPE)	5309	1	02/06/91	CLS-5			.15		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	149	01/23/91	CLS-5			.50		C
NTRO TO IBM-PC: LOTUS 1-2-3 BEGINNING	2329	33	12/03/90	CLS-5	6303		20.00	415.00	C
NUSUAL OCCURRENCES REPORT	7650	1	05/02/90	CLS-5			2.00		C
NNUAL SECURITY REFRESHER	1425	42	04/01/90	CLS-5	6613		2.00		C
AZARD COMMUNICATION INTRODUCTION	2398	153	03/12/90	CLS-5			2.00		C
AZ/COM TRAINING - INTRODUCTION	2398	36	03/12/90	CLS-5	5750		2.00		C
IRST AID, STANDARD	3574	42	09/06/89	XXXX	5750		8.00		C
IR PURIFYING RESPIRATORS	668	304	07/26/89	CLS-6	5750		2.00		C
NTRODUCTION TO THE IBM-PC: MS DOS 3.3/4.01	2328	38	05/22/89	CLS-6	6303		12.00	245.00	C
NTRODUCTION TO IBM-PC: OVERVIEW	2327	60	05/01/89	CLS-6	6303		20.00	415.00	C
LECTRICAL SAFETY AWARENESS	2377	5	06/09/88	CLS-6	5750		2.50		C
LECTRICAL SAFETY AWARENESS	2377	22	06/09/88	CLS-6	5750		2.50		C
HEMICAL HAZARD TRNING	861	7	12/24/87	CLS-6	5750		1.00		C
ECURITY REFRESHER TRNG	1540	104	08/25/87	CLS-6	7800				C
OTAL QUALITY MANAGEMENT MODULE 12	221	2	07/08/87	CLS-6	9945		4.50		C
ECURITY REFRESHER TRNG	1540	4	05/13/87	CLS-6	7800				C
LOURINE + HYDROGEN FLOUR	2415	1	02/26/87	CLS-6	5700				C
PR REFRESHER	686	86	02/13/87	CLS-6	5700		4.00		C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	CLS-6	6613		1.00		C
AZ FLOURINE + HYDRO FLOR	782	1	09/09/86	7909	5700				C
PR	895	79	01/23/86	8716	5700				C
LANNING & DESIGNING FUNCTIONAL R&D FACILITIES, PARTS A&B	1889	66	12/03/85	8716	8700			1200.00	C
IRST AID/MULTIMEDIA	1875	1	11/05/85	8716	8700				C
ON-DISCLOSURE SECURITY AGREEMENT	1427	14	09/27/85	8716	6613		1.00		C
ASER SAFETY/APPROACH	409	1	02/27/85	8716	0000			250.00	C
LECTRICAL SAFETY	787	17	01/15/85	8716	5700				C

IVISION : 77
ROUP : 7712 MEE-12
-NO/NAME: 086958 HANLON JOHN A

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
RE-RETIREMENT: FINANCIAL STRATEGIES	6955	16	08/05/93	MEE-12	6303	X597	8.00		C
RE-RETIREMENT SEMINAR	432	33	06/01/93	MEE-12	6303	X597	14.00		C
EXUAL HARASSMENT PREVENTION TRAINING FOR EMPLOYEES	5429	38	04/14/93	MEE-12			1.50		C
A-53 VIDEO SAFETY ORIENTATION	5937	31	09/21/92	MEE-12			.50		C
ADIATION SAFETY TA-53 (VIDEO)	6160	40	09/21/92	MEE-12			.75		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	68	07/27/92	MEE-12			1.00		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	68	07/27/92	MEE-12			.50		C
.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	68	07/27/92	MEE-12			.25		C
XPERIMENT/TEST PROCEDURES DEVELOPMENT SEMINAR (MEE-DO)	7097	4	06/17/92	MEE-12			2.00		C
EE DIVISION SAFETY MEETING	6985	1	02/26/92	MEE-12			2.00		C
AZARDOUS WASTE GENERATOR TRAINING - HSE	4419	160	09/24/91	MEE-12			3.00		C
S&H EMPLOYEE PARTICIPATION PACKET	4709	2	09/01/90	MEE-12	9955		1.00		C
NNUAL SECURITY REFRESHER	1425	46	08/03/90	MEE-12	6613		2.00		C
AZ/COM TRAINING - INTRODUCTION	2398	36	03/12/90	MEE-12	5750		2.00		C
IMITED EGRESS/CONFINED SPACES ENTRY	2954	8	02/14/90	MEE-12	5750		.50		C
P CHECKLIST AND ORIENTATION	2389	23	10/12/88	7908	5703		1.50		C
ECTRICAL SAFETY AWARENESS	2377	14	10/06/88	7908	5750		2.50		C
RATEGIC PLANNING	2239	4	05/20/88	7908	6303		7.00	187.50	C
HEMICAL HAZARD TRNING	861	4	11/30/87	7908	5750		1.00		C
AZARD COMMUNICATION	776	5	11/12/87	7908	5700				C
RSP DEVELOPMENT FOR SUPERVISORS-GROUP I AND 11 (PHASE I)	2242	1	10/06/87	7908	6303				C
N-DISCLOSURE SECURITY AGREEMENT	1427	36	07/01/87	7908	6613		1.00		C
ECURITY REFRESHER TRNG	1540	98	06/08/87	7908	7800				C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	7908	6613		1.00		C
ASE I - HRD-3	6136	3	11/21/86	MEE-12	6303	X597	138.50		C
AFETY ORIENTAT/MANAGERS	767	1	03/14/85	8705	5700				C
ESIGN DIGITAL CONTRL SYS	232	1	09/09/84	8705	0000			1100.00	C
DO PERF. APPRAISL TR.	1865	1	06/06/84	8705	8700				C
BORATORY OPTICS	184	1	07/06/82	8716	0000			600.00	C
RF EXPERIMENTAL PROJECT	1863	1	02/24/82	8716	8700			330.00	C
OTEL FIRE SURVIVAL	720	33	05/07/81	P-2	5700				C
SIGN ORIENT CIRC ANALYS	1490	1	10/30/80	8801	7700			400.00	C

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
8:31:47 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 81
ROUP : 8103 MST-3
-NO/NAME: 082542 HINSLEY RONALD J

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
RE-RETIREMENT: FINANCIAL STRATEGIES	6955	13	07/08/93	MST-3	6303	X597	8.00		C
RE-RETIREMENT SEMINAR	432	34	07/06/93	MST-3	6303	X597	14.00		C
AMPER INDICATING DEVICES (TID)	7273	17	05/12/93	MST-3			3.50		C
.E.T. - OCCUPATIONAL MEDICINE (SELF-STUDY)	7670	20	04/05/93	MST-3			.50		C
.E.T. - ENVIRONMENT (SELF-STUDY)	7671	20	04/05/93	MST-3			1.00		C
.E.T. - QUALIFIED	5668	177	04/05/93	MST-3			1.50		C
.E.T. - ES&H POLICY (SELF-STUDY)	7654	20	04/05/93	MST-3			.25		C
.E.T. - FACILITIES (SELF-STUDY)	7655	20	04/05/93	MST-3			.25		C
.E.T. - POLICIES AND PROCEDURES (SELF-STUDY)	7656	20	04/05/93	MST-3			.25		C
.E.T. - QUALITY PROGRAM (SELF-STUDY)	7657	20	04/05/93	MST-3			.25		C
.E.T. - EMPLOYEE PARTICIPATION PACKET (SELF-STUDY)	7658	20	04/05/93	MST-3			.50		C
.E.T. - RADIATION PROTECTION (SELF-STUDY)	7659	20	04/05/93	MST-3			1.00		C
.E.T. - MATERIALS CONTROL AND ACCOUNTABILITY (SELF-STUDY)	7660	20	04/05/93	MST-3			.25		C
.E.T. - LOCKOUT/TAGOUT (SELF-STUDY)	7661	20	04/05/93	MST-3			.25		C
.E.T. - SECURITY (SELF-STUDY)	7662	20	04/05/93	MST-3			.25		C
.E.T. - CLASSIFICATION AND SENSITIVE INFORMATION (SELF-STUDY)	7664	20	04/05/93	MST-3			.25		C
.E.T. - OSHA (SELF-STUDY)	7665	20	04/05/93	MST-3			.50		C
.E.T. - INDUSTRIAL SAFETY (SELF-STUDY)	7666	20	04/05/93	MST-3			.50		C
.E.T. - INDUSTRIAL HYGIENE (SELF-STUDY)	7667	20	04/05/93	MST-3			1.00		C
.E.T. - EMERGENCY MANAGEMENT (SELF-STUDY)	7668	20	04/05/93	MST-3			.50		C
.E.T. - FIRE PROTECTION (SELF-STUDY)	7669	20	04/05/93	MST-3			.50		C
.ANL 2-PIECE SUPPLIED AIR SUIT	7547	2	03/29/93	MST-3			2.05		C
NNUAL MC&A TRAINING MEETING	6681	9	03/11/93	MST-3			1.50		C
UCLEAR MATERIAL CUSTODIAN ORIENTATION	5989	14	02/10/93	MST-3			1.50		C
UNDAMENTALS FOR WASTE MANAGEMENT COORDINATORS	7033	4	10/21/92	MST-3			4.00		C
MC - DOCUMENTATION FORM	7233	1	10/21/92	MST-3			4.00		C
ASIC RADIATION WORKER TRAINING	4428	203	10/15/92	MST-3			8.00		C
AZARDOUS WASTE GENERATOR TRAINING - HSE	4419	227	09/23/92	MST-3			3.00		C
RANE SAFETY: INCIDENTAL OPERATORS	2396	50	08/20/92	MST-3			4.00		C
LECTRICAL SAFETY AWARENESS	2377	101	07/15/92	MST-3			3.00		C
OCKOUT/TAGOUT PROCEDURES FOR AUTHORIZED EMPLOYEES	6713	4	04/20/92	MST-3			2.50		C
UCLEAR MATERIAL CUSTODIAN ORIENTATION	5989	2	04/17/92	MST-3	7810	A265	1.50		C
NNUAL MC&A TRAINING MEETING	6681	3	03/19/92	MST-3	7810	A265	1.50		C
ASIC RADIATION WORKER TRAINING	4428	13	06/12/91	MST-3			8.00		C
OCKOUT/TAGOUT TRAINING	5377	4	05/30/91	MST-3			.25		C
RITIUM RADIATION SAFETY	3005	4	05/29/91	MST-3			1.00		C
ESPIRATORS: SELF-CONTAINED BREATHING APPARATUS (SCBA)	669	134	05/10/91	MST-3	5750		2.50		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	57	04/21/91	MST-3			.80		C
ORKLIFT SAFETY FUNDAMENTAL	753	44	03/28/91	MST-3	5750		2.00		C
RANE SAFETY: INCIDENTAL OPERATORS	2396	31	03/26/91	MST-3	5750		4.00		C
RESSURE SAFETY ORIENTATION	769	12	02/19/91	MST-3	5750		4.00		C
AMPER INDICATING DEVICE (TID) TRAINING	4756	46	02/06/91	MST-3	7802		4.00		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	149	01/23/91	MST-3			.50		C
ASER SAFETY ORIENTATION	670	31	10/22/90	MST-3	5750		2.50		C
ACK CARE CLINIC	747	35	06/01/90	MST-3	5750		2.00		C
AFETY MEETING - CLS-3	4470	1	05/04/90	MST-3	5750		.50		C
NNUAL SECURITY REFRESHER	1425	42	04/01/90	MST-3	6613		2.00		C
AZ/COM TRAINING - INTRODUCTION	2398	41	03/23/90	MST-3	5750		2.00		C

IVISION : 81
ROUP : 8103 MST-3
-NO/NAME: 082542 HINSLEY RONALD J

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
LECTRICAL SAFETY AWARENESS	2377	13	05/19/88	CLS-3	5750		2.50		C
LECTRICAL SAFETY AWARENESS	2377	24	05/19/88	CLS-3	5750		2.50		C
LECTRICAL SAFETY AWARENESS	2377	7	03/16/88	CLS-3	5750		2.50		C
ECURITY REFRESHER TRNG	1540	104	08/25/87	CLS-3	7800				C
ON-DISCLOSURE SECURITY AGREEMENT	1427	36	07/01/87	CLS-3	6613		1.00		C
HEMICAL HAZARD TRNING	861	2	05/12/87	CLS-3	5750		1.00		C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	CLS-3	6613		1.00		C
UPPLIED AIR BREATH CART	723	3	07/30/86	CLS-3	5700				C
IMIT EGRESS/CONFIN SPACE	671	3	07/28/86	CLS-3	5700		2.00		C
LECTRICAL SAFETY	787	11	05/17/85	CLS-6	5700				C
EC DEVICES AND SYSTEMS	389	1	09/20/82	CLS-6	0000			650.00	C

IVISION : 00
ROUP : 0030 JCI
-NO/NAME: 092066 SALAZAR DONNA M

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
AZARDOUS WASTE OPERATIONS REFRESHER	4466	49	08/05/93	JCI			8.00		C
ESPIRATORS: AIR-PURIFYING	3549	663	07/13/93	JCI			2.50		C
ADIOLOGICAL WORKER 2	7454	53	07/07/93	JCI			16.00		C
ESPIRATORS: AIR-PURIFYING	3549	614	04/13/93	JCI			2.50		C
AZARDOUS WASTE GENERATOR TRAINING - HSE	4419	233	11/04/92	JCI			3.00		C
.E.T. - CERTIFIED	5668	131	10/22/92	JCI			1.50		C
ADIATION SAFETY-TA-53 TRAINING	4432	72	09/02/92	JCI			1.50		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	70	08/10/92	JCI			.50		C
.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	70	08/10/92	JCI			.25		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	70	08/10/92	JCI			1.00		C
AZARDOUS WASTE OPERATIONS - EQUIVALENT GENERAL SITE WORKER	7500	41	06/10/92	JCI			40.00		C
ESPIRATORS: AIR-PURIFYING	3549	436	05/12/92	JCI			2.50		C
X-5 (WETF) UNESCORTED ACCESS TRAINING	7791	25	04/27/92	JCI			4.00		C
ESPIRATORS: AIR-PURIFYING	3549	391	02/18/92	JCI			2.50		C
REA TRAINING FOR THE PROTON STORAGE RING	6162	1	01/06/92	JCI			1.00		C
ENERIC CONTROLLED ACCESS TRAINING	6111	1	12/06/91	JCI			1.50		C
HECKLIST FOR ENTRY TO THE TARGET 4 TUNNEL	6118	1	12/06/91	JCI			1.00		C
HECKLIST FOR ENTRY TO LINE D TUNNEL	6234	1	12/01/91	JCI			1.00		C
NCIDENTAL CRANE CERTIFIED	5650	2	08/29/91	JCI			1.00		C
RANE SAFETY: INCIDENTAL OPERATORS	2396	38	08/20/91	JCI			4.00		C
ESPIRATORS: ITT COMPRESSOR/AIR SUPPLY SYSTEMS	3638	7	06/10/91	JCI			2.00		C
AZARDOUS WASTE GENERATOR TRAINING - HSE	4419	292	04/09/91	JCI			3.00		C
A-48 SITE-SPECIFIC TRAINING	7092	13	03/01/91	JCI			1.00		C
IR PURIFYING RESPIRATORS	3549	194	02/21/91	JCI	5750		2.50		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	103	10/15/90	JCI			.50		C
TT COMPRESSOR TRAINING	3638	5	03/19/90	JCI	5750		1.50		C
IR PURIFYING RESPIRATORS	3549	46	02/27/90	JCI	5750		2.50		C
IR PURIFYING RESPIRATORS	668	386	02/22/90	JCI	5750		2.00		C
NNUAL SECURITY REFRESHER	1425	39	02/06/90	JCI	6613		2.00		C
HP CHECKLIST AND ORIENTATION	2389	53	07/26/89	JCI	5703		1.50		C
ON-DISCLOSURE SECURITY AGREEMENT	1427	47	03/06/89	JCI	6613		1.00		C
IR PURIFYING RESPIRATORS	668	320	02/27/89	JCI	5750		2.00		C

IVISION : 96
ROUP : 9603 WX-3
NO/NAME: 113208 HASTINGS JAMES D

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
MPER INDICATING DEVICES (TID)	7273	19	07/07/93	WX-3			3.50		C
EALTH PHYSICS CHECKLIST INDOCTRINATION	2389	115	04/26/93	WX-3			1.50		C
SAP FOR EMPLOYEES	6123	33	03/29/93	WX-3	6303	X597	3.00		C
DIOLOGICAL WORKER 2	7454	7	02/11/93	WX-3			16.00		C
ZARDOUS WASTE GENERATOR TRAINING - HSE	4419	246	02/10/93	WX-3			3.00		C
E.T. - FIRE PROTECTION	7710	1	02/09/93	WX-3			.50		C
E.T. - OCCUPATIONAL MEDICINE	5546	96	02/09/93	WX-3			.50		C
E.T. - ENVIRONMENT	5548	96	02/09/93	WX-3			1.00		C
ZARD COMMUNICATION INTRODUCTION	2398	225	02/09/93	WX-3			2.00		C
E.T. - OSHA	5543	96	02/09/93	WX-3			.50		C
E.T. - INDUSTRIAL SAFETY	5540	96	02/09/93	WX-3			.50		C
E.T. - INDUSTRIAL HYGIENE	5545	96	02/09/93	WX-3			1.00		C
E.T. - EMERGENCY MANAGEMENT	5544	96	02/09/93	WX-3			.50		C
E.T. - QUALIFIED	5668	151	02/09/93	WX-3			1.50		C
E.T. - ES&H POLICY	5542	96	02/08/93	WX-3			.25		C
E.T. - FACILITIES	5974	93	02/08/93	WX-3			.25		C
E.T. - POLICIES AND PROCEDURES	5975	93	02/08/93	WX-3			.25		C
E.T. - QUALITY PROGRAM	5976	93	02/08/93	WX-3			.25		C
E.T. - EMPLOYEE PARTICIPATION PACKET	4459	292	02/08/93	WX-3			.50		C
E.T. - RADIATION PROTECTION	5547	96	02/08/93	WX-3			1.00		C
E.T. - MATERIALS CONTROL AND ACCOUNTABILITY	5711	93	02/08/93	WX-3			.25		C
E.T. - LOCKOUT/TAGOUT	5541	96	02/08/93	WX-3			.25		C
E.T. - SECURITY	5977	93	02/08/93	WX-3			.25		C
E.T. - CLASSIFICATION AND SENSITIVE INFORMATION	6936	62	02/08/93	WX-3			.25		C

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
8:41:18 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 96
ROUP : 9603 WX-3
-NO/NAME: 014165 BROOKS GEORGE H

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
IMPT BASIC RAM	7109	2	07/26/93	WX-3			40.00		C
TAMPER INDICATING DEVICES (TID)	7273	5	03/10/93	WX-3			3.50		C
COMMERCIAL DRIVERS WRITTEN TEST PREPARATION	5512	13	01/11/93	WX-3			3.50		C
LOCKOUT/TAGOUT PROCEDURES FOR AUTHORIZED EMPLOYEES	6713	63	12/17/92	WX-3			2.50		C
NUCLEAR MATERIAL CUSTODIAN ORIENTATION	5989	12	12/02/92	WX-3			1.50		C
PRE-RETIREMENT: FINANCIAL STRATEGIES	6955	6	11/03/92	WX-3	6303	X597	8.00		C
PRESSURE SAFETY ORIENTATION	769	22	06/09/92	WX-3			4.00		C
CONTAMINATION CONTROL STATION (CCS) PROCESSING PROCEDURES	7307	1	05/15/92	WX-3			8.00		C
CRANE SAFETY: QUALIFIED OPERATORS	2395	10	02/27/92	WX-3			16.00		C
CRANE SAFETY: INCIDENTAL OPERATORS	2396	44	12/19/91	WX-3			4.00		C
SAP FOR EMPLOYEES	6123	6	12/10/91	WX-3	6303	X597	3.00		C
(-RAY SAFETY-INDUSTRIAL	2383	18	11/13/91	WX-3			4.00		C
RESPIRATORS: SELF-CONTAINED BREATHING APPARATUS (SCBA)	669	168	10/11/91	WX-3			2.50		C
BUILDING MANAGER TRAINING (TIGER PREPARATION)	7739	3	09/18/91	WX-3			1.50		C
FIRST AID: STANDARD	3574	274	09/05/91	WX-3			8.00		C
FIRE EXTINGUISHER TRAINING: FIGHT OR FLIGHT	5224	94	05/22/91	WX-3			.50		C
RESPIRATORS: AIR-PURIFYING	3549	245	05/01/91	WX-3			2.50		C
BUILDING MANAGERS ORIENTATION PROGRAM	5299	10	04/22/91	WX-3			4.00		C
BUILDING MANAGERS ORIENTATION PROGRAM	5299	13	04/05/91	WX-3			4.00		C
CRITICALITY SAFETY: AD HOC (REFRESHER) TRAINING	5272	1	02/19/91	WX-3			1.00		C
LASER SAFETY ORIENTATION	670	34	01/09/91	WX-3	5750		2.50		C
EMERGENCY REPORTING AND FIRE EXTINGUISHMENT	4421	5	10/03/90	WX-3	5750		1.00		C
ANNUAL SECURITY REFRESHER	1425	48	10/01/90	WX-3	6613		2.00		C
WASTE GENERATOR TRAINING	4419	64	08/07/90	WX-3	5750		4.00		C
AIR PURIFYING RESPIRATORS	3549	43	04/16/90	WX-3	5750		2.50		C
CRITICALITY SAFETY	741	5	02/22/90	WX-3	5700				C
HAZ/COM TRAINING - INTRODUCTION	2398	53	02/15/90	WX-3	5750		2.00		C
FORKLIFT SAFETY FUNDAMENTAL	753	26	02/13/90	WX-3	5750		1.50		C
FORKLIFT CERTIFIED	5649	20	02/01/90	WX-3			1.00		C
TAMPER INDICATING DEVICE (TID) TRAINING	4756	19	08/08/89	WX-3	7802		4.00		C
X-RAY SAFETY-INDUSTRIAL	2383	6	04/17/89	WX-3	5750		3.00		C
AIR PURIFYING RESPIRATORS	668	244	04/03/89	WX-3	5750		2.00		C
HP INDOCTRINATION	2379	50	03/03/89	WX-3	5750		1.50		C
HP INDOCTRINATION	2379	65	01/04/89	WX-3	5750		1.50		C
PLANT SAFETY FOR NON-GLOVEBOX WORKERS	2539	8	01/02/89	WX-3	8150		1.00		C
INCIDENTAL CRANE CERTIFIED	5650	30	05/23/88	WX-3			1.00		C
AIR PURIFYING RESPIRATORS	668	86	03/07/88	WX-3	5750		2.00		C
SUPERVISOR ON THE JOB SECURITY BRIEFING	1426	139	07/10/87	WX-3	6613		1.00		C
NON-DISCLOSURE SECURITY AGREEMENT	1427	35	06/02/87	WX-3	6613		1.00		C
SECURITY REFRESHER TRNG	1540	4	05/13/87	WX-3	7800				C
FORKLIFT SAFETY FUNDAMENTAL	753	14	01/15/87	WX-3	5750		1.50		C
INITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	WX-3	6613		1.00		C
ELECTRICAL SAFETY TRNG	891	19	09/18/86	WX-3	5700		35.00		C
VIDEO TAPE FIRE SFTY FILM	1793	44	08/20/86	WX-3	8100				C
NONGLVWORK	1821	44	01/23/86	WX-3	8100				C
X-RAY SAFETY-INDUSTRIAL	901	5	11/12/85	WX-3	5700		1.00		C
TRAVEL FOR TRAINING	2194	79	10/30/85	WX-3	9600		8.00	1125.00	C
EXPLOSIVES HAZ/EVAL ORIEN	2057	24	02/07/85	WX-3	9100				C

IVISION : 96
ROUP : 9603 WX-3
-NO/NAME: 014165 BROOKS GEORGE H

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
EINDOCTRINATION OF TA-55	798	4	01/01/85	WX-3	5700				C
ST AID/MULTIMEDIA	2184	7	02/04/83	WX-3	9600			45.00	C
IRE EXTINGUISHER TRNG	855	25	10/29/82	WX-3	5700		1.00	5.00	C
SITE EMPLOYEE ORIENT	2159	1	01/15/82	WX-3	9600				C
ADIOLOGICAL SAFETY	702	5	05/01/80	9105	5700				C
LASH X-RAY CLASS	2016	1	09/01/79	9105	9100				C

IVISION : 80
ROUP : 8004 C-4
-NO/NAME: 083289 FLEMMING JOHN F JR

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
PR - ADULT	3583	55	11/20/89	7509	5750		4.00		C
ENERAL APTITUDE TEST BATTERY (GATB) TESTING SESSION	2709	9	10/11/89	7509	6303		3.00		C
AZ/COM TRAINING - INTRODUCTION	2398	15	05/05/89	7509	5750		2.00		C
PR CARDIOPULMONARY RESUSCITATION	2378	28	10/06/88	7509	5750		8.00		C
LECTRICAL SAFETY AWARENESS	2377	18	08/11/88	7509	5750		2.50		C
ANAGING PERSONAL GROWTH	2253	1	11/03/87	7509	6303		14.00	540.00	C
ON-DISCLOSURE SECURITY AGREEMENT	1427	36	07/01/87	7509	6613		1.00		C
ERBAL JUDO	3	4	05/12/87	7509	0000			275.00	C
AZ COMMUNICATION-SUPVRS	2410	3	04/20/87	7509	5700				C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	7509	6613		1.00		C
OTENTIAL DEVELOPMENT	14	5	09/01/86	7701	0000			150.00	C
HASE II MGMT DEVEL PROG	80	2	05/06/86	7701	0000				C
HASE II MGMT DEVEL PROG	80	3	01/14/86	7701	-0000			488.00	C
HASE II - HRD-3	6126	7	10/01/85	C-4	6303	X597	169.00		C
EALTH & SAFETY MANUAL	803	22	06/17/85	7701	5700				C
ERF APPRAISAL DIV TRAIN	40	2	05/31/85	7701	0000				C
RAVEL FOR TRAINING	1477	57	05/22/85	7701	7700			304.00	C
HASE I MGT PROGRAM	50	1	02/19/85	7701	0000			591.00	C
USTOMER SERVICE PREVIEW	438	1	10/10/84	7701	6303		14.00	111.00	C
HASE I - HRD-3	6136	5	10/01/84	C-4	6303	X597	138.50		C
-DO PERF. APPRAISL TR.	1454	2	06/12/84	7701	7700				C
YNAMICS/EFF SUPERVISION	67	1	05/10/83	7701	0000			275.00	C
USTOMER ORIENTATION	1182	1	01/11/83	7701	6200				C
MPLOYMENT INTERVIEWING	935	5	12/01/80	7701	5900			35.00	C
LCOHOLISM WORKSHOP	1496	1	10/27/80	7701	7700				C
MPLOYEE EVALUATIONS	1505	1	05/01/80	7701	7700			126.00	C
IME MANAGEMENT	1502	1	11/01/79	7701	7700			160.00	C
ROJECT MANAGEMENT	1453	1	11/01/79	7701	7700			219.00	C
MERGY. + FIRE EXTIN OPER	850	1	11/01/79	7701	5700		1.00		C
UPERVISOR SEMINARS	1455	1	10/01/79	7701	7700				C
NTRO MICROPROCESSORS	1476	1	09/01/79	7701	7700		38.00		C
UPERVISOR SEMINAR	1451	1	08/01/79	7701	7700				C
IGITAL TROUBLESHOOTING	1486	3	08/01/79	7701	7700				C
UPERVISOR SEMINARS	1455	2	02/01/79	7701	7700				C

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
:41:36 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 80
ROUP : 8004 C-4
NO/NAME: 083289 FLEMMING JOHN F JR

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
BSTANCE ABUSE AWARENESS FOR EMPLOYEES - C DIVISION	7314	8	06/08/93	C-4	6303	X597	1.00		C
E.T. - OSHA	5543	113	06/07/93	C-4			.50		C
.E.T. - LOCKOUT/TAGOUT	5541	113	06/07/93	C-4			.25		C
E.T. - RADIATION PROTECTION	5547	113	06/07/93	C-4			1.00		C
E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	77	09/21/92	C-4			1.00		C
E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	77	09/21/92	C-4			.25		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	77	09/21/92	C-4			.50		C
PR - ADULT	3583	953	08/25/92	C-4			4.00		C
I TEAM PQMI WORKSHOPS	7890	11	08/06/92	C-4			16.00		C
HASE I ALUMNI - WORK STRATEGIES PART II: MICROSOFT PROJECT	6998	2	07/27/92	C-4	6303	X597	7.00		C
IRECTOR'S POLICIES - CDIV	6157	2	07/15/92	C-4			1.00		C
KOUT/TAGOUT PROCEDURES FOR AUTHORIZED EMPLOYEES	6713	42	06/10/92	C-4			2.50		C
ECTOR'S POLICIES - CDIV	6157	1	01/01/92	C-4			1.00		C
RGONOMICS: TERMINALS, COMPUTERS, AND VDTS	3594	49	12/16/91	C-4			2.00		C
MT-HAND HACKSAW AND FILING (VIDEO)	6293	1	10/23/91	C-4			.30		C
-ENGINE LATHE ACCESSORIES (VIDEO)	6294	1	10/23/91	C-4			.30		C
-MILLING AND TOOL SHARPENING (VIDEO)	6295	1	10/23/91	C-4			.30		C
MT-THREE METHODS OF FACING WORK	6644	1	10/23/91	C-4			.30		C
PR - ADULT	3583	656	10/08/91	C-4			4.00		C
-LAYOUT TOOLS (VIDEO)	6298	1	09/13/91	C-4			.30		C
-GRINDING A RIGHT-HAND ROUGHING TOOL (VIDEO)	6299	1	09/13/91	C-4			.30		C
MT-GRINDING A ROUND NOSE FINISHING TOOL (VIDEO)	6300	1	09/13/91	C-4			.30		C
MT-STRAIGHT TURNING WORK OF TWO DIAMETERS (VIDEO)	6301	1	09/13/91	C-4			.30		C
-LATHE MOUNTING (VIDEO)	6315	1	09/13/91	C-4			.30		C
-LATHE TAPER TURNING (VIDEO)	6316	1	09/13/91	C-4			.30		C
MT-CUTTING SPEEDS (VIDEO)	6317	1	09/11/91	C-4			.30		C
-DRILL PRESSES (SENSITIVE AND RADIAL):VIDEO	6314	1	09/11/91	C-4			.30		C
-DRILLING, BORING AND REAMING WORK HELD IN LATHE CHUCK	6318	1	09/11/91	C-4			.30		C
MT-KNURLING ON THE LATHE (VIDEO)	6319	1	09/11/91	C-4			.30		C
RILL BITS BY HAND AND MACHINE (VIDEO)	6302	1	09/11/91	C-4			.30		C
-HAND TOOLS AND THEIR USE (VIDEO)	6303	1	09/11/91	C-4			.30		C
-FILING AND POLOSHING (VIDEO)	6304	1	09/11/91	C-4			.30		C
MT-ENGINE LATHE ACCESSORIES (VIDEO)	6294	2	09/11/91	C-4			.30		C
SSOCIATE DIRECTOR'S (ADR) ALL-HANDS COLLOQUIUM - CDIV	5489	1	08/22/91	C-7			4.00		C
-TIGER TEAM DIRECTOR'S "ALL HANDS" COLLOQUIUM 8/21/91 - CDIV	5488	1	08/21/91	C-7			1.50		C
E EXTINGUISHER TRAINING: FIGHT OR FLIGHT	5224	161	08/15/91	C-7			.50		C
ELECTRICAL SAFETY AWARENESS	2377	85	08/13/91	C-7			3.00		C
E EXTINGUISHER TRAINING: FIGHT OR FLIGHT	5224	33	03/12/91	C-7	5750		.50		C
FINED SPACE SAFETY & ENTRY PROCEDURES	4424	2	01/29/91	C-4	5750	W383	1.00		C
ATIONS WORKSHOP	2880	1	11/15/90	7509	6303		8.00		C
PR - ADULT	3583	137	10/12/90	C-7	5750		4.00		C
UAL SECURITY REFRESHER	1425	48	10/01/90	7509	6613		2.00		C
RD COMMUNICATION - SUPERVISORS	3584	40	09/18/90	C-4			2.00		C
OE LAND, MOBLIE RADIO CONFERENCE	4664	1	09/05/90	7509	7509		48.00	20.00	C
SUBSTANCE ABUSE EDUCATION PROGRAM FOR SUPERVISORS	2705	21	08/22/90	7509	6303		8.00		C
O STD 1044	4695	2	06/04/90	7509	7509		8.00	110.00	C
E GENERATOR TRAINING	4419	9	05/30/90	7509	5750		4.00		C
HAZ/COM TRAINING - INTRODUCTION	2398	37	03/19/90	7509	5750		2.00		C

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8:42:05 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 91
ROUP : 9107 M-7
-NO/NAME: 083019 FRESQUEZ ROBERT F

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
:PR - ADULT	3583	1273	05/12/93	M-7			4.00		C
:ESPIRATORS: AIR-PURIFYING	3549	614	04/13/93	M-7			2.50		C
:CRA LESS THAN 90 DAY STORAGE	7782	1	02/05/93	M-7			6.50		C
.OCKOUT/TAGOUT PROCEDURES FOR AUTHORIZED EMPLOYEES	6713	44	08/05/92	M-7			2.50		C
;.E.T. - ENVIRONMENT	5548	68	07/27/92	M-7			1.00		C
;.E.T. - OSHA RIGHTS AND REGULATIONS	5543	68	07/27/92	M-7			.50		C
;.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	68	07/27/92	M-7			1.00		C
;.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	68	07/27/92	M-7			.25		C
:PR - ADULT	3583	861	05/20/92	M-7			4.00		C
:RANE SAFETY: QUALIFIED OPERATORS	2395	9	02/24/92	M-7			16.00		C
SPILL COORDINATOR TRAINING	691	9	02/10/92	M-7			8.00		C
HAZARD COMMUNICATION INTRODUCTION	2398	157	12/13/91	M-7			2.00		C
.ASER SAFETY ORIENTATION	670	47	12/10/91	M-7			2.50		C
:RANE SAFETY: INCIDENTAL OPERATORS	2396	40	09/24/91	M-7			4.00		C
RESPIRATORS: AIR-PURIFYING	3549	295	08/05/91	M-7			2.50		C
FORKLIFT SAFETY FUNDAMENTAL	753	46	05/30/91	M-7			2.00		C
FORKLIFT CERTIFIED	5649	8	05/01/91	M-7			1.00		C
ES&H EMPLOYEE PARTICIPATION PACKET	4459	57	04/21/91	M-7			.80		C
BUILDING MANAGERS ORIENTATION PROGRAM	5299	6	04/18/91	M-7			4.00		C
SUBSTANCE ABUSE EDUCATION PROGRAM FOR SUPERVISORS	2705	44	11/27/90	M-7	6303		8.00		C
WASTE GENERATOR TRAINING	4419	54	08/21/90	M-7	5750		4.00		C
REFRESHER TRAINING FOR M-DIVISION SUPERVISORS	5092	1	05/22/90	M-7	9150		12.00		C
LASER SAFETY	4355	1	05/16/90	M-7	9945		8.00	250.00	C
OVERVIEW: SUPERVISING AT LOS ALAMOS	2916	10	03/20/90	M-7	6303		16.00		C
PERFORMANCE APPRAISAL	3497	3	02/20/90	M-7	6303		16.00		C
MANAGING THE UNSATISFACTORY PERFORMER	2699	7	10/24/89	M-7	6303		14.00	325.00	C
PRACTICAL WRITING AND EDITING	2769	8	10/18/89	M-7	6303		21.00	170.00	C
ANNUAL SECURITY REFRESHER	1425	35	09/26/89	M-7	6613		2.00		C
HAZARD COMMUNICATIONS TRAINING	2972	1	10/27/88	M-7	5750		8.00		C
CPR CARDIOPULMONARY RESUSCITATION	2378	71	05/09/88	M-7	5750		8.00		C
NON-DISCLOSURE SECURITY AGREEMENT	1427	36	07/01/87	M-7	6613		1.00		C
STRESS MANAGEMENT SEMINAR	9	6	03/19/87	M-7	0000			320.00	C
FORKLIFT SAFETY FUNDAMENTAL	753	21	02/05/87	M-7	5750		1.50		C
SECURITY REFRESHER TRNG	1540	35	01/22/87	M-7	7800				C
AIR PURIFYING RESPIRATORS	681	150	01/14/87	M-7	5700				C
INITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	M-7	6613		1.00		C
STRESS MANAGEMENT II	10	1	10/02/86	M-7	0000			200.00	C
CMPTR LITERACY NON-DATA	269	1	09/25/86	M-7	0000			275.00	C
BACK CARE CLINIC	634	8	06/25/86	M-7	5700			45.00	C
AIR PURIFYING RESPIRATORS	681	54	01/14/86	M-7	5700				C
AIR PURIFYING RESPIRATORS	800	16	07/22/85	M-7	5700				C
FULL-FACE RESPIRATORS	859	12	07/11/84	M-7	5700				C
HALF FACE RESPIRATORS	701	27	07/11/84	M-7	5700				C
HALF FACE RESPIRATORS	701	20	07/11/83	M-7	5700				C
FULL FACE RESPIRATORS	858	14	02/22/83	M-7	5700				C
GEOMETRIC TOLERANCING	2165	3	12/06/82	M-7	9600				C
SFTY AWARENESS/EXPLOSIVES	2054	1	11/10/82	M-7	9100				C
APPLIED CHEM/PROPERTIES	282	1	07/26/82	M-7	0000			785.00	C

IVISION : 91
ROUP : 9107 M-7
-NO/NAME: 083019 FRESQUEZ ROBERT F

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
ESPIRATORS/FULL FACE	860	11	07/06/82	M-7	5700				C
ESPIRATORS/HALF FACE	877	11	07/06/82	M-7	5700				C
PPLIED CHEM/FUNDAMENTALS	281	1	06/14/82	M-7	0000			785.00	C
R REFRESHER	699	79	06/19/81	9607	5700			15.00	C
ESPIRATORS/HALF FACE	877	52	06/01/81	9607	5700				C
ESPIRATORS/FULL FACE	860	78	06/01/81	9607	5700				C
R BASIC LIFE SUPPORT	832	34	05/23/80	9607	5700			20.00	C
RST AID MULTIMEDA	677	26	03/11/80	9607	5700			20.00	C
FFEC. SPVSN. FRM DAY ONE	956	1	06/01/79	9607	5900				C

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8:42:19 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 00
ROUP : 0030 JCI
-NO/NAME: 090217 FLYNN PAULINE J

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
ADIATION SAFETY TA-53 (VIDEO)	6160	68	07/12/93	JCI			.75		C
RANE SAFETY: QUALIFIED OPERATORS	2395	13	09/22/92	JCI			16.00		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	70	08/10/92	JCI			1.00		C
.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	70	08/10/92	JCI			.25		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	70	08/10/92	JCI			.50		C
RANE SAFETY: INCIDENTAL OPERATORS	2396	46	05/29/92	JCI			4.00		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	103	10/15/90	JCI			.50		C
ASTE GENERATOR TRAINING	4419	81	09/19/90	JCI	5750		4.00		C
NNUAL SECURITY REFRESHER	1425	39	02/06/90	JCI	6613		2.00		C
ON-DISCLOSURE SECURITY AGREEMENT	1427	33	05/04/87	JCI	6613		1.00		C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	JCI	6613		1.00		C

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
:47:49 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

VISION : 00
ROUP : 0030 JCI
NO/NAME: 087233 LUCERO EDWARD D

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
DIATION SAFETY TA-53 (VIDEO)	6160	66	07/12/93	JCI			.75		C
NFINED SPACE AWARENESS I	7294	20	06/16/93	JCI			2.00		C
RANE SAFETY: QUALIFIED OPERATORS	2395	13	09/22/92	JCI			16.00		C
ADIATION SAFETY-TA-53 TRAINING	4432	71	08/18/92	JCI			1.50		C
E.T. - OSHA RIGHTS AND REGULATIONS	5543	70	08/10/92	JCI			.50		C
E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	70	08/10/92	JCI			.25		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	70	08/10/92	JCI			1.00		C
RANE SAFETY: INCIDENTAL OPERATORS	2396	46	05/29/92	JCI			4.00		C
SPIRATORS: AIR-PURIFYING	3549	402	03/17/92	JCI			2.50		C
PURIFYING RESPIRATORS	3549	193	02/20/91	JCI		5750	2.50		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	103	10/15/90	JCI			.50		C
ASTE GENERATOR TRAINING	4419	83	09/20/90	JCI		5750	4.00		C

ED-8010 LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM PAGE 1
8:49:03 EMPLOYEE TRANSCRIPTS FROM 01/01/1979 TO 08/12/1993 08/12/93

IVISION : 81
ROUP : 8106 MST-6
-NO/NAME: 102297 EDWARDS RANDALL L

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
ORKLIFT SAFETY FUNDAMENTAL	753	69	07/28/93	MST-6			2.00		C
ULTIMEDIA ENVIRONMENTAL AWARENESS FOR MANAGERS	8125	4	06/08/93	MST-6			4.00		C
ERYLLIUM HEALTH HAZARDS	725	13	03/04/93	MST-6			1.00		C
ORTABLE FIRE EXTINGUISHERS - VIDEO	5551	3	09/30/92	MST-6			.50		C
.E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	77	09/21/92	MST-6			1.00		C
.E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	77	09/21/92	MST-6			.25		C
.E.T. - OSHA RIGHTS AND REGULATIONS	5543	77	09/21/92	MST-6			.50		C
RANE SAFETY: QUALIFIED OPERATORS	2395	5	07/31/91	MST-6			16.00		C
ASIC RADIATION WORKER TRAINING	4428	16	04/24/91	MST-6			8.00		C
NTRODUCTION TO IBM-PC: OVERVIEW	2327	89	03/11/91	MST-6	6303		20.00	440.00	C
IRE EXTINGUISHER TRAINING: FIGHT OR FLIGHT	5224	8	02/04/91	MST-6	5750		.50		C
ASIC RADIATION WORKER TRAINING	4428	97	11/28/90	MST-6			8.00		C
HALLIUM HANDLING	3018	4	11/01/90	MST-6	5705		1.00		C
ARD OF AUTHORITY - HAZARDOUS WASTE MANAGEMENT - VIDEO	4462	1	09/25/90	MST-6	5750		.25		C
S&H EMPLOYEE PARTICIPATION PACKET	4459	44	07/31/90	MST-6			.80		C
ELF CONTAINED BREATHING APPARATUS	669	95	06/07/90	MST-6	5750		2.50		C
ASTE GENERATOR TRAINING	4419	7	05/23/90	MST-6	5750		4.00		C
UCLEAR CRITICALITY SAFETY REFRESHER	838	7	05/10/90	MST-6	5750		1.00		C
IR PURIFYING RESPIRATORS	3549	26	04/05/90	MST-6	5750		2.50		C
AZ/COM TRAINING - INTRODUCTION	2398	57	02/23/90	MST-6	5750		2.00		C
NNUAL SECURITY REFRESHER	1425	27	04/05/89	MST-7	6613		2.00		C
RANE SAFETY ORIENTATION	2965	8	05/23/88	MST-7	5703		8.00		C
RANE SAFETY ORIENTATION	2965	2	05/23/88	MST-7	5703		8.00		C
AZ/COM TRAINING - INTRODUCTION	2398	4	03/21/88	MST-7	5750		2.00		C
UCLEAR CRITICALITY TRAINING CLASS	2400	5	03/02/88	MST-7	5750		16.00		C
ORKLIFT SAFETY FUNDAMENTALS	2394	5	12/16/87	MST-7	5750		1.50		C
ELF CONTAINED BREATHING APPARATUS	669	6	11/23/87	MST-7	5750		2.50		C
NITIAL NEW HIRE INDOCTRINATION	1424	8	08/03/87	MST-7	6613		1.00		C
ON-DISCLOSURE SECURITY AGREEMENT	1427	37	08/03/87	MST-7	6613		1.00		C

IVISION : 96
ROUP : 9605 WX-5
NO/NAME: 081107 LARSON RICHARD E

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
MPLOYMENT LAW UPDATE	8332	2	07/16/93	WX-5	4801	W66J	2.00		C
BA OPERATING PROCEDURES	7889	3	07/15/93	WX-5			2.00		C
AP: DRUG AWARENESS TRAINING FOR NUCLEAR EXPLOSIVE DUTY PERSON	7995	1	04/26/93	WX-5	6303	X597	2.00		C
93 ADC RECERTIFICATION TRAINING SESSION	7965	1	04/19/93	WX-5	7806	W483	1.00		C
T FEDERAL HIGHWAY MOTOR CARRIER SAFETY REGULATIONS	7806	3	03/16/93	WX-5			2.00		C
NNUAL MC&A TRAINING MEETING	6681	9	03/11/93	WX-5			1.50		C
UCLEAR MATERIALS PHYSICAL INVENTORY	5992	6	03/09/93	WX-5			1.50		C
ITICALITY SAFETY: AD HOC (REFRESHER) TRAINING	5272	8	02/24/93	WX-5			1.00		C
K DIVISION NUCLEAR EXPLOSIVE DUTIES - 1993	8048	1	02/24/93	WX-5	9650	CW11	2.00		C
ASIC RADIATION WORKER TRAINING	4428	214	11/12/92	WX-5			8.00		C
E.T. - CERTIFIED	5668	132	11/03/92	WX-5			1.50		C
-5 (TA-41) EMERGENCY ALARMS AND PROCEDURES	5466	2	10/05/92	WX-5			.75		C
K DIVISION WEAPONS LECTURE SERIES	7383	1	09/14/92	WX-5	9650	XD96	1.50		C
E.T. - RADIATION PROTECTION TRAINING FOR THE OCCUPATIONAL WOR	5547	75	09/10/92	WX-5			1.00		C
E.T. - OSHA RIGHTS AND REGULATIONS	5543	75	09/10/92	WX-5			.50		C
E.T. - LOCKOUT/TAGOUT TRAINING FOR AFFECTED EMPLOYEES	5541	75	09/10/92	WX-5			.25		C
ASIC 49 CFR/HM-181/AIR TRANSPORTATION OF HAZARDOUS MATERIALS	6684	1	06/15/92	WX-5			40.00		C
RESSURE SAFETY SEMINAR FOR ENGINEERS	3573	2	06/11/92	WX-5			8.00		C
TERMEDIATE PRESSURE SAFETY (PS-02)	3571	2	06/10/92	WX-5			4.00		C
ESSURE SAFETY: HIGH-PRESSURE SYSTEMS	3572	3	06/10/92	WX-5			4.00		C
ONTAMINATION CONTROL STATION (CCS) PROCESSING PROCEDURES	7307	2	05/22/92	WX-5			8.00		C
UCLEAR MATERIAL CUSTODIAN ORIENTATION	5989	2	04/17/92	WX-5	7810	A265	1.50		C
92 CLASSIFICATION AWARENESS AND TRAINING SESSION (ADC)	7042	1	04/13/92	WX-5	7806	W483	1.00		C
E-RETIREMENT SEMINAR	432	19	03/25/92	WX-5	6303	X597	14.00		C
NNUAL MC&A TRAINING MEETING	6681	1	03/02/92	WX-5	7810	A265	1.50		C
X-5 (TA-41) EXPLOSIVE OPERATIONS	7541	1	01/22/92	WX-5			1.00		C
AP FOR MANAGERS	6122	2	12/02/91	WX-5	6303	X597	4.00		C
-5 (TA-41) ICE HOUSE TOUR	7540	2	11/07/91	WX-5			1.00		C
X-5 (TA-41) ICE HOUSE ORIENTATION	7539	4	10/17/91	WX-5			1.00		C
ACKAGING AND TRANSPORTATION: TRANSPORTING GAS CYLINDERS	5261	1	09/10/91	WX-5			1.50		C
NDUCT OF OPERATIONS	5496	4	08/19/91	WX-5	6303		16.00		C
X-5 (TA-41) EMERGENCY ALARMS AND PROCEDURES	5466	1	08/12/91	WX-5			.75		C
RANE SAFETY: QUALIFIED OPERATORS	2395	4	07/29/91	WX-5			16.00		C
ANE SAFETY: INCIDENTAL OPERATORS	2396	36	07/24/91	WX-5			4.00		C
CKAGING AND TRANSPORTATION: HAZARDOUS MATERIALS FOR MANAGER A	5259	1	07/19/91	WX-5			1.00		C
AMPER INDICATING DEVICE (TID) TRAINING	4756	53	06/12/91	WX-5	7802		4.00		C
RESSURE SAFETY: PRESSURE RELIEF DEVICES	5265	2	06/11/91	WX-5			4.00		C
C/MIXED LOW LEVEL RADIOACTIVE WASTE	5306	2	05/21/91	WX-5			1.25		C
C/LOW LEVEL SOLID RADIOACTIVE WASTE	5307	2	05/21/91	WX-5			1.25		C
MC/RADIOACTIVE LIQUID WASTE	5330	1	05/21/91	WX-5			1.00		C
MC/TRANSURANIC (TRU) WASTE	5331	1	05/21/91	WX-5			1.00		C
C/CHEMICAL WASTE MANAGEMENT	5332	1	05/21/91	WX-5			1.00		C
MC/NON-RADIOACTIVE ADMINISTRATIVELY CONTROLLED WASTE/ASBESTOS/	5333	1	05/21/91	WX-5			1.00		C
MC/BIOLOGICAL/MEDICAL WASTE	5334	1	05/21/91	WX-5			1.00		C
STE MANAGEMENT COORDINATOR TRAINING	5304	3	05/20/91	WX-5			3.00		C
SPIRATORS: SELF-CONTAINED BREATHING APPARATUS (SCBA)	669	134	05/10/91	WX-5	5750		2.50		C
ESPIRATORS: AIR-PURIFYING	3549	250	05/09/91	WX-5			2.50		C
M CUSTODIAN ANNUAL MC&A TRAINING - SESSION II	5355	1	04/10/91	WX-5			2.50		C

IVISION : 96
ROUP : 9605 WX-5
-NO/NAME: 081107 LARSON RICHARD E

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
SE-1 PACKAGES CERT TRNG	2420	5	03/18/87	WX-5	5700				C
AZ COMMUNICATION-SUPVRS	2410	7	02/12/87	WX-5	5700				C
NITIAL NEW HIRE INDOCTRINATION	1424	3	01/01/87	WX-5	6613		1.00		C
IR PURIFYING RESPIRATORS	681	69	10/14/86	WX-5	5700				C
ADIATION SFTY TRNG TA-41	754	3	05/06/86	WX-5	5700				C
ADIATION SFTY TRNG TA-41	754	2	04/22/86	WX-5	5700				C
ADIATION SFTY TRNG TA-41	754	1	04/14/86	WX-5	5700				C
CE HOUSE RADIATION SFTY	751	1	04/08/86	WX-5	5700				C
XPLOSIVES HAZ/EVAL ORIEN	2057	2	07/01/85	WX-5	9100				C
EALTH & SAFETY MANUAL	803	19	06/07/85	WX-5	5700				C
X-DO PERF. APPRAISL TR.	2151	6	05/22/84	WX-5	9600				C
OMSEC	540	3	04/02/84	WX-5	5400				C
OMSEC	540	2	12/01/83	WX-5	5400				C
IRE EXTING EMERGENCY RPT	2185	2	10/19/83	WX-5	9600		1.00		C
IRE EXTING/EMERGENCY RPT	2191	1	10/19/83	WX-5	9600		1.00		C
OMSEC	540	1	03/31/83	WX-5	5400				C
AFETY ORIENTATION/MGRS	888	22	01/06/83	WX-5	5700				C
AZARDOUS MATRLS SHIPMENT	1330	6	12/16/82	WX-5	6200				C
OMSEC	540	4	10/01/82	WX-5	5400				C
SX 11M 4.0 UPDATE	296	1	09/16/82	WX-5	0000			595.00	C
ETONATION/COMBUSTION	174	1	05/03/82	WX-5	0000			250.00	C
ADIATION HYDRODYNAMICS	171	1	03/22/82	WX-5	0000			250.00	C
AGNETOHYDRODYNAMICS	169	1	02/22/82	WX-5	0000			240.00	C
UMERICAL FLUID DYNAMICS	161	1	01/11/82	WX-5	0000				C
NTRO TO FLUID DYNAMICS	158	1	11/02/81	WX-5	0000			200.00	C
ESPIRATORS/FULL FACE	860	2	09/21/81	WX-5	5700				C
MPLOYMENT INTERVIEWING	935	9	06/23/81	WX-5	5900			35.00	C
ERF. APPRAISAL TECHNIQ.	962	2	04/15/81	WX-5	5900			155.00	C
FFEC. SUPR. FROM DAY ONE	957	1	04/13/81	WX-5	5900			145.00	C
AZARDOUS MATRLS SHIPMENT	1330	9	01/08/81	WX-5	6200				C
SX-11M USER COURSE	1472	1	12/15/80	WX-5	7700		38.00	650.00	C
ICOLET OSCILLOSCOPE SEM	1474	1	07/15/80	WX-5	7700				C
RITICALITY SAFETY TRG.	2212	1	03/01/80	WX-5	9700				C

IVISION : 96
ROUP : 9605 WX-5
NO/NAME: 081107 LARSON RICHARD E

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CNTR	PGM CODE	HOURS	FEE	ST
UILDING MANAGERS ORIENTATION PROGRAM	5299	14	04/05/91	WX-5			4.00		C
S & H AWARENESS TRAINING - FORMALITY OF OPERATIONS	5345	1	04/01/91	WX-5			2.00		C
M CUSTODIAN ANNUAL MC&A TRAINING - SESSION I	5354	1	03/19/91	WX-5	7802		2.50		C
SCORTED AND UNESCORTED ACCESS TRAINING ICE HOUSE - WX-5	5342	1	03/04/91	WX-5			2.00		C
ASIC INSTRUCTOR TRAINING	2728	2	03/04/91	WX-5	6303		40.00		C
RESSURE SAFETY ORIENTATION	769	12	02/19/91	WX-5	5750		4.00		C
ASTE MANAGEMENT TRAINING - WX-5 - ICE HOUSE SPECIFIC	5343	1	01/22/91	WX-5			1.50		C
SIC RADIATION WORKER TRAINING	4428	96	11/15/90	WX-5			8.00		C
&H EMPLOYEE PARTICIPATION PACKET	4459	33	09/15/90	WX-5			.80		C
ASTE GENERATOR TRAINING	4419	60	08/16/90	WX-5	5750		4.00		C
ORKLIFT CERTIFIED	5649	15	08/01/90	WX-5			1.00		C
ALUATION OF TRAINING	5436	1	07/31/90	WX-5			24.00		C
OGRAM EVALUATION AND CORRECTIVE ACTION OF TRAINING	2730	1	07/31/90	WX-5	6303		.24		C
RAINING THE ON-THE-JOB TRAINER	38	13	06/25/90	WX-5	6303		24.00	275.00	C
NNUAL SECURITY REFRESHER	1425	44	06/01/90	WX-5	6613		2.00		C
LF CONTAINED BREATHING APPARATUS	669	79	05/11/90	WX-5	5750		2.50		C
ALYSIS/DESIGN OF TRAINING	2729	1	04/30/90	WX-5	6303		40.00		C
IR PURIFYING RESPIRATORS	3549	40	04/04/90	WX-5	5750		2.50		C
-5 CRITICALLY SAFETY - (TA41 SITE SPECIFIC)	5841	1	04/03/90	WX-5			1.00		C
ERIALS CONTROL AND ACCOUNTABILITY	5164	1	03/08/90	WX-5	9605		.15		C
A ORIENTATION TRAINING, TA-41, WX-5 ICE HOUSE ACCESS	5344	1	03/08/90	WX-5			1.00		C
AZ/COM TRAINING - INTRODUCTION	2398	38	02/22/90	WX-5	5750		2.00		C
IATION WORKER	5160	1	02/12/90	WX-5	6303		80.08		C
ARDOUS MATLS SHIPPING/DOE	4435	3	01/24/90	WX-5	5700		7.00		C
ZPACT - RADIOACTIVE MATERIAL	3664	6	12/18/89	WX-5	5750		1.50		C
H&S TRN HWOPS: PKG/TRANS	3627	2	10/16/89	WX-5	5700		1.50		C
TRN HWOPS: HW MGT/MIN	3626	2	10/16/89	WX-5	5700		1.00		C
A CONTINGENCY PLAN	3605	1	09/21/89	WX-5	5750		1.00		C
RCRA - HAZARD RECOGNITION	3606	1	09/21/89	WX-5	5750		1.50		C
RCRA REGS (GENERATOR REQUIREMENTS)	3597	10	09/21/89	JCI	5750		1.00		C
EI TRICAL SAFETY AWARENESS	2377	43	08/03/89	WX-5	5750		2.50		C
R A SPILL RESPONSE/SPCC	3610	2	07/19/89	WX-5	5750		3.00		C
HAZPACT - RADIOACTIVE MATERIAL	3664	1	07/11/89	WX-5	5750		1.50		C
TAMPER INDICATING DEVICE (TID) TRAINING	4756	9	05/25/89	WX-5	7802		4.00		C
AI PURIFYING RESPIRATORS	668	242	02/14/89	WX-5	5750		2.00		C
FORKLIFT PROFICIENCY INSTRUCTOR COURSE	2957	1	08/30/88	WX-5	5750		7.00		C
SPILL COORDINATOR CLASS	691	3	08/23/88	WX-5	5750		6.00		C
QU IFIED CRANE SAFETY ORIENTATION	3006	1	07/19/88	WX-5	5750		8.00		C
QU IFIED CRANE SAFETY ORIENTATION	3006	2	07/19/88	WX-5	5750		8.00		C
CRANE SAFETY ORIENTATION	2965	5	07/13/88	WX-5	5703		8.00		C
SELF CONTAINED BREATHING APPARATUS	669	17	04/26/88	WX-5	5750		2.50		C
MO TORED WORKER INITIAL	2984	2	04/20/88	WX-5	5750		8.00		C
AI URIFYING RESPIRATORS	668	81	02/29/88	WX-5	5750		2.00		C
REVIEW OF RAMS QA PROGRAM	2371	2	08/06/87	WX-5	5750		2.00		C
ARG EXERCISE-PREDEPLOYMENT TRAINING	2404	2	07/09/87	WX-5	5750		3.00		C
NO DISCLOSURE SECURITY AGREEMENT	1427	36	07/01/87	WX-5	6613		1.00		C
SECURITY REFRESHER TRNG	1540	128	06/10/87	WX-5	7800				C
SE-1 PACKAGES CERT TRNG	2420	6	04/14/87	WX-5	5700				C

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) -
UNDERGROUND STORAGE TANKS (UST)

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

John Ellison, Environmental Investigations Specialist
NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory in Los Alamos, New Mexico (LANL). This report, one of a series, addresses investigation findings and discusses Underground Storage Tank (UST) issues and compliance at LANL. EPA Region 6 and New Mexico Environment Department (NMED) also participated in the on-site inspection.

REGULATORY SUMMARY

The federal regulations regarding UST systems are found at Title 40 of the Code of Federal Regulations (CFR) Part 280 - Technical Standards and Part 281 - Approval of State Underground Storage Tank Programs. The NMED, Underground Storage Tank Bureau, administers Underground Storage Tank Regulations adopted effective July 26, 1990. The state was authorized to operate and enforce its own UST program effective November 15, 1990.

The technical requirements of the federal regulations address program scope and interim prohibition; UST systems: design, construction, installation, and notification; general operating requirements; release detection; release reporting, investigation, and confirmation; release response and corrective action for UST systems containing petroleum or hazardous substances; out-of-service UST systems and closure; and financial responsibility.

The state regulations contain requirements similar to the federal regulations. Additionally, the state regulations required annual registration of existing UST systems by January 31 of each year, and within 30 days of bringing new UST systems into service. Beginning in 1993, the state Groundwater Protection Act established July 1 of each year as the deadline for payment of registration fees. LANL is currently not under any compliance

orders or enforcement actions with regard to their UST systems. EPA Region 6 and NMED conducted a joint UST inspection at Los Alamos on January 24, 1990. NMED conducted tank closure inspections in February 1991 and June 1992, and compliance inspections in May 1992. No enforcement action was taken as a result of these inspections.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL environmental issues, the facility inspection ensued. A detailed inspection was conducted of each of the 18 regulated UST systems [Table 1]. Records/documents associated with regulated UST activities were also reviewed. A summary of on-site activities, inspection observations, and records review is provided below. All photographs referenced in this report are included in Appendix A.

Program Scope and Interim Prohibition

Known UST systems at Los Alamos are numbered by technical areas (TA) and building or vicinity [Appendix B - UST Information Lists]. In 1990, there were 92 UST systems. LANL policy has been to remove or upgrade tanks to meet UST requirements. Most of the older tanks have been removed. All 18 remaining UST systems at 13 locations were inspected. Database information, as verified during the inspection, was accurate.

UST Systems: Design, Construction, Installation, and Notification

New UST systems are required to meet performance standards including corrosion protection (discussed later) and spill/overfill protection by means of catchment basins, automatic shut-off valves, or high-level alarms. Currently,

Table 1

UNDERGROUND STORAGE TANKS
Los Alamos National Laboratory
Los Alamos, New Mexico

Tank Number	Capacity (gallons)/ Contents	Content Use/ Installation Date	Comments
TA-2-1 Omega reactor	560/Diesel	Backup generator/1987	Passed tightness tested 9/17/91
TA-3-36-1 Gas station	10,152/Gasoline	Vehicle fuel/1988	Wheaton Tank Level Monitor II automated inventory control and tightness testing
TA-3-36-2 Gas station	5,038/Gasoline	Vehicle fuel/1980	Passed tightness test 12/12/92
TA-3-TF-1 Tank farm	10,152/Kerosene	Fuel/1984	Automated Veeder Root system for inventory control and tightness testing
TA-3-TF-2 Tank farm	25,560/Diesel	Fuel/1984	Monitored by same Veeder Root system as above
TA-3-TF-3 Tank farm	15,228/Gasoline	Vehicle fuel/1984	Monitored by same Veeder Root system as above
TA-3-TF-4 Tank farm	25,560/Gasoline	Vehicle fuel/1984	Monitored by same Veeder Root system as above
TA-3-TF-5 Tank farm	25,560/Gasoline	Vehicle fuel/1984	Monitored by same Veeder Root system as above
TA-3(60)-MP-1 Motor pool	10,152/Diesel	Vehicle fuel/1980	Monitored by same Veeder Root system as above
TA-3-1255 Operational security	4,030/Diesel	Backup generator/1982	Tightness tested 4/23/91 inconclusive as tank next to steam line which causes temperature fluctuations. 1993 closure
TA-16-197 Gas station	10,000/Gasoline	Vehicle fuel/1990	Wheaton Tank Level Monitor II for inventory control and tightness testing. New steel tank but corrosion protection systems not tested within 6 months of installation. Pressurized piping but piping not tightness tested
TA-16-205	560/Diesel	Backup generator/1986	Passed tightness test 9/5/91. On 1993 projected closure list
TA-18-PL30	560/Diesel	Backup generator/1987	Passed tightness test 9/16/91. On 1993 projected closure list
TA-21-155 Group MST-3	3,008/Diesel	Backup generator/1981	Passed tightness test 4/23/91. Automated Veeder Root system for inventory control and tightness testing installed 12/1/92
TA-21-325 Old plutonium facility	4,200/Nitric acid	Old plutonium facility shut down 13 years ago/1974	Tank emptied and declared temporarily closed 11/23/92. Tank removed 9/11/93

Table 1 (continued)

Tank Number	Capacity (gallons)/ Contents	Content Use/ Installation Date	Comments
TA-35-197	24,000 total with 3 sections of 8,000 each/NonPCB Dielectric	Insulating oil/1980	Passed 1991 tightness test. Automated Veeder Root system for inventory control and tightness testing installed 12/92
TA-41-W2 Tritium facility	560/Diesel	Backup generator/1987	Passed tightness test 9/19/91
TA-55-17 New plutonium facility	3,008/Diesel	Out of service/1977	Passed tightness test 9/6/91. Supply lines capped off and temporarily closed 12/9/92. On 1993 closure list

only one UST system (TA-16-197) is required to meet new tank performance standards. This UST system was installed in September 1990 at a gas station in TA-16. The double-walled steel tank is connected to a Wheaton monitoring system that provides both automated tightness testing and inventory reconciliation. The fill pipe collar can hold 2 gallons in case of spill or overfill.

The state requires that UST systems be registered annually. In June 1993, LANL registered 18 UST systems with the state for new and used petroleum products and hazardous substances [Appendix C - UST Notification]. Beginning in 1993, this registration is required by July 1 of each year. LANL personnel indicated that the state sends a bill each June for annual tank fees.

Design was questionable for three UST systems. At the TA-60 tank farm, stormwater runoff floods the collars surrounding the fill pipes. At the TA-60 motor pool, the fill pipe cover near the gas pump island is dislodged by traffic allowing precipitation and other contamination to enter the fill collar. At the TA-3 gas station the fill pipe is exposed between a parking lot and sidewalk.

General Operating Requirements

General operating requirements include spill and overfill control and operation and maintenance of corrosion protection. No evidence of spills was observed during the on-site inspection.

The one new UST system is a steel tank with three types of cathodic protection, including dielectric coating, sacrificial anode, and electric insulation. This tank did not have its cathodic protection tested within 6 months of installation. As of September 16, 1993, a work order had been made with JCI to have this tank's cathodic protection systems tested. The one new

piping system is fiberglass not requiring cathodic protection. LANL does not have a corrosion engineer and a cathodic protection program for UST systems has not been initiated. To initiate a cathodic protection program for UST systems, much time must often be spent locating tanks and piping to determine if the system is protected. Existing UST systems installed before December 22, 1988 must be upgraded and cathodically protected by December 22, 1998 and existing cathodic protection must be tested periodically.

Release Detection

Leak detection for underground pressurized piping has been required since December 22, 1990. Automatic line leak detectors and an annual line tightness test, or other methods, are required. The one UST system with pressurized piping (TA-16-197) has a Wheaton Tank Level Monitor II. LANL personnel indicated that the pressurized piping will be tightness tested this year. A printout of the daily "leak report" for the system is kept with the inventory control records [Appendix D].

The tank farm has an automated monitoring system used for inventory control and tank tightness testing. Leak detection for the tank farm USTs is not required until December 22, 1993. During the on-site inspection the probe in one of the tanks was not working.

Two UST systems installed in 1974 (TA-21-325) and 1977 (TA-55-17) were taken out of service on November 23 and December 9, 1992, respectively. The state was notified of each temporary closure [Appendix E]. LANL plans to remove five UST systems during 1993, including these two UST systems [Appendix F]. Release detection would have been required on TA-21-325 as of December 22, 1991. However, the old plutonium facility has been out of service for 13 years and monitored by security forces. LANL personnel

indicated the security forces would report a leaking tank, if observed. No method of release detection was used. The tank was emptied on November 23, 1992 and declared temporarily closed by LANL. The tank was removed on September 11, 1993. The tank was still in excellent condition and no evidence of any leaks or spills was found.

Release Reporting, Investigation, and Confirmation

The regulating agency must be notified within 24 hours if release detection monitoring, unusual operating conditions, or other methods indicate a UST system is leaking; or following spills or overfills of 25 gallons of reportable quantities of hazardous substances; or causing an oil sheen on nearby surface waters. LANL Environmental Protection Group personnel indicated that there have been no spills to report. However, when UST systems have been removed, there has been evidence of soil contamination. Also, the tank farm fill station has leaked causing soil contamination. Additionally, when it rains, the water that collects on the tank farm fueling pad sometimes has a sheen on it. LANL personnel indicated this is reported under their Spill Prevention Control and Countermeasures Plan. These events all get reported to the state. During the on-site inspection, there was water on the tank farm fueling pad, but no sheen was observed [photograph 1]. A tank removal (TA-3-MP-3) resulted in a UST investigation to determine the extent of soil contamination. This study was ongoing during the on-site inspection.

Release Response and Corrective Action

LANL has been aggressive in removing older tanks and has reduced the number of UST systems from 92 in 1990 to 18 in 1993. The tanks are usually removed by contractors and sampling and site remediation information are submitted to the state, as necessary. If contamination is found, the state is notified by the Environmental Management Division. Corrective action was completed at the tank farm and is ongoing at the motor pool.

Out-of-Service UST Systems and Closure

Corrosion protection and leak detection, if required when the UST system is in use, must continue for UST systems taken out of service unless they are emptied. After 3 months the tank must be secured by leaving the vent lines open and functioning, but capping and securing all other lines, pumps, manways, and ancillary equipment. After 12 months, the tank must be permanently closed. LANL indicated Tank TA-21-325 was first taken out of service in November 1992 when the UST was emptied. However, the old plutonium facility where the tank is located ceased operations about 13 years ago. The tank was emptied in November 1992, but the lines have not been capped. This area is patrolled by security forces and is undergoing decontamination and decommissioning. According to LANL personnel, TA-21-325 was removed on September 11, 1993.

Financial Responsibility

The U.S. Government is exempted from UST financial responsibility requirements.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

The following areas of noncompliance of the UST requirements were identified during the investigation:

NMUSTR Part V, §501(b)/Title 40 Code of Federal Regulations (CFR), § 280.31(b)	The cathodic protection on UST system TA-16-197, installed in September 1990, was not tested within 6 months of installation.
NMUSTR Part VIII §800/40 CFR §280.70	TA-21-325 was temporarily closed on November 23, 1992 when the tank was emptied, but the piping is still intact. Temporary closure of a UST system for 3 months or more requires that vent lines be left open and all other lines, pumps, manways, and ancillary equipment be capped and secured.

AREAS OF CONCERN

The following areas of concern were identified during the NEIC investigation. Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements or adverse environmental impacts.

- The tank farm fueling pad is located in an area where stormwater runoff collects and was under water during the NEIC on-site inspection.

- Soil contamination from a waste oil tank had not been completely addressed yet. Corrective action for soil contamination from a

waste oil tank (TA-3-MP-3) removed from the motor pool at TA-60 was ongoing during the on-site inspection.

- A monitoring probe for one of the tank farm UST systems was not working during the on-site inspection. This probe is used for inventory control and tank tightness testing that will be required for this tank beginning December 22, 1993.

- LANL does not have a UST corrosion protection program for required testing as well as the increased testing that will be required in 1998.

- UST system design was questionable in three cases:

  (1) Stormwater runoff at the tank farm floods the collars surrounding the fill pipes.

  (2) The fill pipe cover near the gas pump at the TA-60 motor pool is dislodged by traffic and then the fill pipe collar can be filled by precipitation or other contamination.

  (3) The fill pipe at the TA-3 gas station is exposed between a parking lot and sidewalk.

APPENDICES

A	Photographs
B	UST Information Lists
C	UST Notification
D	TA-16-197 Leak Report
E	Notification of Temporary Closure for TA-21-325 and TA-55-17
F	Projected 1993 UST Closures

APPENDIX A

PHOTOGRAPHS

PHOTOGRAPH 1: WATER ON TANK FARM FUELING PAD

APPENDIX B

UST INFORMATION LISTS

UNDERGROUND STORAGE TANKS IN USE LIST

LAB JOB NUMBER	TANK NUMBER	DATE INSTALLED	TANK CONTENTS	TANK CAPACITY IN GALLONS	LAST TIGHTNESS TEST OR TYPE OF MONITORING		
12461	TA-2-1	08-01-87	DIESEL	560	09-17-91	PASSED	
	TA-3-36-1	05-01-88	GASOLINE-UNL	10,152	AUTOMATED		
12469	TA-3-36-2	01-01-80	GASOLINE-UNL	5,038	12-12-92	PASSED	
	TA-3-TF-1	05-21-84	KEROSENE	10,152	AUTOMATED		
	TA-3-TF-2	05-21-84	DIESEL	25,560	AUTOMATED		
	TA-3-TF-3	05-21-84	GASOLINE-UNL	15,228	AUTOMATED		
	TA-3-TF-4	05-21-84	GASOLINE-UNL	25,560	AUTOMATED		
	TA-3-TF-5	05-21-84	GASOLINE-UNL	25,560	AUTOMATED		
12470	TA-3-MP-1	08-28-80	DIESEL	10,152	AUTOMATED		
12467	TA-3-1255	00-00-82	DIESEL	4,030	04-23-91	INCONCL.	CLOS. 1993
	TA-16-197	09-00-90	GASOLINE	10,000	AUTOMATED		
12462	TA-16-205	01-01-86	DIESEL	560	09-05-91	PASSED	CLOS. 1993
12463	TA-18-PL30	08-01-87	DIESEL	560	09-16-91	PASSED	CLOS. 1993
12471	TA-21-155	01-01-81	DIESEL	3,008	AUTOMATED		
13268	TA-21-325	00-00-74	HN03	4,200	TEMPORARY CLOSED		CLOS. 1993
13267	TA-35-197	01-01-80	DIELECTRIC	24,000	AUTOMATED		
12464	TA-41-W2	08-01-87	DIESEL	560	09-19-91	PASSED	
12466	TA-55-17	01-01-77	DIESEL	3,008	TEMPORARY CLOSED		CLOS. 1993

NOTE: TF = TANK FARM
MP = MOTOR POOL

B:\ust\master1.lst

August 5, 1993

UNDERGROUND STORAGE TANK INVENTORY CONTROL LIST

TANK NUMBER	DATE INSTALLED	TANK CONTENTS	TANK CAPACITY IN GALLONS	INVENTORY CONTROL CONTACT
TA-3-36-1	05-01-88	GASOLINE-UNL	10,152	Edward Tapia/Mark Browning
TA-3-36-2	01-01-80	GASOLINE-UNL	5,038	JCI 667-5177
TA-3-MP-1	08-28-80	DIESEL	10,152	
TA-16-197	09-00-90	GASOLINE	10,000	
TA-3-TF-1	05-21-84	KEROSENE	10,152	Scott Alexander
TA-3-TF-2	05-21-84	DIESEL	25,560	JCI 667-4914
TA-3-TF-3	05-21-84	GASOLINE-UNL	15,228	7-8040
TA-3-TF-4	05-21-84	GASOLINE-UNL	25,560	
TA-3-TF-5	05-21-84	GASOLINE-UNL	25,560	
TA-35-197	01-01-80	DIELECTRIC	24,000	Jerry Umphres CLS-7 667-2383
TA-2-1	09-17-87	DIESEL	560	Alfonso Martinez
TA-3-1255	00-00-82	DIESEL	4,030	ENG-6 667-2118
TA-16-205	01-01-86	DIESEL	560	
TA-18-PL30	08-01-87	DIESEL	560	
TA-21-155	01-01-81	DIESEL	3,008	
TA-41-W2	08-01-87	DIESEL	560	
TA-55-17	01-01-77	DIESEL	3,008	

NOTE: TF = TANK FARM
MP = MOTOR POOL

August 3, 1993

MASTER-2.LST

APPENDIX C

UST NOTIFICATION

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

JUN 30 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

New Mexico Environment Department
ATTN: UST Bureau, RM N2150
Harold Runnels Building
P.O. Box 26110
1190 St. Francis Drive
Santa Fe, NM 87502

Dear Sir or Madam:

In response to the Underground Storage Tank (UST) Bureau's letter dated June 1, 1993, a check in the amount of $1800.00 for fee payment (invoice number: UST-760-6764-94) for the registration at USTs at the Los Alamos National Laboratory (LANL) was submitted by the University of California for the Department of Energy (DOE) on June 28, 1993. This registration fee is required by EIB/USTR-3, adopted July 26, 1990, under authority of 74-4-4.5 NMSA 1978.

LANL closed six USTs in 1992, none of which were replaced with an upgraded UST system. These USTs are stamped "REMOVED" on the enclosed Notification for Underground Storage Tanks form (EPA form 7530-1). Currently two USTs are temporarily closed; Technical Area (TA) 21-325 and TA-55-17. Both are scheduled for removal this summer. All other USTs listed on the notification are in use.

If you have any questions, please contact Steve Fong of my staff at (505) 665-5534, or Jeff Carmichael, LANL, at (505) 665-2505.

Sincerely,

Joseph C. Vozella, Chief
Environment, Safety and Health Branch

LESH:3SF-031

Enclosures

cc w/enclosures:
T. Gunderson, EM-DO, LANL, MS-J591
J. Carmichael, EM-8, LANL, MS-K490

0 1 3 0 0 0 4 0 4 5

PLEASE DETACH AND RETURN THIS REMITTANCE WITH YOUR PAYMENT

Make Checks Payable To : UNDERGROUND STORAGE TANK FUND

Mail Checks To: NEW MEXICO ENVIRONMENT DEPARTMENT
ATTN: UST BUREAU, RM N2150
HAROLD RUNNELS BUILDING
1190 ST FRANCIS DRIVE - PO BOX 26110
SANTA FE, NM 87502

Invoice Number: UST-790-6764-94

Date: 01-JUN-93

US DEPARTMENT OF ENERGY LOS ALAMOS
528 THIRTY FIFTH ST
LOS ALAMOS NM 87544

1990 Amount Due:	$.00
1991 Amount Due:	$.0
1992 Amount Due:	$.00
1993 Amount Due:	$1,800.00
Total Amount Due:	$1,800.0

Thank You.

Amount ~~Enclosed~~: $1,800.00
Submitted June 28, 1993

Harold Runnels Building • 1190 St. Francis Drive • P.O. Box 26110 • Santa Fe, New Mexico 87502

Notification for Underground Storage Tanks

FORM APPROVED
OMB NO. 2050-0068
APPROVAL EXPIRES 9-30-91

EPA estimates public reporting burden for this form to average 30 minutes per response, including time for reviewing instructions, gathering and maintaining the data needed, and completing and reviewing the form. Send comments regarding this burden estimate to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503, marked "Attention: Desk Officer for EPA."

STATE USE ONLY

I.D. Number

Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986; or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or wastewater collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached [ ]

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
U.S. Department of Energy, LAAO

Street Address
528 35th Street

County
Los Alamos

City: Los Alamos | State: NM | ZIP Code: 87544

Area Code: (505) | Phone Number: 667-5105

Type of Owner (Mark all that apply ■)

- [ ] Current
- [ ] Former
- [ ] State or Local Gov't
- [■] Federal Gov't (GSA facility I.D. no. _____)
- [ ] Private or Corporate
- [ ] Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here [ ])

Facility Name or Company Site Identifier, as applicable
Los Alamos National Laboratory

Street Address or State Road, as applicable
Box 1663

County
Los Alamos

City (nearest): Los Alamos | State: NM | ZIP Code: 87544

Indicate number of tanks at this location: 18

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands [ ]

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here [ ]): Steve Fong

Job Title: Mechanical Engineer

Area Code: 505 | Phone Number: 665-5534

IV. TYPE OF NOTIFICATION

[X] Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative: [illegible] ANDERSON, EM Div. Dir.

Signature: [illegible]

Date Signed: 6/29/93

Owner Name (from Section I) DOE/LANL Location (from Section I) Los Alamos, NM Page No. ___ of ___ Pages

VI DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-2-1	Tank No. TA-3-36-1	Tank No. TA-3-36-2	Tank No. TA-3-TF-1	Tank No. TA-3-TF-2
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	X	X	X	X	X
Temporarily Out of Use					
Permanently Out of Use					
Brought into Use after 5/8/86	X	X			
2. Estimated Age (Years)	6	5	13	9	9
3. Estimated Total Capacity (Gallons)	560	10152	5038	10152	25560
4. Material of Construction (Mark one ☒)					
Steel	X	X	X	X	X
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection		X			
Interior Lining (e.g., epoxy resins)					
None			X		
Unknown	X			X	X
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection		X			
Painted (e.g., asphaltic)	X	X	X	X	X
Fiberglass Reinforced Plastic Coated					
None					
Unknown					
Other, Please Specify	Polytube Tank Cover				
7. Piping (Mark all that apply ☒)					
Bare Steel			X	X	X
Galvanized Steel					
Fiberglass Reinforced Plastic		X			
Cathodically Protected					
Unknown					
Other, Please Specify	Tape Steel	Double walled			
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty					
b. Petroleum					
Diesel	X				X
Kerosene				X	
Gasoline (including alcohol blends)		X	X		
Used Oil					
Other, Please Specify					
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

Owner Name (from Section I) DOE/LANL Location (from Section I) Los Alamos, NM Page No. 2 of 5 Pages

VI DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-3-TF-3	Tank No. TA-3-TF-4	Tank No. TA-3-TF-5	Tank No. TA-3-MP-1	Tank No. TA-3-MP-3
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	X	X	X	X	
Temporarily Out of Use					
Permanently Out of Use					X
Brought into Use after 5/8/86					
2. Estimated Age (Years)	9	9	9	13	13
3. Estimated Total Capacity (Gallons)	15228	25560	25560	10152	560
4. Material of Construction (Mark one ☒)					
Steel	X	X	X	X	X
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None					
Unknown	X	X	X	X	X
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection				X	
Painted (e.g., asphaltic)	X	X	X		
Fiberglass Reinforced Plastic Coated					
None					
Unknown					
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	X	X	X	X	
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown					
Other, Please Specify			Wrapped		
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty					
b. Petroleum					
Diesel				X	
Kerosene					
Gasoline (including alcohol blends)	X	X	X		
Used Oil					
Other, Please Specify					Reclaimed Oil
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	06/1/92
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

REMOVED

Owner Name (from Section I): DOE/LANL Location (from Section I): Los Alamos, NM Page No. 3 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-3-MP-4	Tank No. TA-3-1255	Tank No. TA-15-287	Tank No. TA-16-197	Tank No. TA-16-205
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☐	X	☐	X	X
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	X	☐	X	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	X	☐
2. Estimated Age (Years)	13	11	12	3	7
3. Estimated Total Capacity (Gallons)	560	4030	15000	10000	560
4. Material of Construction (Mark one ☒)					
Steel	X	X	☐	X	X
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify			Stainless Steel	STIP3	
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	X	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	X	X	X	☐	X
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	X	☐
Painted (e.g., asphaltic)	X	X	X	X	X
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	X	☐	☐	X
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	X	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify			Stainless Steel	Double walled	
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	X	☐	☐	X
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	X	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	Reclaimed Oil		Dielectric Oil		
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	06/01/92	/	10/29/92	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REMOVED

REMOVED

Owner Name (from Section I) DOE/LANL Location (from Section I) Los Alamos, NM Page No. 4 of 5 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-18-PL30	Tank No. TA-21-155	Tank No. TA-21-325	Tank No. TA-35-159	Tank No. TA-35-197
1. Status of Tank (Mark all that apply ☒) — Currently in Use	X	X			X
Temporarily Out of Use			X		
Permanently Out of Use				X	
Brought into Use after 5/8/86					
2. Estimated Age (Years)	6	12	19	15	13
3. Estimated Total Capacity (Gallons)	560	3008	4200	4000	24000
4. Material of Construction (Mark one ☒) — Steel	X	X		X	X
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify			Stainless Steel		
5. Internal Protection (Mark all that apply ☒) — Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None			X		
Unknown	X	X		X	X
Other, Please Specify					
6. External Protection (Mark all that apply ☒) — Cathodic Protection					
Painted (e.g., asphaltic)	X	X			X
Fiberglass Reinforced Plastic Coated					
None			X		
Unknown					
Other, Please Specify	Exxon Rust Band and Polytube				
7. Piping (Mark all that apply ☒) — Bare Steel	X	X			X
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown					
Other, Please Specify	W/wrapped tape		Stainless Steel		
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒) — a. Empty					
b. Petroleum — Diesel	X	X			
Kerosene					
Gasoline (including alcohol blends)					
Used Oil					
Other, Please Specify			HNO3	Dielectric oil	Dielectric oil
c. Hazardous Substance			X		
Please Indicate Name of Principal CERCLA Substance			Nitric Acid		
OR Chemical Abstract Service (CAS) No.			7697-37-2		
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service) — a. Estimated date last used (mo/yr)	/	/	/	09/25/92	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

REMOVED

Owner Name (from Section I): DOE/LANL Location (from Section I): Los Alamos, NM Page No. 5 of 5 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-41-W2	Tank No. TA-50-37	Tank No. TA-55-17	Tank No. TA-59-6	Tank No.
1. Status of Tank (Mark all that apply ☒) — Currently in Use	X				
Temporarily Out of Use			X		
Permanently Out of Use		X		X	
Brought into Use after 5/8/86					
2. Estimated Age (Years)	6	12	16	25	
3. Estimated Total Capacity (Gallons)	560	1034	3008	3008	
4. Material of Construction (Mark one ☒) — Steel	X	X	X	X	
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒) — Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None	X				
Unknown		X	X	X	
Other, Please Specify					
6. External Protection (Mark all that apply ☒) — Cathodic Protection					
Painted (e.g., asphaltic)	X		X	X	
Fiberglass Reinforced Plastic Coated					
None					
Unknown					
Other, Please Specify	Exxon Rust Band & Polytube				
7. Piping (Mark all that apply ☒) — Bare Steel	X		X	X	
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown					
Other, Please Specify	W/wrapped tape				
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒) — a. Empty					
b. Petroleum — Diesel	X	X	X	X	
Kerosene					
Gasoline (including alcohol blends)					
Used Oil					
Other, Please Specify					
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service) — a. Estimated date last used (mo/yr)	/	07/29/92	/	06/06/92	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

REMOVED REMOVED

1993	0
1992	1
1991	2
1990	3
1989	4
1988	5
1987	6
1986	7
1985	8
1984	9
1983	10
1982	11
1981	12
1980	13
1979	14
1978	15
1977	16
1976	17
1975	18
1974	19
1973	20

APPENDIX D

TA-16-197 LEAK REPORT

****
SAME S SITE
ADDRESS
CITY ST ZIP
PHONE

LEAK REPORT

06/11/93 09:27

TK1 UNLEADED 10140 GAL
0.200 GAL/HR LEAK RATE
09:27 START TIME
10:33 COMPLETION TIME

TIME DEG F NET GAL
09:37 63.536 9910.357
10:33 63.542 9910.287
0.030 GAL TEST LVL DIF
0.032 GAL/HR LEAK RATE

06/11/93 10:31

0.038 GAL/HR
CONTINUOUS LEAK RATE

97% CAPACITY
PASSED .200 GAL/HR
LEAK RATE TEST
WITH PROBABILITY OF
.99 DETECTION
& .01 FALSE ALARM
****

APPENDIX E

NOTIFICATION OF TEMPORARY CLOSURE FOR TA-21-325 AND TA-55-17

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE December 9, 1992
IN REPLY REFER TO ADO:92-1225
MAIL STOP A120
TELEPHONE (505) 667-9390

Ms. Shelda Sutton-Mendoza
USTs Prevention/Inspections Section
Underground Storage Tank Bureau
New Mexico Environment Department
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87502

Dear Ms. Sutton-Mendoza:

SUBJECT: TRANSMITTAL OF UNDERGROUND STORAGE TANK NOTIFICATION FORM FOR THE TEMPORARY CLOSURE OF UST TA-21-325

The purpose of this letter is to transmit the official notification form (EPA Form 7530-1) indicating the temporary closure date of Underground Storage Tank (UST) Technical Area (TA) 21-325, pursuant to the reporting requirements in Part II, Section 207 B., of the New Mexico Underground Storage Tank Regulations.

If you should require any additional information regarding this notification form, please contact Jeff Carmichael of the Environmental Protection Group at 665-2505.

Sincerely,

Allen J. Tiedman
Associate Director
for Operations

AJT/JAC:smm

Enclosures: a/s

Cy: T. Gunderson, LANL, EM-DO, MS K491
K. Hargis (EM-8:92-3522), EM-8, MS K490
J. Carmichael, EM-8, MS K490
R. Gonzales, EM-13, MS M707
J. Bellows, LAAO, ES&H, MS A316
J. Vozella, LAAO, ES&H, MS A316
RPF, EM-13, MS M707
CRM-4, MS A150
Circ. File

Notification for Underground Storage Tanks

FOR TANKS IN **NM**

RETURN COMPLETED FORM TO

New Mexico Environment Department
UNDERGROUND STORAGE TANK BUREAU
1190 St. Francis Drive
Harold Runnels Bldg. N2164
Santa Fe, New Mexico 87503

STATE USE ONLY

I.D. Number

Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must by completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached: [ ]

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity): U. S. Department of Energy, LAAO

Street Address: 528 35th Street

County: Los Alamos

City: Los Alamos | State: NM | ZIP Code: 87544

Area Code: (505) | Phone Number: 667-5105

Type of Owner (Mark all that apply [X]):

- [X] Current
- [ ] Former
- [ ] State or Local Gov't
- [X] Federal Gov't (GSA facility I.D. no. _____)
- [ ] Private or Corporate
- [ ] Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here [ ])

Facility Name or Company Site Identifier, as applicable: Los Alamos National Laboratory

Street Address or State Road, as applicable: Box 1663

County: Los Alamos

City (nearest): Los Alamos | State: NM | ZIP Code: 87545

Indicate number of tanks at this location: 18

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands: [ ]

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here [ ]): Jeff Carmichael

Job Title: Technical Staff Member

Area Code / Phone Number: (505) 665-2505

IV. TYPE OF NOTIFICATION

[ ] Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative: Allen J. Tiedman

Signature: [signature]

Date Signed: 2/4/92

CONTINUE ON REVERSE SIDE

Location (from Section II) _____ Page No. ____ of ____

Identification No. (e.g., ABC-123), or Locally Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-21-325	Tank No.	Tank No.	Tank No.	Tank No.
1 Status of Tank (Mark all that apply ☒) — Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	X	☐	☐	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2 Estimated Age (Years)	18				
3 Estimated Total Capacity (Gallons)	4,200				
4 Material of Construction (Mark one ☒) — Steel	☐	☐	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify	Stainless Steel				
5. Internal Protection (Mark all that apply ☒) — Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	X	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. External Protection (Mark all that apply ☒) — Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	X	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒) — Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify	Stainless Steel				
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒) — a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	HNO3				
c. Hazardous Substance	X	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance	Nitric Acid				
OR Chemical Abstract Service (CAS) No.	7697372				
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service) — a. Estimated date last used (mo/yr)	11 /92	/	/	/	/
b. Estimated quantity of substance remaining (gal.)	0				
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

☆ U.S. Government Printing Office: 1986—486-738

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE January 21, 1993
IN REPLY REFER TO ADO:~~XX~~-93-50-U
MAIL STOP A120
TELEPHONE (505) 667-9390

Ms. Shelda Sutton-Mendoza
USTs Prevention/Inspections Section
Underground Storage Tank Bureau
New Mexico Environment Department
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87502

Dear Ms. Sutton-Mendoza:

SUBJECT: TRANSMITTAL OF UNDERGROUND STORAGE TANK NOTIFICATION FORM FOR THE TEMPORARY CLOSURE OF UST TA-55-17

The purpose of this letter is to transmit the official notification form (EPA Form 7530-1) indicating the temporary closure date of Underground Storage Tank (UST) Technical Area (TA) 55-17, pursuant to the reporting requirements in Part II, Section 207 B., of the New Mexico Underground Storage Tank Regulations.

If you should require any additional information regarding this notification form, please contact Jeff Carmichael of the Environmental Protection Group at 665-2505.

Sincerely,

Allen J. Tiedman
Associate Director
for Operations

AJT/JAC:smm

Enclosures: a/s

Cy: T. Gunderson, EM-DO, MS K491
K. Hargis (EM-8:92-3804), EM-8, MS K490
J. Carmichael, EM-8, MS K490
R. Gonzales, EM-13, MS M707
J. Bellows, LAAO, ES&H, MS A316
J. Vozella, LAAO, ES&H, MS A316
RPF, EM-13, MS M707
CRM-4, MS A150
Circ. File

Notification for Underground Storage Tanks

FORM APPROVED
OMB NO. 2050-0049
APPROVAL EXPIRES

FOR TANKS IN NM

RETURN COMPLETED FORM TO

New Mexico Environment Department
UNDERGROUND STORAGE TANK BUREAU
1190 St. Francis Drive
Harold Runnels Bldg. N2164
Santa Fe, New Mexico 87503

STATE USE ONLY

I.D. Number

Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural G Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production ar gathering operations;
9. storage tanks situated in an underground area (such as a basement, cella mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above tl surface of the floor.

What Substances Are Covered? The notification requirements apply to unde ground storage tanks that contain regulated substances. This includes any substan defined as hazardous in section 101 (14) of the Comprehensive Environment Response, Compensation and Liability Act of 1980 (CERCLA), with the exception those substances regulated as hazardous waste under Subtitle C of RCRA. It als includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standar conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds pe square inch absolute).

Where To Notify? Completed notification forms should be sent to the addre given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have bee taken out of operation after January 1, 1974, but still in the ground, must notify b May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false informatio shall be subject to a civil penalty not to exceed $10,000 for each tank for whic notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must by completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached ☐

I OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
U. S. Department of Energy, LAAO

Street Address
528 35th Street

County
Los Alamos

City: Los Alamos | State: NM | ZIP Code: 87544

Area Code: (505) | Phone Number: 667-5105

Type of Owner (*Mark all that apply* ☒)

- ☒ Current
- ☐ Former
- ☐ State or Local Gov't
- ☒ Federal Gov't (GSA facility I.D. no. _____)
- ☐ Private or Corporate
- ☐ Ownership uncertain

II LOCATION OF TANK(S)

(If same as Section 1, mark box here ☐)

Facility Name or Company Site Identifier, as applicable
Los Alamos National Laboratory

Street Address or State Road, as applicable
Box 1663

County
Los Alamos

City (nearest): Los Alamos | State: NM | ZIP Code: 87545

Indicate number of tanks at this location: 18

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands ☐

III CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☐): Jeff Carmichael

Job Title: Technical Staff Member

Area Code / Phone Number: (505) 665-2505

IV TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative: Allen J. Tiedman

Signature: [signature]

Date Signed:

CONTINUE ON REVERSE SIDE

Owner Name (from Section I) DOE/LANL Location (from Section II) Los Alamos, NM Page No. 2 of 2

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. TA-55-17	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply ■)					
Currently in Use					
Temporarily Out of Use	X				
Permanently Out of Use					
Brought into Use after 5/8/86					
2. Estimated Age (Years)	15				
3. Estimated Total Capacity (Gallons)	3,008				
4. Material of Construction (Mark one ■)					
Steel	X				
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
5. Internal Protection (Mark all that apply ■)					
Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None					
Unknown	X				
Other, Please Specify					
6. External Protection (Mark all that apply ■)					
Cathodic Protection					
Painted (e.g., asphaltic)	X				
Fiberglass Reinforced Plastic Coated					
None					
Unknown					
Other, Please Specify					
7. Piping (Mark all that apply ■)					
Bare Steel	X				
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown					
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ■)					
a. Empty					
b. Petroleum					
Diesel	X				
Kerosene					
Gasoline (including alcohol blends)					
Used Oil					
Other, Please Specify					
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☐ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	12 / 92	/	/	/	
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☐ if tank was filled with inert material (e.g., sand, concrete)					

☆ U.S. Government Printing Office 1988—405-728

APPENDIX F

PROJECTED 1993 UST CLOSURES

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE March 10, 1993
IN REPLY REFER TO EM-DO-93- 179
MAIL STOP J591
TELEPHONE (505) 665-3778

Shelda Sutton-Mendoza
USTs Prevention/Inspections Section
Underground Storage Tank Bureau
New Mexico Environment Department
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87502

THRU: Joe Vozella, DOE/LAAO

Dear Ms. Sutton-Mendoza:

SUBJECT: PROJECTED UST CLOSURES IN FISCAL YEAR 1993

The purpose of this letter is to fulfill the notification requirement of Part VIII, Section 801(a) of the New Mexico Underground Storage Tank (UST) Regulations. Los Alamos National Laboratory's (LANL) UST Program plans to close and remove five USTs in FY93. The UST identification numbers, contents, size, and age are listed below.

TANK NUMBER	CONTENTS	SIZE (gal)	AGE (yrs)
TA-3-1255	Diesel Fuel	4,030	10
TA-16-205	Diesel Fuel	560	6
TA-18-PL30	Diesel Fuel	560	5
TA-21-325	Nitric Acid	4,200	18
TA-55-17	Diesel Oil	3008	14

On behalf of the Department of Energy, please consider this the official closure notification for the listed USTs. Part VIII, Section 801(a) of the UST Regulations requires notification of UST closures to be received by the New Mexico Environment Department (NMED) at least thirty-days before any closure activity. Furthermore, LANL will notify NMED of specific closure dates as our closure window narrows for each UST. This will enable NMED to observe the UST closures and split soil samples with LANL's Environmental Protection Group (EM-8), if desired. If you have questions, please contact Jeff Carmichael of the Environmental Protection Group (EM-8) at 665-2505.

Sincerely,

Tom Gunderson
Environmental Management
Division Leader

TG/JC:es

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1	K490	HARGIS/GARVEY	Kenneth M. Hargis	✓		3/4/93
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TOXIC SUBSTANCES CONTROL ACT (TSCA)

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

John Ellison, Environmental Investigations Specialist
NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. This report, one of a series, addresses investigation findings and discusses Toxic Substances Control Act - Polychlorinated Biphenyl (PCB) issues and compliance at LANL.

REGULATORY SUMMARY

LANL has 35 PCB transformers, 6 miscellaneous PCB articles, 29 PCB-contaminated transformers, 8 miscellaneous PCB-contaminated articles, 299 PCB capacitors, a storage-for-disposal area, an active PCB landfill cell, 2 active PCB disposal shafts, and several closed PCB landfill cells and disposal shafts regulated by TSCA. EPA Region 6 conducted a PCB inspection on March 17, 1992. Deficiencies involving inadequate transportation and disposal documents in the 1990 Annual Document were discovered. LANL had a goal to be PCB free by 1993, which they have not accomplished, but they have reduced their PCB inventory as noted below:

1990: 18 PCB transformers/miscellaneous articles removed
9 PCB transformers retrofilled and reclassified
3 PCB-contaminated transformers/miscellaneous articles removed
564 PCB capacitors removed
4,974 kilograms of debris including PCB-contaminated soil disposed

1991: 31 PCB transformers/miscellaneous articles removed
19 PCB-contaminated transformers/miscellaneous articles removed
3 PCB transformers retrofilled and reclassified

47 PCB capacitors removed

12,001 kilograms of PCB-contaminated debris, asphalt, concrete, and metal disposed

1992: 19 PCB transformers/miscellaneous articles removed

8 PCB-contaminated transformers/miscellaneous articles removed

3 PCB transformers retrofilled and reclassified

80 PCB capacitors removed

44,786 kilograms of PCB-contaminated soil disposed

1993 (through July 1993): 3 PCB transformers removed

4 PCB-contaminated transformers/miscellaneous articles removed

6 PCB transformers retrofilled and reclassified

17 PCB-contaminated transformers dechlorinated

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL environmental issues, the facility inspection ensued. TSCA inspection forms were discussed and signed by Jerry L. Bellows prior to the on-site PCB inspection [Appendix A]. Inspection of transformers, capacitors, miscellaneous articles, the PCB storage-for-disposal area, and PCB landfill and disposal shafts was conducted with Raul Morales and/or Tina Marie Sandoval, Environmental Protection Group. Personnel from the Engineering Utilities Program Office also assisted in the inspection. PCB records, including annual documents, inspection logs, and disposal records, were reviewed. A receipt for documents and photographs was completed at the end of the inspection [Appendix A]. No documents were declared TSCA confidential business information during the inspection.

Facility Inspection/Discussions

A discussion of the various facility areas inspected follows. A brief description/identification of activities and observations is included. All photographs referenced in this section are located in Appendix B. Inspected were 33 of the 41 PCB transformers/miscellaneous articles, 16 of the 37 PCB-contaminated transformers/miscellaneous articles, 3 out-of-service PCB capacitors, the storage-for-disposal area, the PCB landfill cell, and the PCB disposal shafts. Reports from the 1992 annual document of in-service PCB equipment as of June 30, 1993 were used to identify items to inspect.

Transformer PCB concentrations were identified or estimated during a 1984 survey conducted by LANL. The 1984 survey included sampling of selected items. Currently, LANL is conducting a survey to improve database information. The current survey began in early 1992 and included more than 1,000 samples collected in 1992. When hydraulic equipment was tested for PCBs, pieces of equipment found to contain PCBs, such as an elevator, a scale, hydraulic press, and a power hacksaw, were marked or replaced. According to the 1992 annual document, no PCB or PCB-contaminated hydraulic equipment remained in service. A form has been developed for the survey of LANL technical areas (TAs) [Appendix C]. LANL has prioritized PCB equipment based on potential for environmental contamination and has retrofilled, dechlorinated, or replaced many of the high priority items. However, some of the high priority items have not been addressed, such as at TA-36-138 located next to a stream course [photograph 1].

The Meson Physics Facility at TA-53 required many transformers to supply power to the electron beam accelerator. PCB, PCB-contaminated, and non-PCB transformers ringed the electron beam accelerator area. At other TAs, power supply and activity relationships were less obvious.

Transformers/Miscellaneous Articles and Capacitors

None of the 52 PCB items inspected were leaking [Table 1]. The serial numbers and LANL tag numbers were verified. Because these PCB items contain more than 50 parts per million (ppm) PCBs, the PCB spill clean-up policy would apply and should be followed if these PCB items leak. According to LANL personnel, there were no leaking PCB items at LANL during the NEIC inspection.

The 31 PCB transformers were inspected and combustible material was found within 5 meters (17 feet) at 8 PCB transformers [Table 1]. Combustible materials included dead weeds, wooden blocks, windblown trash, and plastic bags containing wipes. The combustible material was removed immediately, or the next day. LANL has a Combustible Materials/PCB Transformer form used to notify appropriate officials to remove any combustible material. Three examples of this form are presented in Appendix D. Additionally, there were two transformers with sandbag dikes/berms around the transformers [photographs 2 and 3]. LANL contends that a sandbag filled with sand is no longer a combustible material and the sandbag berms are used to contain potential PCB spills. During the inspection, afternoon showers occurred frequently and the sandbags were wet.

Three PCB capacitors inspected on August 4, 1993 in the basement of TA-21, building 209 were not marked. The capacitors had been taken out of service in preparation for the Department of Energy Tiger Team inspection in 1991. TA-21 personnel stated they could not find any group that wanted to use the capacitors and asked Environmental Protection Group personnel what procedures to follow to dispose of the capacitors. The capacitors were tagged with a LANL ID number, but no PCB mark. The capacitors were marked the next day [photograph 4].

Table 1

PCB ITEMS INSPECTED
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Type	Item/LANL ID #	Comments
PCB ITEMS >500ppm TA 3, bldg 190, NW corner of SM-16	Radial transformer	ITE-9983-63/855010	Sandbag berm on pad
TA 3, bldg 229, S of bldg 206	Radial transformer	GE-C-858476/855012	Sandbag berm on pad
TA 3, bldg 290, W of bldg 287	Radial transformer	WES-YAR-99701/855013	None
TA 3, bldg 290, W of bldg 287	Radial transformer	WES-YAR-99731/855014	None
TA 3, bldg 290, W of bldg 287	Radial transformer	WES-YAR-99691/855015	None
TA 3, bldg 290, W of bldg 287	Radial transformer	WES-UAV473201/855016	None
TA 3, bldg 367, S side bldg SM-216	Radial transformer	WES-7027589/855018	None
TA 3, bldg 105, Outside-West	Voltage regulator	GE-D-583429/919191	None
TA 15, bldg 196, W of bldg 183	Radial transformer	ESC-4022243/855019	None
TA 15, Location R197	Voltage regulator	GE-D583441/912124	Rectifier pad equipment abandoned in place about 5 years ago
TA 16, bldg 563, N of bldg 430	Radial transformer	PEN-19091-7/864997	On wooden pad temporarily until new transformer installed
TA 21, bldg 193, SE of bldg 215	Radial transformer	GE-E686531/855017	Item ID # listed as GE-E68531 in LANL records
TA 21, bldg 209, Basement	Capacitor	None/912160	No PCB mark when inspected August 4, 1993
TA 21, bldg 209, Basement	Capacitor	None/912161	No PCB mark when inspected August 4, 1993
TA 21, bldg 209, Basement	Capacitor	None/912162	No PCB mark when inspected August 4, 1993
TA 35, bldg 32, S of bldg 29	Radial transformer	GE-C-862754/855024	Dead dry weeds on pad within 3 feet of transformer
TA 35, bldg 53, S of bldg 27	Radial transformer	STA-175023WEST/855025	None
TA 35, bldg 53, S of bldg 27	Radial transformer	STA-175022 EAST/855026	None
TA 35, bldg 86, Room 168	Capacitor	MAX-6060MA-AS/929390	Unable to locate during inspection on August 4, 1993
TA 50, bldg 4, E of bldg 1	Radial transformer	GE-E-687176/855023	None
TA 52, bldg 9, N of bldg 1	Radial transformer	GE-E-688470A/855027	None
TA 52, bldg 9, N of bldg 1	Radial transformer	GE-E-688470B/855028	None

Table 1 (continued)

Location	Type	Item/LANL ID #	Comments
TA 53, bldg 51, N side bldg 2	Radial transformer	ITE-16887/855032	Cardboard/paper cups underneath transformer fins
TA 53, bldg 52, S side bldg 2	Radial transformer	GE-C-864202/855033	None
TA 53, bldg 71, N of sector A	Radial transformer	GE-F965698B/855034	None
TA 53, bldg 71, N of sector A	Radial transformer	GE-F965698A/855035	None
TA 53, bldg 171, S side bldg M on mezzanine	Radial transformer	GE-G-853266B/855038	Retrofilled and marked PCB-contaminated transformer, but still on PCB inventory
TA 53, bldg 172, S side bldg M on mezzanine	Radial transformer	GE-G853264A/855039	3 wooden blocks within 3 feet of transformer
TA 53, bldg 173, S side bldg M on mezzanine	Radial transformer	GE-G853267B/855040	Dechlorinated and marked <50 ppm PCB, but still on PCB inventory
TA 53, bldg 174, S side bldg M on mezzanine	Radial transformer	GE-G-853263B/855041	None
TA 53, bldg 175, S side bldg M on mezzanine	Radial transformer	GE-G-853265B/855042	Retrofilled and marked PCB-contaminated transformer, but still on PCB inventory
TA 53, bldg 191, N side bldg M on mezzanine	Radial transformer	WES-PCV7107-01/855045	Retrofilled and marked PCB-contaminated transformer, but still on PCB inventory
TA 53, bldg 177, N side bldg M on mezzanine	Radial transformer	GE-G853263C/855046	Retrofilled and marked PCB-contaminated transformer, but still on PCB inventory
TA 53, bldg 179, N side bldg M on mezzanine	Radial transformer	GE-G853264B/855048	6 wooden blocks within 2 feet of transformer
TA 53, bldg 182, W of bldg M	Radial transformer	STA-PFH3797/855051	Dead dry weeds on transformer pad within 10 feet of transformer
TA 53, bldg 182, W of bldg M	Radial transformer	GE-G853268/855052	Dead dry weeds on transformer pad within 10 feet of transformer
TA 53, bldg 181, W bldg B	Radial transformer	GE-G854272/855058	Retrofilled and marked PCB-contaminated transformer, but still on PCB inventory
TA 55, bldg 4, RM-7	Radial transformer	ITE-PDV-5985-01/855599	None
TA 55, bldg 4, RM-46	Radial transformer	ITE-PDV-5985-03/855602	2 plastic bags with wipes within 10' of transformer
PCB ITEMS 50-499 ppm TA 3, bldg 122, Vicinity 243	Radial transformer	GE-503822/845438	None
TA 3, bldg 1195, SM-29	Radial transformer	PGG1410/845439	None

Table 1 (continued)

Location	Type	Item/LANL ID #	Comments
TA 3, bldg 1194, SM-29	Radial transformer	PGG-1409/845440	Not regulated, but cardboard debris observed under transformer fins
TA 3, bldg 1191, SM-29	Radial transformer	PGB00415/845441	None
TA 3, bldg 1190, SM-29	Radial transformer	PGG-1411/845442	None
TA 3, bldg 1192, SM-29	Radial transformer	PGB-0414/845443	None
TA 3, bldg 216, RM-17	Radial transformer	GE-F959267/855559	None
TA 3, bldg 105, Outside- west	Radial transformer	UNI-L7835061/919192	None
TA 3, bldg 105, Outside- west	Voltage regulator	UNI-D554248/919193	None
TA 15, 0.2 miles NW of bldg 185	Radial transformer	GE-937012/912125	Rectifier pad equipment abandoned in place about 5 years ago
TA 21, bldg 188, Vicinity 356	Radial transformer	7027517/845456	None
TA 21, bldg 307, Vicinity 358	Radial transformer	G858998/845460	None
TA 36, bldg 138, Vicinity 784	Radial transformer	F583649-66P/845528	None
TA 53, bldg 3, Sec-A	Radial transformer	F965616/844619	None
TA 53, bldg 223, Vicinity 234	Radial transformer	PAV747801/845432	None
TA 53, Sector A	Voltage regulator	D583760/922203	None

PCB equipment is taken out of service by user groups at individual TAs, but does not enter the disposal system until the user group fills out a waste profile sheet and submits it to the Waste Management Group. The interval between out of service and disposal can be several years. Additionally, once a waste profile sheet is submitted to the Waste Management Group, it often takes several months for approval and for the waste to be moved to the storage-for-disposal area. The removal from service/storage date listed by LANL is the date the item is moved to the storage-for-disposal area.

Storage-for-Disposal Area

The PCB storage-for-disposal area was located at TA-54, building 39, area L. The building had an inside bermed storage area where three drums of PCB waste were stored [photograph 5]. A 55-gallon drum was dated June 22, 1993, and two 5-gallon plastic pails were dated April 27, 1993 and July 27, 1993, respectively. Another covered bermed storage area is located outside the building where 34 drums of radioactively contaminated PCB waste were stored [photographs 6 and 7]. The 34 drums have all been in storage longer than 1 year and were dated from October 23, 1989 to August 7, 1992. No cracks were observed in either storage area. The storage-for-disposal area is managed and inspected by the Waste Management Group. The log of inspections conducted every 4 weeks is kept on the wall of the inside bermed area.

LANL has requested negotiations for a Federal Facility Compliance Agreement regarding the storage of radioactively contaminated PCB waste [Appendix E]. Inventory and waste data forms were provided for the 34 drums of this waste present in the storage-for-disposal area during the inspection [Appendix F]. These records listed only six drums with measurements for radioactivity. However, LANL has areas that are considered Radiological

Material Management Areas (RMMAs) and anything removed from these areas is presumed (per DOE policy) to be radioactively contaminated. Six of the 34 drums contained PCB capacitors which are sealed units with hard surfaces that could potentially be cleaned if radioactively contaminated. However, there is no data to show these capacitors are radioactively contaminated except that they came from an RMMA.

During the on-site inspection, one drum of PCB spill cleanup material was moved to the storage-for-disposal area. This quarter-full drum from TA-35 building 7, was dated February 21, 1992 and contained CAPSUR (a cleaning agent), water, and PCBs.

PCB Landfill Cell/Disposal Shafts

The PCB landfill cell and disposal shafts are located at TA-54, Area G. The area is managed by the EM-8 Waste Management Group. Landfill cells are constructed by using a front-end loader to rip a hole in the rock of the Bandelier tuff formation. Similarly, PCB disposal shafts extend to 60 to 65 feet deep in the same rock formation. Area G is located on top of a mesa where landfill cell 37 [photograph 8] and shafts C13 and C14 [photograph 9] are currently active and located within a mile of each other. Neither the landfill cell nor the disposal shafts are lined. Radioactively contaminated PCB solids are disposed at area G. PCB items too large to go down the shafts are placed in the landfill cell and PCB and PCB-contaminated dirt is used as fill in both the landfill and shafts. Shaft C13 opened about 3 years ago and is currently about half full. Shafts C1 through C12 are all capped with concrete [photograph 10]. PCB disposal at LANL is conducted under the conditions of the June 5, 1980 approval from EPA Region 6 [Appendix G]. Records and monitoring are discussed in the following section.

Records/Document Review

PCB records reviewed were kept in the Environmental Protection Group office.

Notification

Los Alamos County provides fire protection for LANL, and the Environmental Protection Group provided the Department of Energy Environment, Safety, and Health Branch with an inventory of PCB transformers on-site. The DOE sends the inventory to Los Alamos County and the fire department had a copy of the inventory in their files [Appendix H]. The PCB transformer inventory provided to the fire department was dated June 11, 1993. However, a more recent inventory as of June 30, 1993 (from the 1992 Annual Document) identified an additional PCB transformer (Serial No. SN-6184) located at TA-52 building 3, in the vicinity of section 1, that was not on the fire department's inventory. The last inventory was sent to the fire department in 1991.

Annual Document

The PCB annual documents are prepared by the Environmental Protection Group and the Waste Management Group. The annual documents for 1990, 1991, and 1992 were reviewed. The 1990 annual document was reviewed during the previous EPA Region 6 inspection. PCB manifests and certificates of disposal were included in the annual documents.

As previously stated, LANL is currently conducting a survey to identify PCB items. However, some of the PCB database is based on information/ assumptions made in 1984 and is inaccurate. For example, a PCB transformer

was not listed in the database under the correct serial number. The in-service list of PCB equipment contains items taken out of service by user groups as at TA-15 and 21. Information regarding PCB concentration, volume, and PCB weight in kilograms is often estimated and sometimes questionable. For example, a vacuum pump (LANL ID # 933282) is listed as 150 ppm PCB containing 1.5 gallons with a PCB weight in kilograms of 34.1. Even if the 1.5 gallons was pure PCBs, the PCB weight in kilograms would only be 8.7 kilograms (1.5 gallons x 12.7 pounds/gallon of pure PCB x one kilogram/2.2 pounds). At 150 ppm, the PCB weight in kilograms would be 0.01.

Certificates of disposal included in the annual document did not always contain required information such as a list of each PCB item and the method of destruction. This would be an area of noncompliance for the off-site disposal facility.

PCB Manifests

Manifests and supporting documentation to track the PCB items were reviewed. Two manifests had 20 to 30% discrepancies between the manifested weight shipped and the certificate of disposal amount. For manifest PX941, S.D. Myers, Tallmadge, Ohio, received 26,260 pounds of drained PCB transformers from LANL. The certificate of disposal from Aptus, Coffeyville, Kansas, lists 20,720 pounds disposed (or about 20% less) for the same transformers. For manifest PX940, S.D. Myers of Tallmadge, Ohio, received 2,660 kilograms of PCB waste (one drained PCB transformer and two switchgear) from LANL and S.D. Myers issued a certificate of disposal for 3,775 kilograms (or about 30% more) for the same items.

PCB Inspection records

Daily, monthly, and quarterly inspections of PCB and PCB-contaminated transformers were conducted by a contractor, Johnson Controls, Inc. (JCI). Leaking transformers are inspected daily, PCB transformers are inspected monthly, and PCB-contaminated transformers are inspected quarterly. Inspection records were reviewed for 1990 through July 1993. An example of inspection records is presented in Appendix I. LANL conducts inspections more frequently than required by TSCA regulations. PCB transformers are required to be inspected quarterly and PCB-contaminated transformers are not required to be inspected. The more frequent inspection schedule helps find leaks early and even if a transformer is assumed to be PCB-contaminated and is later found to be a PCB transformer, it will have met inspection requirements. This in fact happens occasionally, when a retrofilled transformer is retested and the PCB concentration is found to have increased. No deficiencies were observed in the inspection records.

Spill Clean-up Records

The last reported PCB spills at LANL occurred in March 1989 when capacitors ruptured at TA-3 and TA-53. Fifty-one nonreported spills of less than 1 pound occurred between 1987 and 1993 [Appendix J]. Records for all these spills were kept by the Environmental Protection Group. An example of a nonreportable spill cleanup record is provided in Appendix J. There were no on-going spill cleanups during the NEIC inspection.

Semiannual PCB Disposal and Monitoring Reports

Condition four of the EPA approval for disposal of PCBs at LANL requires that two springs be monitored at least once each year (during and

after operation) for PCBs, pH, specific conductance, and chlorinated organics. Similarly, condition five of the EPA approval for disposal of PCBs at LANL requires the installation of on-site cumulative samplers for rainfall runoff collection [photograph 11]. Water samples collected in the cumulative samplers after rainfall of sufficient volume for analyses must be analyzed for PCBs, pH, specific conductance, and chlorinated organics. Condition six for disposal of PCBs at LANL requires LANL make semiannual reports to EPA Region 6 summarizing analytical data for conditions four and five.

The most recent report with data for conditions four and five was for July through December 1992 [Appendix K]. Conditions four and five were not met. PCBs were not analyzed for the annual spring samples. For the stormwater runoff sample collected June 25, 1992, pH and specific conductance analyses were not conducted. For the stormwater sample collected August 12, 1992, chlorinated organics analyses were not conducted.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

The following areas of noncompliance of the TSCA requirements were identified during the investigation:

40 CFR §761.30(a)(1)(viii)	Combustible materials were stored within 5 meters of eight PCB transformers.
40 CFR §761.40(a)	Three out-of-service PCB capacitors were not marked with the PCB mark.
40 CFR §761.65(a)	One drum of PCB cleanup material, dated February 21, 1992, was still on-site and not in the storage for disposal area.
40 CFR §761.65(a)	Thirty-four drums of radioactively contaminated PCBs have been in storage for disposal for more than 1 year.
40 CFR §761.75(a)	Approval conditions for PCB disposal at LANL were not met. Water analyses, required by 40 CFR §761.75(b)(6)(iii), were not conducted for PCBs, pH, specific conductance, and chlorinated organics.
40 CFR §761.180(a)(1)(iii)	The LANL PCB database does not have an accurate total weight in kilograms for each PCB article.

AREAS OF CONCERN

The following areas of concern were identified during the NEIC investigation. Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements or adverse environmental impact.

- The PCB database is being improved by an ongoing survey, but some of the information is based on information/assumptions made in 1984 and is inaccurate.

- Waste is determined to be radioactively contaminated PCB waste by where it comes from instead of testing. Therefore, some nonradioactive PCB waste may be improperly identified and handled as radioactively contaminated.

- PCB equipment is taken out of service by user groups at individual TAs, but does not enter the disposal system until the user group fills out a waste profile sheet and submits it to the Waste Management Group. The interval between out of service and disposal can be several years. Additionally, once a waste profile sheet is submitted to the Waste Management Group, it often takes several months for approval and for the waste to be moved to the storage-for-disposal area. The removal from service/storage date listed by LANL is the date the item is moved to the storage-for-disposal area.

- LANL has prioritized PCB items with potential for environmental contamination and has retrofilled, dechlorinated, or removed many of these items, but there are still PCB items in high

priority areas such as TA-36-0138 near a stream course where a spill would be costly both to LANL and the environment.

- The inventory of PCB transformers sent to the fire department is incomplete. A more recent inventory identified an additional PCB transformer not on the fire department's inventory.

- Certificates of disposal included in the 1992 annual document did not always contain all required information such as a list of PCB items and method of destruction. This would be an area of noncompliance for the off-site disposal areas.

APPENDICES

A	TSCA Inspection Forms
B	Photographs
C	Form Used for Current PCB Survey
D	Combustible Materials/PCB Transformer Form
E	Radioactively Contaminated PCB Waste
F	Inventory and Waste Data Forms for PCB Mixed Waste in Storage at TA-54, Area L
G	LANL PCB Disposal Approval and Conditions
H	Registration of PCB Transformers with Fire Response Personnel
I	Transformer Inspection Records
J	List of PCB Spill Reports for Nonreportable Releases
K	Semiannual PCB Disposal and Monitoring Report

APPENDIX A

TSCA INSPECTION FORMS

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT K59-01

NOTICE OF INSPECTION

Form Approved
OMB No. 2070-0007
Expires 3-31-88

1. INVESTIGATION IDENTIFICATION			2. TIME	3. FIRM NAME
DATE 8/3/93	INSPECTOR NO. 6772	DAILY SEQ. NO. 01	8 a.m.	United States Department of Energy

4. INSPECTOR ADDRESS	5. FIRM ADDRESS
EPA-NEIC Bldg 53, Box 25227, DFC Denver, CO 80225	Los Alamos Area Office 528 35th Street Los Alamos, NM 87544

REASON FOR INSPECTION

Under the authority of Section 11 of the Toxic Substances Control Act:

☑ For the purpose of inspecting (including taking samples, photographs, statements, and other inspection activities) an establishment, facility, or other premises in which chemical substances or mixtures or articles containing same are manufactured, processed or stored, or held before or after their distribution in commerce (including records, files, papers, processes, controls, and facilities) and any conveyance being used to transport chemical substances, mixtures, or articles containing same in connection with their distribution in commerce (including records, files, papers, processes, controls, and facilities) bearing on whether the requirements of the Act applicable to the chemical substances, mixtures, or articles within or associated with such premises or conveyance have been complied with.

☐ In addition, this inspection extends to *(Check appropriate blocks)*:

- ☐ A. Financial data
- ☐ B. Sales data
- ☐ C. Pricing data
- ☐ D. Personnel data
- ☐ E. Research data

The nature and extent of inspection of such data specified in A through E above is as follows:

INSPECTOR SIGNATURE		RECIPIENT SIGNATURE	
John T. Ellison			
NAME: John T. Ellison		NAME: Jerry L. Bellows	
TITLE: Enforcement Officer	DATE SIGNED: 8/3/93	TITLE: Area Manager	DATE SIGNED:

EPA Form 7740-3 (12-82)

INSPECTION FILE

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

TOXIC SUBSTANCES CONTROL ACT K59-01

TSCA INSPECTION CONFIDENTIALITY NOTICE

Form Approved
OMB No 2070-0007
Expires 3-31-88

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE 8/3/93	INSPECTOR NO. 6772	DAILY SEQ. NO. 01	United States Department of Energy
3. INSPECTOR NAME: John T. Ellison			4. FIRM ADDRESS: Los Alamos Area Office, 528 35th Street, Los Alamos, NM 87544
5. INSPECTOR ADDRESS: EPA-NEIC, Bldg. 53, Box 25227, DFC			6. CHIEF EXECUTIVE OFFICER NAME: Jerry L. Bellows (Area Manager, LAAO)
			7. TITLE: Area Manager

TO ASSERT A CONFIDENTIAL BUSINESS INFORMATION CLAIM

It is possible that EPA will receive public requests for release of the information obtained during inspection of the facility above. Such requests will be handled by EPA in accordance with provisions of the Freedom of Information Act (FOIA), 5 USC 552; EPA regulations issued thereunder, 40 CFR Part 2; and the Toxic Substances Control Act (TSCA), Section 14. EPA is required to make inspection data available in response to FOIA requests unless the Administrator of the Agency determines that the data contain information entitled to confidential treatment or may be withheld from release under other exceptions of FOIA.

Any or all the information collected by EPA during the inspection may be claimed confidential if it relates to trade secrets or commercial or financial matters that you consider to be confidential business information. If you assert a CBI claim, EPA will disclose the information only to the extent, and by means of the procedures set forth in the regulations (cited above) governing EPA's treatment of confidential business information. Among other things, the regulations require that EPA notify you in advance of publicly disclosing any information you have claimed as confidential business information.

A confidential business information (CBI) claim may be asserted at any time. You may assert a CBI claim prior to, during, or after the information is collected. The declaration form was developed by the Agency to assist you in asserting a CBI claim. If it is more convenient for you to assert a CBI claim on your own stationery or by marking the individual documents or samples "TSCA confidential business information," it is not necessary for you to use this form. The inspector will be glad to answer any questions you may have regarding the Agency's CBI procedures.

While you may claim any collected information or sample as confidential business information, such claims are unlikely to be upheld if they are challenged unless the information meets the following criteria:

1. Your company has taken measures to protect the confidentiality of the information, and it intends to continue to take such measures.
2. The information is not, and has not been, reasonably obtainable without your company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on showing of special need in a judicial or quasi-judicial proceeding).
3. The information is not publicly available elsewhere.
4. Disclosure of the information would cause substantial harm to your company's competitive position.

At the completion of the inspection, you will be given a receipt for all documents, samples, and other materials collected. At that time, you may make claims that some or all of the information is confidential business information.

If you are not authorized by your company to assert a CBI claim, this notice will be sent by certified mail, along with the receipt for documents, samples, and other materials to the Chief Executive Officer of your firm within 2 days of this date. The Chief Executive Officer must return a statement specifying any information which should receive confidential treatment.

The statement from the Chief Executive Officer should be addressed to:

and mailed by registered, return-receipt requested mail within 7 calendar days of receipt of this Notice. Claims may be made any time after the inspection, but inspection data will not be entered into the special security system for TSCA confidential business information until an official confidentiality claim is made. The data will be handled under the agency's routine security system unless and until a claim is made.

TO BE COMPLETED BY FACILITY OFFICIAL RECEIVING THIS NOTICE:		If there is no one on the premises of the facility who is authorized to make business confidentiality claims for the firm, a copy of this Notice and other inspection materials will be sent to the company's chief executive officer. If there is another company official who should also receive this information, please designate below.
I have received and read the notice		
SIGNATURE		NAME: -
NAME: Jerry L. Bellows		TITLE
TITLE: Area Manager	DATE SIGNED: 8/3/93	ADDRESS

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT K59-01

DECLARATION OF CONFIDENTIAL BUSINESS INFORMATION

Form Approved
OMB No. 2070-0007
Expires 3-31-88

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE 8/12/93	INSPECTOR NO. 6772	DAILY SEQ. NO. 01	United States Department of Energy
3. INSPECTOR ADDRESS EPA-NEIC Bldg. 53, Box 25227, DFC Denver, CO 80225			4. FIRM ADDRESS Los Alamos Area Office 528-35th Street Los Alamos, NM 87544

INFORMATION DESIGNATED AS CONFIDENTIAL BUSINESS INFORMATION

NO.	DESCRIPTION
	None declared as of 8/12/93

ACKNOWLEDGEMENT BY CLAIMANT

The undersigned acknowledges that the information described above is designated as Confidential Business Information under Section 14(c) of the Toxic Substances Control Act. The undersigned further acknowledges that he/she is authorized to make such claims for his/her firm.

The undersigned understands that challenges to confidentiality claims may be made, and that claims are not likely to be upheld unless the information meets the following guidelines: (1) The company has taken measures to protect the confidentiality of the information and it intends to continue to take such measures; (2) The information is not, and has not been reasonably attainable without the company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding); (3) The information is not publicly available elsewhere; and (4) Disclosure of the information would cause substantial harm to the company's competitive position.

INSPECTOR SIGNATURE		CLAIMANT SIGNATURE	
John Ellison		Jerry L. Bellows	
NAME John Ellison		NAME Jerry L. Bellows	
TITLE Enforcement Officer	DATE SIGNED 8/12/93	TITLE Area Manager	DATE SIGNED 8/12/93

EPA Form 7740-2 (12-82)

INSPECTION FILE

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT K59-01

RECEIPT FOR SAMPLES AND DOCUMENTS

Form Approved.
OMB No. 2070-0007
Approval expires 3-31-88

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE	INSPECTOR NO.	DAILY SEQ. NO.	United States Department of Energy
8/12/93	6772	01	

3. INSPECTOR ADDRESS	4. FIRM ADDRESS
EPA - NEIC Bldg 53, Box 25227, DFC Denver, CO 80225	Los Alamos Area Office 528 - 35th Street Los Alamos, NM 87544

The documents and samples of chemical substances and/or mixtures described below were collected in connection with the administration and enforcement of the Toxic Substances Control Act.

RECEIPT OF THE DOCUMENT(S) AND/OR SAMPLE(S) DESCRIBED IS HEREBY ACKNOWLEDGED:

NO.	DESCRIPTION
	See attached TSCA Document List and Photo Log

OPTIONAL:

DUPLICATE OR SPLIT SAMPLES: REQUESTED AND PROVIDED ☑ NOT REQUESTED ☐

INSPECTOR SIGNATURE	RECIPIENT SIGNATURE
John Ellison	Jerry L. Bellows
NAME: John Ellison	NAME: Jerry L. Bellows
TITLE: Enforcement Officer — DATE SIGNED: 8/12/93	TITLE: Area Manager — DATE SIGNED: 8/12/93

EPA Form 7740-1 (12-82)

INSPECTOR'S FILE

TSCA Document Log

STATUTE	TITLE/SUBJECT
TSCA (TOXIC SUBSTANCES CONTROL ACT)	PCB INVENTORY FROM 1992 ANNUAL DOCUMENT.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	AR-10 PCBS.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	MISCELLANEOUS PCB FORMS.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	REGISTRATION OF PCB TRANSFORMERS WITH FIRE DEPARTMENT.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	1991 PCB ANNUAL DOCUMENT.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	1992 PCB ANNUAL DOCUMENT.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	RADIOACTIVE SOLID WASTE DISPOSAL (RSWD) RECORD APPLICATION FOR STORAGE/DISPOSAL.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	RADIOACTIVE PCB WASTE FLOWSHEET.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	PCB MIXED WASTE IN STORAGE AT TA-54, AREA L.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	LIST OF PCB SPILL REPORTS/NON-REPORTABLE RELEASES, 1987-1993.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	TRANSMITTAL LETTER AND SEMIANNUAL PCB DISPOSAL AND MONITORING REPORT FOR THE DEPARTMENT OF ENERGY'S MESITA DEL BUEY (AREA G) LANDFILL AT THE LOS ALAMOS NATIONAL LABORATORY, JULY 1, 1992-DECEMBER 31, 1992.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	COMBUSTIBLE MATERIALS/PCB TRANSFORMER FORM.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	COMBUSTIBLE MATERIALS/PCB TRANSFORMER FORM.
TSCA (TOXIC SUBSTANCES CONTROL ACT)	COMBUSTIBLE MATERIALS/PCB TRANSFORMER FORM.

TSCA Document Log (continued)

STATUTE	TITLE/SUBJECT
TSCA (TOXIC SUBSTANCES CONTROL ACT)	TRANSFORMER INSPECTION CHECKLIST, 6/8 THRU 6/15/93..
TSCA (TOXIC SUBSTANCES CONTROL ACT)	PCB MAINTENANCE REPORT (1.5-DD-006) I.E., MONTHLY PCB TRANSFORMER REPORT FROM JCI.

TSCA Photo Log

Raul Morales Roll Dated 8/5/93

Negative #

6 + 7 TA-35-0132 PCB Transformer inspected 8/4 and dead weeds observed on pad - photographed 8/5 after weeds removed

9, 10, + 11 TA-21-0209 Basement 3-PCB Capacitors in storage for reuse but not marked with PCB mark. Inspected on 8/4 - photographed 8/5 after PCB marks placed on capacitors

12 TA-54-39, Area L PCB Storage Area, PCB Waste Inventory inside building (8/5 Photograph)

13 + 14 TA-54-39, Area L Covered Radioactively Contaminated PCB Storage, 34 drums (8/5 Photograph)

15, 16, 17 TA-54, Area G PCB Disposal Shafts

18 TA-54, Area G Weir where Area G, TA-54 runoff sampled downgradient from PCB Disposal Shafts (8/5 Photograph)

19 TA-54, Area G Pit 37, Active PCB Disposal Trench (8/5 Photograph)

Raul Morales Roll Dated 8/6/93

Negative #

2 TA-36-0138 PCB-Contaminated Transformer next to stream course near TA-18

APPENDIX B

PHOTOGRAPHS

PHOTOGRAPH 1: PCB-CONTAMINATED TRANSFORMER AT TA-36-138 NEXT TO STREAM COURSE

PHOTOGRAPH 2: PCB TRANSFORMER AT TA-35-32 AFTER WEEDS CLEARED OFF PAD

PHOTOGRAPH 3; PCB TRANSFORMER AT TA-3-190 WITH SANDBAG BERM

PHOTOGRAPH 4: PCB CAPACITORS AT TA-21-209 AFTER MARKING

PHOTOGRAPH 5: PCB WASTE AT TA-54-39, AREA L

PHOTOGRAPH 6: RADIOACTIVELY CONTAMINATED PCB WASTE AT TA-54-39, AREA L

PHOTOGRAPH 7: RADIOACTIVELY CONTAMINATED PCB WASTE AT TA-54-39, AREA L

PHOTOGRAPH 8: DISPOSAL PIT 37 AT TA-54, AREA G

PHOTOGRAPH 9: PCB DISPOSAL SHAFTS C13 AND C14 AT TA-54, AREA G

PHOTOGRAPH 10: CAPPED PCB DISPOSAL SHAFT AT TA-54, AREA G

PHOTOGRAPH 11: RAINFALL RUNOFF COLLECTION POINT AT TA-54, AREA G

APPENDIX C

FORM USED FOR CURRENT PCB SURVEY

PCB EQUIPMENT INVENTORY AND SURVEY

T.A.# _____ BUILDING# _____ ROOM# _____

OIL FILLED EQUIPMENT IN THIS ROOM? YES_____ NO_____

THE FOLLOWING MAY CONTAIN PCBs

TRANSFORMERS: _____ CAPACITORS: _____ POWER SUPPLIES: _____

X-RAY EQUIPMENT: _____ VOLTAGE REGULATORS: _____

RADIO FREQUENCY GENERATORS: _____ OVERHEAD CRANE: _____

MECH. SHOP EQUIPMENT: _____

HYDRAULIC EQUIPMENT: _____ INDUCTION HEATING UNITS: _____

VACUUM PUMPS: _____ OIL IN DRUMS, CANS, TANKS: _____

OTHER _____

DESCRIPTION OF ITEMS: _____

SERIAL/P.N. ON ITEMS: _____ PCB ID # _____

MANUFACTURERS INFO.: _____

M.S.D.S.	YES_____	NO_____
ANALYTICAL RESULTS	YES_____	NO_____
IS EQUIPMENT LEAKING?	YES_____	NO_____
EVIDENCE OF PAST LEAKS?	YES_____	NO_____
IS LEAKING FLUID CONTAINED?	YES_____	NO_____
COMBUSTIBLES?	YES_____	NO_____
ARE FLOOR DRAINS PRESENT?	YES_____	NO_____
IS EQUIPMENT LABELED WITH PROPER PCB MARKINGS?	YES*_____	NO*_____

*NOTE: _____

OTHER NOTES: _____

_____

_____

DATE OF SURVEY _____ GROUP _____ PHONE# _____

BUILDING MANAGER _____

APPENDIX D

COMBUSTIBLE MATERIALS/PCB TRANSFORMER FORM

COMBUSTIBLE MATERIALS/PCB TRANSFORMER FORM

Date sent: 1/18/91

To: Tom Minchal * ENG-5 Coordinator, MS G770

From: Paul Ibarra HSE-8, MS K490, Phone: 7-0814

* If you may need to report about these or samples of similar opc.

Combustible Materials Boxes, plastic, paper were found within 5 meters (~17 ft) of transformer # 5004/5004 located at TA-3, 0176.046 (Bldg 14). This is in violation of 40 CFR 761.30 Subpart B pertaining to PCB regulations.

Please take the appropriate corrective action to immediately remove the combustible materials. Also, please complete the rest of this form within two (2) days of receipt and return to sender.

ACTION TAKEN (CHECK/COMPLETE)

____ Combustible materials removed by ENG-5

✓ Combustible materials removed by World Services

✓ Combustible materials removed by Ray Lujan Pan Am.

____ Spoke to _____ of Group _____ who will assume responsibility for cleaning the area by ___/___/___.

____ Unable to comply with combustible materials removal because

_____

_____

****

For HSE-8 Use Only.

Confirmation of combustibles-removal by Tom Minchal on 1/23/91.

/pcbform/bjh

U3U 004189

COMBUSTIBLE MATERIALS/PCB TRANSFORMER FORM

Date sent: 8 / 27 / 91

To: Tom Mirabal ENG-5 Coordinator, MS G770

From: Raul Morales HSE-8, MS K490, Phone: 7-0814

Combustible Materials Boxes, rags Wood were found within 5 meters (~17 ft) of transformer #858428 located at TA-3, SM66, Room J-3 Basement. This is in violation of 40 CFR 761.30 Subpart B pertaining to PCB regulations.

Please take the appropriate corrective action to immediately remove the combustible materials. Also, please complete the rest of this form within two (2) days of receipt and return to sender.

ACTION TAKEN (CHECK/COMPLETE)

____ Combustible materials removed by ENG-5

____ Combustible materials removed by World Services

✓ Combustible materials removed by PLASTICS SECTION

____ Spoke to THE BOSS (GARY CARTER) of Group MST-7 who will assume responsibility for cleaning the area by 8/28/91.

____ Unable to comply with combustible materials removal because

_____

_____

****

For HSE-8 Use Only.

Confirmation of combustibles-removal by DR. GARY CARTER on 8/28/91.

Tom Mirabal Eng 5

KLL

/pcbform/bjh

Combustible Materials/PCB Transformer Form

Date sent: 8 / 12 / 92

To: Joe Bustos ENG-5 Coordinator, MS C944

From: Raul Morales EM-8, MS K490, Phone: 7-0814

Combustible materials Trash between Fence + loading dock + around transformer were found within 5 meters (~17 ft) of transformer # 7371969 located at TA- 33 - 124.
This is in violation of 40 CFR 761.30 Subpart B pertaining to PCB regulations.

Please take the appropriate corrective action to immediately remove the combustible materials. Also, please complete the rest of this form within two (2) days of receipt and return to sender.

Action Taken (Check/Complete)

- [x] Combustible materials removed by ENG-5 J. Bustos
- [ ] Combustible materials removed by World Services
- [ ] Combustible materials removed by _____
- [ ] Spoke to _____ of Group _____ who will assume responsibility for cleaning the area by ___/___/___.
- [ ] Unable to comply with combustible materials removal because:

_____

_____

For EM-8 Use Only

Confirmation of combustibles-removal by [signature] on 8/17/92

mac/belinda/pcbform

U3D 004190

APPENDIX E

RADIOACTIVELY CONTAMINATED PCB WASTE

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

APR 27 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. A. Stanley Meiburg
Chief, Toxics Section
U. S. EPA, Region 6, 6H-PT
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Dear Mr. Meiburg:

The issue of the storage of polychlorinated biphenyls (PCB) waste contaminated with radioactive constituents at the Los Alamos National Laboratory (LANL), beyond the one-year storage limit allowed by 40 CFR 761.65(a), has been discussed with the Environmental Protection Agency (EPA), both at the Headquarters and regional levels, starting on October 6, 1991. It is an issue that the Department of Energy, Los Alamos Area Office (DOE-LAAO), and the University of California (UC) are very much interested in resolving. At the January 13, 1993 meeting in Dallas, Texas, with Ms. Lou Roberts of your staff; Steve Slaten, ES&H, DOE-LAAO; and Raul Morales, LANL; Ms. Roberts indicated that in order to help expedite the issue of the storage of the contaminated PCB waste, a formal request be made to Region 6 to enter into the negotiations towards a Federal Facility Compliance Agreement (FFCA). This letter requests that such negotiations be formally initiated as quickly as possible.

Enclosed, also as Ms. Roberts requested, is a fact sheet summarizing the various types of communications that have taken place since October 16, 1991, among EPA-Headquarters Region 6, DOE-LAAO, and LANL, with respect to the storage of radioactively contaminated PCB waste.

We appreciate your help in expediting this matter.

Sincerely,

Jerry L. Bellows
Area Manager

LESH:3SS-016

Enclosure

cc:
See page 2

APR 2 1993

cc w/enclosure:
L. Roberts
U. S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733
A. Tiedman, ADO, LANL,
MS-A120
T. Gunderson, EM-DO, LANL,
MS-J591
K. Hargis, (EM-8:93-640-1),
EM-8, LANL, MS-K490
S. Rae, EM-8, LANL, MS-K490
R. Morales, EM-8, LANL, MS-K490
A. Drypolcher, EM-7, LANL,
MS-E517
C. Mack, LC-GL, LANL, MS-A187

DOE/UC COMMUNICATIONS WITH EPA ON THE STORAGE OF PCBs CONTAMINATED WITH RADIOACTIVE CONSTITUENTS

October 16, 1991:	R. Morales (Staff Member, PCB Program, Los Alamos National Laboratory, University of California) telephone call to L. Roberts (Compliance Officer, EPA, Region 6) seeking guidance on how to proceed, from a regulatory standpoint, with PCB/radioactive waste which cannot be disposed within the one year storage limit required by the PCB regulations.
November 15, 1991:	J. Bellows (Area Manager, DOE-LAAO) to T. Baney, (EPA, Chemical Regulation Branch, Washington, DC) letter requesting guidance on how to resolve the storage issue.
December 4, 1991:	T. Baney to J. Bellows letter suggesting negotiations between DOE and Ms. Carol Peters (EPA, Region 6 Chief, Toxics Section) to incorporate a condition in a compliance agreement allowing the Laboratory to store radioactively contaminated PCB wastes until disposal can be accomplished.
January 23, 1992:	J. Bellows to C. Peters letter requesting a meeting to discuss the issue of the storage of radioactively contaminated PCB waste at the Laboratory.
February 27, 1992:	Meeting in Dallas, TX, EPA, Region 6 to discuss on how best to proceed with the storage of radioactively contaminated PCB waste at the Laboratory. EPA, Region 6 personnel present at the meeting were Bruce Jones (attorney), Lou Roberts (TSCA Compliance), Jim Sales (RCRA/TSCA permits) and Paul Thomas (Environmental specialist). Steve Slaten of DOE-LAAO and, from the Laboratory, Raul Morales, Steven Rae, and Roy Bohn were present. EPA personnel indicated they would review the issue, obtain a copy of the Federal Facility Compliance Agreement (FFCA) between EPA-HQ and the DOE for DOE facilities at Paducah, KY; Portsmouth, OH; and Oak Ridge, TN which addressed the same issue. Region 6 indicated it would let DOE-LAAO and the Laboratory know how they intended to proceed; and that negotiations would probably involve an FFCA.
June 5, 1992:	R. Morales to L. Roberts telephone call to determine how Region 6 plans to proceed with respect to the storage of the Laboratory's radioactively contaminated PCB waste. L. Roberts indicated that B. Jones had requested from EPA-HQ a copy of the EPA-HQ/DOE-HQ FFCA addressing the storage (at other DOE facilities) of PCB waste contaminated with radioactive constituents but had not received it. R. Morales promised to provide a copy through DOE-LAAO.
August 7, 1992:	R. Morales accompanies B. Jones on a walkthrough of the Laboratory's PCB storage area (TA-54, Area L) and inquires as to when Region 6 will be addressing the Laboratory's storage of PCB/radioactive waste. B. Jones says that, because of other Region 6 priorities, not before the fall.

DOE/UC COMMUNICATIONS WITH EPA ON THE STORAGE OF PCBs CONTAMINATED WITH RADIOACTIVE CONSTITUENTS (Cont.)

August 17, 1992:	J. C. Vozella (Acting Chief, Environment, Safety & Health Branch, DOE-LAAO) to L. Roberts provides a copy of the FFCA between EPA-HQ and DOE-HQ addressing PCB waste contaminated with radioactive constituents.
December 14, 1992:	S. Slaten calls L. Roberts for the purpose of meeting with Region 6 to discuss the status of the storage of PCB/rdioactive waste issue. Meeting date is agreed on.
January 8, 1993:	R. Morales sends FAX message to L. Roberts indicating that he and S. Slaten will meet with Roberts to discuss the PCB/radioactive waste issue on January 13, 1993.
January 13, 1993:	R. Morales, S. Slaten, and L. Roberts meet at Region 6, to discuss status, of the PCB/radioactive waste issue, and how best to proceed with its resolution. Roberts recommends that a letter be written requesting, from Region 6, negotiations towards a FFCA. Also, that a fact sheet summarizing all communications between the Laboratory, DOE-LAAO, and Region 6 on the subject be included.

APPENDIX F

INVENTORY AND WASTE DATA FORMS FOR PCB MIXED WASTE IN STORAGE AT TA54, AREA L

PCB MIXED WASTE IN STORAGE

ROW A TOP

10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM	10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM
D898191N TA3-29 Bailey Pan Am	D898189N TA3-29 Bailey Pan Am
10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM	10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM
D898188N TA3-29 Bailey Pan Am	D898190N TA3-29 Bailey Pan Am
10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM	10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM
D898193N TA3-29 Bailey Pan Am	D898192N TA3-29 Bailey Pan Am
10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM	10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM
D898194N TA3-29 Bailey Pan Am	D898195N TA3-29 Bailey Pan Am
9-23-91 PCB CAPACITORS PCB # 02128 02129 02130 6ea 02131 02132 02133	9-23-91 PCB CAPACITORS PCB # 9137 9138 9133 9134 9135 9ea 9136 9074 9075 9125
C91021826 TA3-66 BAKER MST-6	C91022013 TA3-29 Larry Laughlin MEE
8-20-91 PCB CAPACITORS PCB # 2141 2143 2144 2152 2153 10ea 2154 2155 2156 2157 2159	10-4-91 Repak Oil 92026383 91025538 91023333 91025474
C91021599 TA3-66 BAKER MST-6	C92026834 TA54-39 Francine Vigil EM-

ROW A BOTTOM

8-13-91 CAPSUL WATER .16 PPM .048 E n/Ci of Radiation D9100 6216 TA3-29 Bailey TC-I	8-13-91 CAPSUL WATER .16 PPM .048 E n/Ci of Rad D9100 5566 TA3-29 Bailey TC-I
6-10-91 Drums fr Draining PCB OIL 709 PPM 9.5+9 n/Ci of Rad fr PCB # 3134 D9100 4634 Nick Salazar SIGMA MESA CTR-DO	8-13-91 CAPSUL WATER .16 PPM .048 E n/Ci of Rad D9100 5565 TA3-29 Bailey TC-I
6-10-91 PCB OIL fr PCB # 3134 709 PPM 905+9 n/Ci of Rad D9100 4633 Nick Salazar SIGMA MESA CTR-DO	6-10-91 PCB FLUSH Fr Sigma Mesa 709 PPM Fr D9100 4543 D9100 7415 Nick Salazar SIGMA MESA CTR-DO
1-17-90 PCB OIL >500 PPM .12 n/Ci of Rad D9100 2088 TA3-16 Greg Chapparro P-9	6-10-91 PCB FLUSH Fr SIGMA MESA 709 PPM Fr D9100 4543 D9100 4631 Nick Salazar SIGMA MESA CTR-D
11-14-89 Clean-up Water w/PCB >500 PPM and Rad D899407 TA3-29 ENG-1	10-23-89 PCB CONTAMINATED WATER 1.8% or 18,000 PPM D898196N TA3-29 Bailey Pan Ar
11-14-89 Clean-up Water w/PCB >500 PPM and Rad D899408 TA3-29 ENG-1	8-30-91 PCB CAPACITORS C2142 - C2145 - C2146 - C2147 - C2149 - C2150 - C2151 - C2158 C9102 1600 TA3-35 BAKER NOT-

CMWO WASTE DATA FORM

Container # : C91021600	Requestor : BAKER BILLY
	Group : MST6
	Phone : 75191
CWDR # : 1000643	TA : 03
	Building: 35
	Room: NRTHEQ
DT_ID # :	Z # : 092559

LESS THAN 90 DAYS (START DATE: 20-AUG-91)
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code : 27	Other Con # :
Storage Code : PCB-O	Container Type: DM
RGN # : 17	Container Vol: 55 G
Treat/Disp Loc :	Reviewed By : 099848
Transported By :	Data Entry By : 099848
	Qa Check By :
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 064281 / 20-SEP-91 10:00
	Load Check By/Date: 109152 / 20-SEP-91
Treat/Ship By:	Pickup Update Check By :
Treat/Ship Date:	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 : PCB ID #02142, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE

Item 2 : PCB ID #02145, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3 : PCB ID #02146, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4 : PCB ID #02147, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5 : PCB ID #02148, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

RCW B

10-24-91	CAPACITORS PCB # 02137 & 02138		3-5-92	CAPACITORS PCB# 02176 02178 02177 02177	
C41023360	TA3-16 GOOSNEY	P-9	C9202 26729	MARY MARTINEZ TA3-66	MST-6
9-25-91	CAPACITORS PCB # 02135 & 02136		5-6-91	LAB PACK OIL-VIALS - PIPETTES	
C91023025	TA3-16 GOOSNEY	P-9	C91002959	Terry Eller TA50-1	HSE-7
8-16-91	INSULATING OIL PCB		8-7-92	CAPSUR WATER 7500 PPM	
D91006760	NICK SALAZAR TA3-105	CTR-D0	NO C92030376	BAILEY TA3-29	JCI
6-8-90	KIMWIPES PCB-OIL WITH ACETONE-HEXANE		6-19-91	PIPETTES W/PCB OIL	
C904535	DAVID SHAPLAND TA3-29-ATTIC	MST-14	C91004476	Terry Eller TA50-1	HSE-9
6-8-90	Oil in Vermiculite w/PCB > 50 PPM		6-8-90	KIMWIPES, PCB OIL 750 PPM W/ACETONE, HEXANE, UFG	
C904536	DAVID SHAPLAND TA3-29-ATTIC	MST-14	C904534	DAVID SHAPLAND TA3-29-ATTIC	

Item 6 :	PCB ID #02149, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 7 :	PCB ID #02150, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 8 :	PCB ID #02151, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 9 :	PCB ID #02158, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

CMWO WASTE DATA FORM

Container # : C91021600	Requestor : BAKER BILLY
	Group : MST6
CWDR # : 1000643	Phone : 75191
	TA : 03
	Building : 35
	Room : NRTHEQ
DT_ID # :	Z # : 092559

LESS THAN 90 DAYS (START DATE: 20-AUG-91)
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Reviewed By :	099848
Storage Code :	MW6	Data Entry By :	099848
RGN #:	17	Qa Check By :	
HMTF/RMTT # :		Picked Up By :	064281
Other Con # :		Pickup Date&Time:	20-SEP-91 10:00
Container Type :	DM	Load Check By :	109152
Container Vol :	55	Date :	20-SEP-91
Treat/Disp Loc :		Treat/Ship By :	
Transported By :		Treat/Ship Date :	
Other Document :		TSDF Date :	
AreaG/J Loc :		Destruction # :	
		Destruction Date :	
Off-Site Check By :		Update By :	
Date :		Date :	

Item 1 : PCB ID #02142, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE

Item 2 : PCB ID #02145, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3 : PCB ID #02146, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4 : PCB ID #02147, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5 : PCB ID #02148, CAPACITOR (>500 PPM)
WPN : 00499 Volume: 1.7 G Weight: 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 6 :	PCB ID #02149, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 7 :	PCB ID #02150, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 8 :	PCB ID #02151, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 9 :	PCB ID #02158, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	1.7 G	**Weight:**	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

PICKUP DATA FORM for CHEM WASTE

Container #: C91021600

CWDR #: 1000643

Requestor: BAKER BILLY
Group: MST6
Phone: 75191
TA: 03
Building: 35
Room: NRTHEQ
Z #: 092559

LESS THAN 90 DAYS (START DATE)20-AUG-91
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 27
Storage Code: MW6
RGN #: 17
HMTF/RMTT #:

Container Type: DM
Container Vol: 55

Reviewed By: 099848

Pickup Date&Time: 09/20/91 10:00
Picked Up By: 064281

Date Checked: 09/20/91
Checked By: 109152

Treat/Disp Loc:
Transported By:

EM7 Manifest#:
Other Document:

Treat/Ship By:
Treat/Ship Date:

TSDF Date:
Destruction #:
Destruction Date:

Item 1: PCB ID #02142, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE

Item 2: PCB ID #02145, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB ID #02146, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB ID #02147, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5: PCB ID #02148, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE

RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 6: PCB ID #02149, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 7: PCB ID #02150, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 8: PCB ID #02151, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 9: PCB ID #02158, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

PICKUP DATA FORM for CHEM WASTE

Container #:	C91021600	Requestor:	BAKER BILLY
		Group:	MST6
		Phone:	75191
		TA:	03
CWDR #:	1000643	Building:	35
		Room:	NRTHEQ
		Z #:	092559

LESS THAN 90 DAYS (START DATE)20-AUG-91
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

HSE-7 Code:	27	Reviewed By:	099848
Storage Code:	NONE		
RGN #:	17	Pickup Date&Time:	9-20-91
HMTF/RMTT #:		Picked Up By:	LE
		Date Checked:	9-24-91
Container Vol:	55	Checked By:	Glenn

Treat/Disp Loc:		Treat/Ship By:	
Transported By:		Treat/Ship Date:	
HSE7 Manifest#:		TSDF Date:	
Other Document:		Destruction #:	
Manifest Line:	00	Destruction Date:	

Item 1: PCB ID #02142, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE

Item 2: PCB ID #02145, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB ID #02146, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB ID #02147, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5: PCB ID #02148, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE

```
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  6: PCB ID #02149, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  7: PCB ID #02150, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  8: PCB ID #02151, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  9: PCB ID #02158, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G
```

CONTAINER SUMMARY

C91021600

EPA Code :	NONE		
RAD Code :	U238	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

CMWO WASTE DATA FORM

Container # : C91021599	Requestor : BAKER BILLY
	Group : MST6
	Phone : 75191
CWDR # : 1000643	TA : 03
	Building : 35
	Room : NRTHEQ
DT_ID # :	Z # : 092559

LESS THAN 90 DAYS (START DATE: 20-AUG-91)
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Other Con # :	
Storage Code :	PCB-O	Container Type :	DM
RGN # :	17	Container Vol :	55 G
Treat/Disp Loc :		Reviewed By :	099848
Transported By :		Data Entry By :	099848
		Qa Check By :	
Other Document :			
AreaG/J Loc :		Picked Up By/Date&Time:	064281 / 20-SEP-91 10:00
		Load Check By/Date:	109152 / 20-SEP-91
Treat/Ship By:		Pickup Update Check By :	
Treat/Ship Date :			
		Off-Site Check By/Date :	
TSDF Date :			
Destruction # :		Update By/Date :	
Destruction Date :		Final Update Check By :	

Item 1 : PCB ID #02141, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2 : PCB ID #02143, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3 : PCB ID #02144, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4 : PCB ID #02152, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5 : PCB ID #02153, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE

RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 6 :	PCB ID #02154, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 7 :	PCB ID #02155, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 8 :	PCB ID #02156, CAPACITOR (>500 PPM PCB)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 9 :	PCB ID #02157, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 10 :	PCB ID #02159, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

CMWO WASTE DATA FORM

Container # : C91021599	Requestor : BAKER BILLY
	Group : MST6
	Phone : 75191
CWDR # : 1000643	TA : 03
	Building : 35
	Room : NRTHEQ
DT_ID # :	Z # : 092559

LESS THAN 90 DAYS (START DATE: 20-AUG-91)
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Reviewed By :	099848
Storage Code :	MW6	Data Entry By :	099848
RGN #:	17	Qa Check By :	
HMTF/RMTT # :		Picked Up By :	064281
Other Con # :		Pickup Date&Time:	20-SEP-91 10:00
Container Type :	DM	Load Check By :	109152
Container Vol :	55	Date :	20-SEP-91
Treat/Disp Loc :		Treat/Ship By :	
Transported By :		Treat/Ship Date :	
Other Document :		TSDF Date :	
AreaG/J Loc :		Destruction # :	
		Destruction Date :	
Off-Site Check By :		Update By :	
Date :		Date :	

Item 1 : PCB ID #02141, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2 : PCB ID #02143, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3 : PCB ID #02144, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4 : PCB ID #02152, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5 : PCB ID #02153, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** 1.7 G **Weight:** 25 P
EPA Code : NONE

RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 6 :	PCB ID #02154, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 7 :	PCB ID #02155, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 8 :	PCB ID #02156, CAPACITOR (>500 PPM PCB)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 9 :	PCB ID #02157, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 10 :	PCB ID #02159, CAPACITOR (>500 PPM)				
WPN :	00499	Volume:	1.7 G	Weight:	25 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C91021599

EPA Code :	NONE		
RAD Code :	U238	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

PICKUP DATA FORM for CHEM WASTE

Container #: C91021599

CWDR #: 1000643

Requestor: BAKER BILLY
Group: MST6
Phone: 75191
TA: 03
Building: 35
Room: NRTHEQ
Z #: 092559

LESS THAN 90 DAYS (START DATE)20-AUG-91
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 27
Storage Code: MW6
RGN #: 17
HMTF/RMTT #:

Container Type: DM
Container Vol: 55

Reviewed By: 099848

Pickup Date&Time: 09/20/91 10:00
Picked Up By: 064281

Date Checked: 09/20/91
Checked By: 109152

Treat/Disp Loc:
Transported By:

EM7 Manifest#:
Other Document:

Treat/Ship By:
Treat/Ship Date:

TSDF Date:
Destruction #:
Destruction Date:

Item 1: PCB ID #02141, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2: PCB ID #02143, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB ID #02144, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB ID #02152, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5: PCB ID #02153, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P

```
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  6: PCB ID #02154, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  7: PCB ID #02155, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  8: PCB ID #02156, CAPACITOR (>500 PPM PCB)    WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  9: PCB ID #02157, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item 10: PCB ID #02159, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G
```

PICKUP DATA FORM for CHEM WASTE

Container #:	C91021599	Requestor:	BAKER BILLY
		Group:	MST6
		Phone:	75191
		TA:	03
CWDR #:	1000643	Building:	35
		Room:	NRTHEQ
		Z #:	092559

LESS THAN 90 DAYS (START DATE)20-AUG-91
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

HSE-7 Code:	27	Reviewed By:	099848
Storage Code:	NONE		
RGN #:	17	Pickup Date&Time:	9-20-91
HMTF/RMTT #:		Picked Up By:	LE
		Date Checked:	9-24-91
Container Vol:	55	Checked By:	Glenn

Treat/Disp Loc:		Treat/Ship By:	
Transported By:		Treat/Ship Date:	
HSE7 Manifest#:		TSDF Date:	
Other Document:		Destruction #:	
Manifest Line:	00	Destruction Date:	

Item 1: PCB ID #02141, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2: PCB ID #02143, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB ID #02144, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB ID #02152, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5: PCB ID #02153, CAPACITOR (>500 PPM) WPN: 00499
Volume: 1.7 G Weight: 25 P

```
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  6: PCB ID #02154, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25         P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  7: PCB ID #02155, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25         P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  8: PCB ID #02156, CAPACITOR (>500 PPM PCB)    WPN:  00499
        Volume:  1.7        G                     Weight:  25         P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  9: PCB ID #02157, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25         P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item 10: PCB ID #02159, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25         P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G
```

CMWO WASTE DATA FORM

Container # : C91021826	Requestor : BAKER BILLY
	Group : MST6
	Phone : 75191
CWDR # : 1000741	TA : 03
	Building : 66
	Room :
DT_ID # :	Z # : 092559

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Other Con # :	
Storage Code :	PCB-O	Container Type :	
RGN # :	17	Container Vol :	55 G
Treat/Disp Loc :		Reviewed By :	099848
Transported By :		Data Entry By :	087656
		Qa Check By :	
Other Document :			
AreaG/J Loc :		Picked Up By/Date&Time:	064281 / 24-SEP-91 10:00
		Load Check By/Date :	064281 / 24-SEP-91
Treat/Ship By:		Pickup Update Check By :	
Treat/Ship Date :			
		Off-Site Check By/Date :	
TSDF Date :			
Destruction # :		Update By/Date :	
Destruction Date :		Final Update Check By :	

Item 1 : PCB ID #91.02128 (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2 : PCB ID #91.02129, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3 : PCB ID #91.02130, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4 : PCB ID #91.02131, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5 : PCB ID #91.02132, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE

```
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  6: PCB ID #02154, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  7: PCB ID #02155, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  8: PCB ID #02156, CAPACITOR (>500 PPM PCB)    WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item  9: PCB ID #02157, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G

Item 10: PCB ID #02159, CAPACITOR (>500 PPM)        WPN:  00499
        Volume:  1.7        G                     Weight:  25          P
      EPA Code:  NONE
      RAD Code:  U238                    0.00E+00 curies    0.00E+00 nCi/G
```

CMWO WASTE DATA FORM

Container # : C91021826	Requestor : BAKER BILLY
	Group : MST6
	Phone : 75191
CWDR # : 1000741	TA : 03
	Building : 66
	Room :
DT_ID # :	Z # : 092559

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code : 27	Other Con # :
Storage Code : PCB-O	Container Type :
RGN # : 17	Container Vol : 55 G
Treat/Disp Loc :	Reviewed By : 099848
Transported By :	Data Entry By : 087656
	Qa Check By :
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 064281 / 24-SEP-91 10:00
	Load Check By/Date : 064281 / 24-SEP-91
Treat/Ship By :	Pickup Update Check By :
Treat/Ship Date :	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 : PCB ID #91.02128 (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2 : PCB ID #91.02129, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3 : PCB ID #91.02130, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4 : PCB ID #91.02131, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE
RAD Code : U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5 : PCB ID #91.02132, CAPACITOR (>500 PPM)
WPN : 00499 **Volume:** .5 L **Weight:** 55 P
EPA Code : NONE

RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

Item 6 :	PCB ID #91.02133, CAPACITOR (>500 PPM)				
WPN :	00499	**Volume:**	.5 L	**Weight:**	55 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C91021826

EPA Code :	NONE		
RAD Code :	U238	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

PICKUP DATA FORM for CHEM WASTE

Container #: C91021826	Requestor: BAKER BILLY
	Group: MST6
	Phone: 75191
	TA: 03
CWDR #: 1000741	Building:
	Room:
	Z #: 092559

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 27	Reviewed By: 099848
Storage Code: MW6	
RGN #: 17	Pickup Date&Time: 09/24/91 10:00
HMTF/RMTT #:	Picked Up By: 064281
Container Type:	Date Checked: 09/24/91
Container Vol: 55	Checked By: 064281
Treat/Disp Loc:	Treat/Ship By:
Transported By:	Treat/Ship Date:
EM7 Manifest#:	TSDF Date:
Other Document:	Destruction #:
	Destruction Date:

Item 1: PCB ID #91.02128 (>500 PPM) WPN: 00499
Volume: .5 L Weight: 55 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2: PCB ID #91.02129, CAPACITOR (>500 PPM) WPN: 00499
Volume: .5 L Weight: 55 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB ID #91.02130, CAPACITOR (>500 PPM) WPN: 00499
Volume: .5 L Weight: 55 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB ID #91.02131, CAPACITOR (>500 PPM) WPN: 00499
Volume: .5 L Weight: 55 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 5: PCB ID #91.02132, CAPACITOR (>500 PPM) WPN: 00499
Volume: .5 L Weight: 55 P

EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 6: PCB ID #91.02133, CAPACITOR (>500 PPM) WPN: 00499
Volume: .5 L Weight: 55 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

LOS ALAMOS
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE FORM

EM-8 USE ONLY
Reference number
C4999

Complete both sides of this form using a black or blue pen. Incomplete forms will be rejected. Send form to ATTN: WPF, MS K490

Division/Group	Telephone	Mail Stop	Technical Area	Building	Room
LS-4	7-8358	M.888	43	HRL-1	127

Method of Characterization
- [x] *Knowledge of Process* (KOP)
- [ ] MSDS attached (optional)
- OR -
- [ ] *Chemical/Physical Analysis* (specify below)
- [ ] Request for analysis
- [ ] Analysis attached

Waste Category *(Choose one or more of the categories below that most accurately describe your waste)*

[x] Flammable	[ ] Pesticide	[ ] Photographic	[ ] Spent coolant	[ ] Plastics
[ ] Combustible	[ ] Beryllium	[ ] Sanitary	[ ] Aerosol cans	[ ] Filter media
[ ] High explosive	[ ] Asbestos	[x] Radiochemistry	[ ] Motor oil	[ ] Vacuum filter media
[ ] DOT oxidizer	[ ] Solvent	[ ] Paint waste	[ ] Pump oil	[ ] Cement paste
[ ] Pyrophonc	[ ] Waste rags	[ ] Laboratory trash	[ ] Capacitor oil	[ ] Nonsalvageable
[ ] Cyanide	[ ] Glass	[ ] Metallurgic	[ ] UST remediation	[ ] Nonrecycleable
[ ] Heavy metal	[ ] Plating solution	[ ] Scrap metal	[ ] Contaminated soils	[ ] Building debris
[ ] Corrosive	[ ] Etchant	[ ] Medical/Biological	[ ] Environmental/SWMU	[ ] Firing site debris

General Description *(provide a general description of the waste and/or waste-generating process below)*

BILLIARD EXTRACTS CONTAINING ^{3}H-THYMIDINE IN BIOFLUOR

Waste Description

Form	Ignitability (F)	Corrosivity (pH)	Reactivity	PCBs
[ ] Solid	[ ] < 100°	[ ] 2.0 or less	[ ] Unstable	[ ] < 50 ppm
[ ] Semisolid/sludge	[x] 100° to 139°	[ ] 2.1 to 12.4	[ ] Water reactive	[ ] 50 to 500 ppm
[ ] Absorbed liquid	[ ] 140° to 200°	[ ] 12.5 or greater	[ ] Cyanides	[ ] > 500 ppm
[x] Liquid	[ ] > 200°	[x] Not aqueous	[ ] Sulfides	[x] None
[ ] Gas cylinder or vessel	[ ] Not ignitable		[ ] Shock sensitive	
[ ] Multilayered			[ ] Class A or B explosive	
[ ] Suspended solids			[x] Nonreactive	
[ ] Powder or ash				

Waste Origination

A. Is this waste generated in a radiation controlled area? [x] Yes [ ] No

B. If yes, is the waste generated or accumulated in a properly defined, registered radioactive materials management area (RMMA)? (RMMA # _____) [ ] Yes [x] No

C. If A is yes and you have determined that your waste is nonradioactive, provide justification in the additional comments section on the reverse side of this form.

Radioactivity

[ ] Nonradioactive [ ] Suspect [x] Radioactive

Activity Measure	Radiation Type	Half-life
[x] ≤ 2.0 nC/g	[ ] alpha	[ ] $t^{1/2}$ < 20 yr
[ ] > 2.0 nC/g	[x] beta	[ ] $t^{1/2}$ ≥ 20 yr
[ ] > 10.0 nC/g	[ ] gamma	
[ ] > 100 nC/g	[ ] tritium	

WASTE GENERATOR CERTIFICATION: *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Waste Generator's Name (last, first, middle)	Z Number	Signature	Date
WHARTON, WALKER RICHARD	Z093491	[signature]	5 JAN 93

If your waste management coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional) ---->	Name (last, first, middle)	Mail Stop
	STAFFORD, CAROLYN	M 880

Toxic Metals *(Indicate if each of the following heavy metals exists in your waste at the posted concentrations)*

arsenic	☒ None	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐ TCLP	☐ Other _____
barium	☒ None	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐ TCLP	☐ Other _____
cadmium	☒ None	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐ TCLP	☐ Other _____
chromium	☒ None	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐ TCLP	☐ Other _____
lead	☒ None	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐ TCLP	☐ Other _____
mercury	☒ None	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☐ TCLP	☐ Other _____
nickel	☒ None	☐ < 134.0 ppm	☐ ≥ 134.0 ppm	☐ TCLP	☐ Other _____
selenium	☒ None	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐ TCLP	☐ Other _____
silver	☒ None	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐ TCLP	☐ Other _____
thallium	☒ None	☐ < 130.0 ppm	☐ ≥ 130.0 ppm	☐ TCLP	☐ Other _____

Organic Compounds *(Indicate if each of the following organic compounds exists in your waste at the posted concentrations)*

benzene	☒ None	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐ TCLP	☐ Other _____
carbon tetrachloride	☒ None	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐ TCLP	☐ Other _____
chlorobenzene	☒ None	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐ TCLP	☐ Other _____
chloroform	☒ None	☐ < 6.0 ppm	☐ ≥ 6.0 ppm	☐ TCLP	☐ Other _____
cresol	☒ None	☐ < 200.00 ppm	☐ ≥ 200.0 ppm	☐ TCLP	☐ Other _____
1,4-dichlorobenzene	☒ None	☐ < 7.5 ppm	☐ ≥ 7.5 ppm	☐ TCLP	☐ Other _____
1,2-dichloroethane	☒ None	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐ TCLP	☐ Other _____
1,1-dichloroethylene	☒ None	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐ TCLP	☐ Other _____
2,4-dinitrotoluene	☒ None	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐ TCLP	☐ Other _____
hexachlorobenzene	☒ None	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐ TCLP	☐ Other _____
hexachlorobutadiene	☒ None	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐ TCLP	☐ Other _____
hexachloroethane	☒ None	☐ < 3.0 ppm	☐ ≥ 3.0 ppm	☐ TCLP	☐ Other _____
methyl ethyl ketone	☒ None	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐ TCLP	☐ Other _____
nitrobenzene	☒ None	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐ TCLP	☐ Other _____
pentachlorophenol	☒ None	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐ TCLP	☐ Other _____
pyridine	☒ None	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐ TCLP	☐ Other _____
tetrachloroethylene/perchloroethylene	☒ None	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐ TCLP	☐ Other _____
trichloroethylene	☒ None	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐ TCLP	☐ Other _____
2,4,5-trichlorophenol	☒ None	☐ < 400.0 ppm	☐ ≥ 400.0 ppm	☐ TCLP	☐ Other _____
2,4,6-trichlorophenol	☒ None	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐ TCLP	☐ Other _____
vinyl chloride	☒ None	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☐ TCLP	☐ Other _____

Hazardous Constituents *(Identify hazardous constituents for F- and K-listed wastes and substances causing waste to exhibit a characteristic)*

1,2,4 Trimethylbenzene (pseudocumene)

Additional Comments *(Provide comments regarding the chemical or radiological nature of the waste)*

Do not write in this box - EM-8 use only

Waste Classification

☐ Non-RCRA waste ☐ RCRA-regulated solid waste ☑ RCRA-regulated hazardous waste ☐ Radioactive only

☐ PCB ☐ municipal refuse ☐ hazardous waste ☐ low-level waste

☐ non-PCB TSCA waste ☐ nonhazardous chemical waste ☑ mixed low-level waste ☐ transuranic waste

☐ asbestos ☐ administratively controlled waste ☐ mixed transuranic waste

☐ sanitary/industrial sludges

RCRA Code 1	RCRA Code 2	RCRA Code 3	RCRA Code 4	RCRA Code 5	RCRA Code 6	RCRA Code 7	RCRA Code 8
D001							

EM-8 Reviewer's Signature	Date	Cost Center/Program Code for Analysis	Reference Number
Michelle Cash	1.8.93		04999

MATERIAL SAFETY DATA SHEET

DUPONT CATALOG NUMBER: NEF-961

DuPont Medical Products
331 Treble Cove Rd.
N. Billerica, MA 01862

Information and Emergencies:
Information: (508)667-9538
Emergency: (800) 441-3637
Transportation:
Chemtrec (800)424-9300
If in D.C. (800) 483-7616

The information which follows was developed to address Occupational Health and Safety Administration Hazard Communication Standard rules and may reflect information designed to provide the most conservative chemical safety guidelines for handling quantities of pure forms of chemicals or chemical components.

CHEMICAL NAME

SUBSTANCE: BIOFLUOR (TM) HIGH EFFICIENCY EMULSIFIER COCKTAIL

SYNONYMS: NEF-961; BIOFLUOR

HAZARDOUS INGREDIENTS AND REGULATORY LIMITS

COMPONENT:	CAS #	APPROXIMATE PERCENT:
1,2,4-TRIMETHYLBENZENE	95-63-6	> 50
POLOXAMER	9003-11-6	> 30

EXPOSURE LIMITS

1,2,4-TRIMETHYLBENZENE (PSEUDOCUMENE):
25 PPM (125 MG/M3) ACGIH TWA
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

POLOXAMER
NO OCCUPATIONAL EXPOSURE LIMITS ESTABLISHED BY OSHA, ACGIH, DUPONT OR NIOSH.

PHYSICAL DATA

BOILING POINT 760 mm Hg
RANGE: STARTS AT ~173 C (343 F)

EVAPORATION RATE: LESS THAN 1 (SLOWER)
(BUTYL ACETATE =1)

FREEZING POINT: APPROX. -50 C (-58 F)

% VOLATILES BY VOLUME: >50

SPECIFIC GRAVITY: 0.93 (H2O=1)

SOLUBILITY IN WATER: INMISCIBLE

VAPOR DENSITY: 4.1

VAPOR PRESSURE: NOT AVAILABLE

PH: 6% + H2O = APPROX. 4.2
50% + H2O = APPROX. 2.7

ODOR THRESHOLD: NOT AVAILABLE

DESCRIPTION: CLEAR TO SLIGHT BLUE FLUORESCENT LIQUID WITH AN AROMATIC ODOR.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD: COMBUSTIBLE LIQUID. MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME. VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK. VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

FLASH POINT: (118F) (48C) AUTOIGNITION TEMP.: NOT AVAILABLE
UPPER EXPLOSIVE LIMIT: NOT AVAILABLE LOWER EXPLOSIVE LIMIT: NOT AVAILABLE

FIREFIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, HALON, WATER SPRAY OR ALCOHOL FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

FIREFIGHTING: WEAR-SELF CONTAINED BREATHING APPARATUS TO PROTECT AGAINST THE HAZARDOUS BYPRODUCTS OF COMBUSTION: OXYGEN DEFICIENCY AND TOXIC FUMES.

HEALTH EFFECTS AND FIRST AID

1,2,4-TRIMETHYLBENZENE (PSEUDOCUMENE):

CARCINOGEN STATUS: NONE. 1,2,4-TRIMETHYLBENZENE IS AN IRRITANT TO THE SKIN, EYES AND MUCOUS MEMBRANES OF THE RESPIRATORY TRACT. IT IS MODERATELY TOXIC BY INHALATION AND INGESTION.

TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.
ROUTES OF ENTRY: INHALATION, INGESTION.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: PERSONS WITH A HISTORY OF CHRONIC SKIN OR RESPIRATORY DISORDERS MAY BE AT INCREASED RISK FROM EXPOSURE.

POLOXAMER:

CARCINOGEN STATUS: NONE. POLOXAMER IS AN EYE AND SKIN IRRITANT. THE TOXICITY OF THIS SUBSTANCE HAS NOT BEEN FULLY QUANTIFIED.
ROUTES OF ENTRY: INGESTION.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: PERSONS WITH A HISTORY OF CHRONIC SKIN DISORDERS MAY BE AT INCREASED RISK FROM EXPOSURE.

INHALATION:

1,2,4-TRIMETHYLBENZENE (PSEUDOCUMENE): IRRITANT/TOXIC/NARCOTIC.

ACUTE EXPOSURE- HIGH CONCENTRATIONS MAY CAUSE MUCOUS MEMBRANE IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION, AND CHEMICAL PNEUMONITIS.
CHRONIC EXPOSURE- TRIMETHYLBENZENE MAY CAUSE ASTHMATIC BRONCHITIS, HEADACHE, FATIGUE, TENSION, ANXIETY, NERVOUSNESS, AND DROWSINESS.

POLOXAMER: SEE BELOW.

ACUTE EXPOSURE- NO DATA AVAILABLE. DUE TO THE LOW DEGREE OF VOLATILITY OF POLOXAMERS, NO SIGNIFICANT HEALTH HAZARD FROM INHALATION IS LIKELY TO OCCUR AT NORMAL ROOM TEMPERATURES. INHALATION OF GENERATED MIST OR VAPORS PRODUCED FROM ELEVATED TEMPERATURES MAY CAUSE IRRITATION OF THE MUCOUS MEMBRANES.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

1,2,4-TRIMETHYLBENZENE (PSEUDOCUMENE): IRRITANT.

ACUTE EXPOSURE- MAY CAUSE IRRITATION. SYSTEMIC TOXICITY DUE TO ABSORPTION IS NOT PROBABLE.

CHRONIC EXPOSURE- PROLONGED OR REPEATED CONTACT WITH IRRITANTS MAY CAUSE DERMATITIS.

POLOXAMER: POSSIBLE IRRITANT.

ACUTE EXPOSURE- MAY CAUSE IRRITATION.

CHRONIC EXPOSURE- PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE IRRITATION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

1,2,4-TRIMETHYLBENZENE (PSEUDOCUMENE): IRRITANT.

ACUTE EXPOSURE- MAY CAUSE IRRITATION.

CHRONIC EXPOSURE- PROLONGED OR REPEATED CONTACT WITH IRRITANTS MAY CAUSE CONJUNCTIVITIS.

POLOXAMER: IRRITANT.

ACUTE EXPOSURE- CONTACT WITH THE CONCENTRATED SOLUTION MAY CAUSE IRRITATION.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

1,2,4-TRIMETHYLBENZENE (PSEUDOCUMENE): SEE BELOW.

ACUTE EXPOSURE- NO HUMAN DATA AVAILABLE.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

POLOXAMER: POSSIBLY TOXIC.

ACUTE EXPOSURE- INGESTION OF A LARGE DOSE MAY CAUSE DIARRHEA, WEAKNESS AND OTHER GASTROINTESTINAL DISTURBANCES. MOST POLOXAMERS ARE LOW IN ORAL TOXICITY.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- SEEK MEDICAL ATTENTION AND DIRECTION IMMEDIATELY. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. MAINTAIN OPEN AIRWAY AND RESPIRATION. IF VOMITING OCCURS, KEEP HEAD BELOW KNEES TO PREVENT ASPIRATION. WHEN A POISONOUS SUBSTANCE HAS BEEN INGESTED, IF THE VICTIM IS CONSCIOUS, REMOVAL BY GASTRIC LAVAGE OR EMESIS, WITH APPROPRIATE PRECAUTIONS TO PREVENT ASPIRATION, IS GENERALLY RECOMMENDED IN THE ABSENCE OF CORROSIVE INJURY. ONLY QUALIFIED MEDICAL PERSONNEL SHOULD PERFORM GASTRIC LAVAGE. WHEN A CORROSIVE SUBSTANCE HAS BEEN INGESTED, DILUTION BY RINSING THE MOUTH AND GIVING WATER OR MILK TO DRINK IS GENERALLY RECOMMENDED. IF PERFORATION HAS OCCURRED OR THE VICTIM IS UNCONSCIOUS, THE VICTIM SHOULD NOT BE GIVEN ANYTHING TO DRINK.

REACTIVITY

REACTIVITY: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES: OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.

DECOMPOSITION: THERMAL DECOMPOSITION MAY RELEASE TOXIC AND/OR HAZARDOUS GASES.

POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE, HANDLING, AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE: STORE IN ACCORDANCE WITH 29 CFR 1910.106. (COMBUSTIBLE LIQUID). STORE IN A COOL, DRY, WELL-VENTILATED AREA AWAY FROM HEAT, SOURCES OF IGNITION AND INCOMPATIBLE SUBSTANCES.

SPILL AND LEAK PROCEDURES

SHUT OFF IGNITION SOURCES. ASSURE ADEQUATE VENTILATION. WEAR PROTECTIVE EQUIPMENT. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO A SUITABLE CLEAN, DRY CONTAINER FOR LATER DISPOSAL.

FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION: PROVIDE LOCAL EXHAUST VENTILATION AND/OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR: THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORKPLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

MINIMUM RESPIRATORY PROTECTION: TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINOUS-FLOW MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES: VITON OR PVA (POLYVINYL ALCOHOL) GLOVES SHOULD PROVIDE ADEQUATE PROTECTION AGAINST CONTACT WITH THIS SUBSTANCE DURING NORMAL LABORATORY USE.

ABOUT CONTACT LENS USE: THE FOLLOWING IS A STATEMENT ISSUED AS A SERVICE TO THE BUSINESS COMMUNITY ON THE WEARING OF CONTACT LENSES IN THE WORKPLACE FROM THE NATIONAL SOCIETY TO PREVENT BLINDNESS (REVISED 3/87):

"WHEN THE WORK ENVIRONMENT ENTAILS EXPOSURES TO CHEMICALS, VAPORS, SPLASHES, RADIANT OR INTENSE HEAT, MOLTEN METALS OR A HIGHLY PARTICULATE ATMOSPHERE, CONTACT LENS USE SHOULD BE RESTRICTED ACCORDINGLY. HOWEVER, CONTACT LENS WEARERS MUST CONFORM TO THE PREROGATIVES AND DIRECTIONS OF THEIR OWN MANAGEMENT POLICIES REGARDING CONTACT LENS USE."

EMERGENCY WASH FACILITIES: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

****

THE DATA IN THIS MATERIAL SAFETY DATA SHEET RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AS PROVIDED IN DUPONT RESEARCH PRODUCTS AND DOES NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS. THE INFORMATION SET FORTH HEREIN IS FURNISHED FREE OF CHARGE AND IS BASED ON TECHNICAL DATA THAT DUPONT BELIEVES TO BE RELIABLE. IT IS INTENDED FOR USE BY PERSONS HAVING TECHNICAL SKILL AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION. NOTHING HEREIN IS TO BE TAKEN AS A LICENSE TO OPERATE UNDER OR A RECOMMENDATION TO INFRINGE ANY PATENTS.

CREATION DATE: MAY 4, 1989
REVISED JULY 24, 1989
2ND REVISION: SEPTEMBER 1, 1989

CMWO WASTE DATA FORM

Container # : C91022013	Requestor : VAUGHAN LARRY LEE
	Group : MEE9
	Phone : 76285
CWDR # : 1000232	TA : 03
	Building : 29
	Room : 5009
DT_ID # :	Z # : 015420

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA:
WASTE ACCUMULATED OR STORED IN A SECURITY AREA:

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Other Con # :	
Storage Code :	PCB-O	Container Type :	
RGN # :	17	Container Vol :	55 G
Treat/Disp Loc :		Reviewed By :	090019
Transported By :		Data Entry By :	101956
		Qa Check By :	
Other Document :			
AreaG/J Loc :		Picked Up By/Date&Time:	064281 / 23-SEP-91 10:30
		Load Check By/Date :	064281 / 23-SEP-91
Treat/Ship By :		Pickup Update Check By :	
Treat/Ship Date :			
		Off-Site Check By/Date :	
TSDF Date :			
Destruction # :		Update By/Date :	
Destruction Date :		Final Update Check By :	

Item 1 :	PCB ID #09133, CAPACITOR (>500 PPM)				
WPN :	00839	Volume:	1.46 G	Weight:	8.33 K
EPA Code :	NONE				
RAD Code :	U235	0.00E+00	curies	0.00E+00	nCi/G
RAD Code :	PU239	0.00E+00	curies	0.00E+00	nCi/G
Item 2 :	PCB ID #09134, CAPACITOR (>500 PPM)				
WPN :	00839	Volume:	1.46 G	Weight:	8.33 K
EPA Code :	NONE				
RAD Code :	U235	0.00E+00	curies	0.00E+00	nCi/G
RAD Code :	PU239	0.00E+00	curies	0.00E+00	nCi/G
Item 3 :	PCB ID #09135, CAPACITOR (>500 PPM)				
WPN :	00839	Volume:	1.46 G	Weight:	8.33 K
EPA Code :	NONE				
RAD Code :	U235	0.00E+00	curies	0.00E+00	nCi/G
RAD Code :	PU239	0.00E+00	curies	0.00E+00	nCi/G
Item 4 :	PCB ID #09136, CAPACITOR (>500 PPM)				
WPN :	00839	Volume:	1.46 G	Weight:	8.33 K
EPA Code :	NONE				
RAD Code :	U235	0.00E+00	curies	0.00E+00	nCi/G
RAD Code :	PU239	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C91022013

EPA Code :	NONE		
RAD Code :	PU239	0 curies	0 nCi/G
RAD Code :	U235	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

PICKUP DATA FORM for CHEM WASTE

Container #:	C91022013	Requestor:	VAUGHAN LARRY LEE
		Group:	MEE9
		Phone:	76285
		TA:	03
CWDR #:	1000232	Building:	29
		Room:	5009
		Z #:	015420

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA:
WASTE ACCUMULATED OR STORED IN A SECURITY AREA:

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code:	27	Reviewed By:	090019
Storage Code:	MW6		
RGN #:	17	Pickup Date&Time:	09/23/91 10:30
HMTF/RMTT #:		Picked Up By:	064281
Container Type:		Date Checked:	09/23/91
Container Vol:	55	Checked By:	064281

Treat/Disp Loc:	Treat/Ship By:
Transported By:	Treat/Ship Date:
EM7 Manifest#:	TSDF Date:
Other Document:	Destruction #:
	Destruction Date:

Item 1: PCB ID #09133, CAPACITOR (>500 PPM) WPN: 00839
Volume: 1.46 G Weight: 8.33 K
EPA Code: NONE
RAD Code: U235 0.00E+00 curies 0.00E+00 nCi/G
RAD Code: PU239 0.00E+00 curies 0.00E+00 nCi/G

Item 2: PCB ID #09134, CAPACITOR (>500 PPM) WPN: 00839
Volume: 1.46 G Weight: 8.33 K
EPA Code: NONE
RAD Code: U235 0.00E+00 curies 0.00E+00 nCi/G
RAD Code: PU239 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB ID #09135, CAPACITOR (>500 PPM) WPN: 00839
Volume: 1.46 G Weight: 8.33 K
EPA Code: NONE
RAD Code: U235 0.00E+00 curies 0.00E+00 nCi/G
RAD Code: PU239 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB ID #09136, CAPACITOR (>500 PPM) WPN: 00839
Volume: 1.46 G Weight: 8.33 K
EPA Code: NONE
RAD Code: U235 0.00E+00 curies 0.00E+00 nCi/G

```
      RAD Code:  PU239                    0.00E+00 curies    0.00E+00 nCi/G

Item  5: PCB ID #09137, CAPACITOR (>500 PPM)        WPN:  00839
        Volume:  1.46       G                     Weight:  8.33       K
      EPA Code:  NONE
      RAD Code:  U235                     0.00E+00 curies    0.00E+00 nCi/G
      RAD Code:  PU239                    0.00E+00 curies    0.00E+00 nCi/G

Item  6: PCB ID #09138, CAPACITOR (>500 PPM)        WPN:  00839
        Volume:  1.46       G                     Weight:  8.33       K
      EPA Code:  NONE
      RAD Code:  U235                     0.00E+00 curies    0.00E+00 nCi/G
      RAD Code:  PU239                    0.00E+00 curies    0.00E+00 nCi/G

Item  7: PCB ID #09075, CAPACITOR (>500 PPM)        WPN:  00839
        Volume:  1.46       G                     Weight:  8.33       K
      EPA Code:  NONE
      RAD Code:  U235                     0.00E+00 curies    0.00E+00 nCi/G
      RAD Code:  PU239                    0.00E+00 curies    0.00E+00 nCi/G

Item  8: PCB ID #09074, CAPACITOR (>500 PPM)        WPN:  00839
        Volume:  1.46       G                     Weight:  8.33       K
      EPA Code:  NONE
      RAD Code:  U235                     0.00E+00 curies    0.00E+00 nCi/G
      RAD Code:  PU239                    0.00E+00 curies    0.00E+00 nCi/G

Item  9: PCB ID #09125, CAPACITOR (>500 PPM)        WPN:  00839
        Volume:  1.46       G                     Weight:  8.33       K
      EPA Code:  NONE
      RAD Code:  U235                     0.00E+00 curies    0.00E+00 nCi/G
      RAD Code:  PU239                    0.00E+00 curies    0.00E+00 nCi/G
```

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

HSE 8 USE ONLY
Reference Number 00839

Complete both sides of this form using a black or blue pen. Inadequate information will result in processing delays.
Send completed form to: **ATTN: WPRF, MS K490**

Division Group	Telephone	Mail Stop	Technical Area	Building	Room
MEE-9	7-6285	6736	3	29	5016

☑ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☐ Analysis Attached

Choose one or more of the items below which best describes your waste:

☐ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☐ Solvent	☐ Paint Waste	☐ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☐ Waste Rags	☐ Laboratory Trash	☒ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
Capacitors (1) containing PCB Oil Sizes: 12½ x 13½ x 4
PCB id #'s Westinghouse 91-09107; Capacitor (1) Lepel - non-PCB

General Description Of Waste (check at least one block for each column): 8) Westinghouse Caps from Controlled Area: PCB id #'s 90-09133 -90-09138 90-09074, 90-09087 90-09125

FORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☐ Solid	☐ Less Than 100	☐ 2.0 or Less	☐ Unstable	☐ <50 ppm
☐ Cemented Sludge	☐ 100 to 139	☒ 2.1 to 12.4	☐ Reacts With Water	☐ 50-500 ppm
☐ Semi-Solid/Sludge	☐ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☒ >500 ppm
☐ Absorbed Liquid	☒ Greater Than 200	☐ Not Applicable	☐ Sulfides	☐ No PCBs
☒ Liquid	☐ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☒ Non-Reactive	
☐ Suspended Solids				
☐ Powder or Ash				

Indicate Known Radioactivity Of Your Waste:
☒ Not Radioactive (Go To Next Section)

☐ <2.0 nC/g	☐ Alpha
☐ >2.0 nC/g	☐ Beta
☐ >10.0 nC/g	☐ Gamma
☐ >100.0 nC/g	☐ Tritium

List Known Radioisotopes:
☐ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

GENERATOR CERTIFICATION

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Print Generator's Name (Last, First Mi)	Z Number	Generator's Signature	Date
VAUGHAN, LARRY LEE	15420	[signature]	8/5/91

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional).	Print Group Waste Coordinator's Name (Last, First Mi)	Mail Stop
	WILKERSON, MARK	G

Heavy Metals (indicate whether the following heavy metals exist in your waste, at the posted concentration)

	None			KOP	Analysis	TCLP	Other
Arsenic	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Barium	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Cadmium	☒	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
Chromium	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Lead	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Mercury	☒	☐ <0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐
Nickel	☒	☐ <134.0 ppm	☐ ≥ 134.0 ppm	☐	☐ →	☐	☐
Selenium	☒	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☐	☐ →	☐	☐
Silver	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Thallium	☒	☐ <130.0 ppm	☐ ≥ 130.0 ppm	☐	☐ →	☐	☐

Organic Compounds (indicate if the following organic compounds exist in your waste, at the posted concentration)

	None			KOP	Analysis	TCLP	Other
Benzene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Carbon Tetrachloride	☒	☐ <0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Chlorobenzene	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Chloroform	☒	☐ <6.0 ppm	☐ ≥ 6.0 ppm	☐	☐ →	☐	☐
Cresol	☒	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
1,4-Dichlorobenzene	☒	☐ < 7.5 ppm	☐ ≥ 7.5 ppm	☐	☐ →	☐	☐
1,2-Dichloroethane	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
1,1-Dichloroethylene	☒	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
2,4-Dinitrotoluene	☒	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
Hexachlorobenzene	☒	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☐	☐ →	☐	☐
Hexachlorobutadiene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
Hexachloroethane	☒	☐ < 3.0 ppm	☐ ≥ 3.0 ppm	☐	☐ →	☐	☐
Methyl Ethyl Ketone	☒	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☐	☐ →	☐	☐
Nitrobenzene	☒	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
Pentachlorophenol	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☐	☐ →	☐	☐
Pyridine	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☐	☐ →	☐	☐
Tetrachloroethylene	☒	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☐	☐ →	☐	☐
Trichloroethylene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☐	☐ →	☐	☐
2,4,5-Trichlorophenol	☒	☐ < 400.0 ppm	☐ ≥ 400.0 ppm	☐	☐ →	☐	☐
2,4,6-Trichlorophenol	☒	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☐	☐ →	☐	☐
Vinyl Chloride	☒	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☐	☐ →	☐	☐

CHECK ONE

☐ Additional hazardous components in the waste are listed below: ☒ There are no additional hazardous constituents in this waste.

	Compound Name	Concentration		Compound Name	Concentration
1.			5.		
2.			6.		
3.			7.		
4.			8.		

HSE-8/HSE-7 USE ONLY (Do Not Write Below This Line)

WASTE CLASSIFICATION

☑ Non-Radioactive, Non-Hazardous
- ☐ Solid Waste
- ☒ Non-Regulated Chemical Waste
- ☐ Sanitary Waste
- ☐ Other Non-Disposable Waste

☐ Radioactive
- ☐ Low-Level Radioactive Waste
- ☐ Transuranic Waste
- ☐ Special Nuclear Material

☐ Hazardous or Mixed
- ☐ Hazardous Waste
- ☐ Mixed Low-Level Waste
- ☐ Mixed Transuranic Waste

Hazardous or Mixed Waste Codification:

Waste Code 1	Waste Code 2	Waste Code 3	Waste Code 4	Waste Code 5	Waste Code 6	Waste Code 7

HSE-8 Reviewer's Signature	Date	Cost Center/ProgramCode For HSE Analysis Backcharge
Jeff A. Carnahan	8-5-91	

CMWO WASTE DATA FORM

Container # : C92026834	Requestor : VIGIL FRANCINE
	Group : EM7
CWDR # : 1001849	Phone : 53082
	TA : 54
	Building: 39
	Room: 102
DT_ID # :	Z # : 090019

NON RCRA STORAGE ONLY

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO

WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name : HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code : 37	Other Con # :
Storage Code : NONE MW	Container Type :
RGN # : 17	Container Vol : 55 GAL
Treat/Disp Loc :	Reviewed By : 090019
Transported By :	Data Entry By : 101956
	Qa Check By :
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 097501 / 21-FEB-92 10:00
	Load Check By/Date:
Treat/Ship By:	Pickup Update Check By :
Treat/Ship Date :	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 :	REPK-92026383,91023333,5538,5474				
WPN :	02975	**Volume:**	55 G	**Weight:**	250 K
EPA Code :	NONE				
RAD Code :	H3	0.00E+00	curies	0.00E+00	nCi/G

PICKUP DATA FORM for CHEM WASTE

Container #:	C92026834	Requestor:	VIGIL FRANCINE
		Group:	EM7
		Phone:	53082
		TA:	54
CWDR #:	1001849	Building:	39
		Room:	102
		Z #:	090019

NON RCRA STORAGE ONLY
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name:	HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code:	ORM-E
DOT #:	NA9188

EM-7 Code:	00	Reviewed By:	090019
Storage Code:	NONE		
RGN #:	17	Pickup Date&Time:	02/21/92 10:00
HMTF/RMTT #:		Picked Up By:	097501
Other Con #:			
Container Type:		Date Checked:	02/21/92
Container Vol:	55 GAL	Checked By:	

Treat/Disp Loc:		Treat/Ship By:	
Transported By:		Treat/Ship Date:	
EM7 Manifest#:		TSDF Date:	
Other Document:		Destruction #:	
		Destruction Date:	

Item 1: REPK-92026383,91023333,5538,5474 WPN: 02975
Volume: 55 G Weight: 250 K
EPA Code: NONE

RMMA

PICKUP DATA FORM for CHEM WASTE

Container #:	C92026834	Requestor:	VIGIL FRANCINE
		Group:	EM7
		Phone:	53082
		TA:	54
CWDR #:	1001849	Building:	39
		Room:	102
		Z #:	090019

NON RCRA STORAGE ONLY
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name: HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code:	00	Reviewed By:	090019
Storage Code:	NONE		
RGN #:	17	Pickup Date&Time:	21-FEB-92
HMTF/RMTT #:		Picked Up By:	DB
Other Con #:			
Container Type:		Date Checked:	
Container Vol:	55 GAL	Checked By:	

Treat/Disp Loc:		Treat/Ship By:	
Transported By:		Treat/Ship Date:	
EM7 Manifest#:		TSDF Date:	
Other Document:		Destruction #:	
		Destruction Date:	

Item 1: PCB OIL
Volume: 55 G
EPA Code: NONE

WPN: 02975
Weight: ~~200~~ 250 kg K

CONTAINER SUMMARY

C92026834

EPA Code :	NONE		
RAD Code :	H3	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE				RECEIVING SITE			
ALPHA CONTAMINATION(DPM/100CM2)	.	E	+/-		.	E	+/-	
BETA-GAMMA CONT.(DPM/100CM2)	.	E	+/-		.	E	+/-	
GAMMA DOSE RATE(MREM/H)	.	E	+/-		.	E	+/-	
SURVEY METER MODEL/PROPERTY NO.								

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

CMWO WASTE DATA FORM

Container # : C92026834	Requestor : VIGIL FRANCINE
CWDR # : 1001849	Group : EM7
	Phone : 53082
	TA : 54
	Building : 39
	Room : 102
DT_ID # :	Z # : 090019

NON RCRA STORAGE ONLY

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: NO

WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name : HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code : 37	Other Con # :
Storage Code : PCB-O	Container Type :
RGN # : 17	Container Vol : 55 G
Treat/Disp Loc :	Reviewed By : 090019
Transported By :	Data Entry By : 101956
	Qa Check By :
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 097501 / 21-FEB-92 10:00
	Load Check By/Date :
Treat/Ship By :	Pickup Update Check By :
Treat/Ship Date :	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 :	REPK-92026383,91023333,5538,5474				
WPN :	02975	**Volume:**	55 G	**Weight:**	250 K
EPA Code :	NONE				
RAD Code :	H3	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C92026834

EPA Code :	NONE		
RAD Code :	H3	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

HSE 8 USE ONLY
Reference Number 02975

Complete both sides of this form using a black or blue pen. Inadequate information will result in processing delays.
Send completed form to: ATTN: WPRF, MS K490

Division/Group	Telephone	Mail Stop	Technical Area	Building	Room
CM-7	5-3032	J593	54	39	102

☒ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☐ Analysis Attached

Choose one or more of the items below which best describes your waste:

☐ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☐ Solvent	☐ Paint Waste	☒ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☐ Waste Rags	☐ Laboratory Trash	☒ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
Collection Drum for PCB Oil BAR Code #'s C92026383, C91203333, C91025538, C91025474

General Description Of Waste (check at least one block for each column):

FORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☐ Solid	☐ Less Than 100	☐ 2.0 or Less	☒ Unstable	☐ <50 ppm
☐ Cemented Sludge	☐ 100 to 139	☐ 2.1 to 12.4	☐ Reacts With Water	☐ 50-500 ppm
☐ Semi-Solid/Sludge	☐ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☒ >500 ppm
☐ Absorbed Liquid	☒ Greater Than 200	☒ Not Applicable	☐ Sulfides	☐ No PCBs
☒ Liquid	☒ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☒ Non-Reactive	
☐ Suspended Solids				
☐ Powder or Ash				

Indicate Known Radioactivity Of Your Waste:
☒ Not Radioactive (Go To Next Section)

☐ < 2.0 nC/g	☐ Alpha
☐ > 2.0 nC/g	☐ Beta
☐ > 10.0 nC/g	☐ Gamma
☐ > 100.0 nC/g	☐ Tritium

List Known Radioisotopes:
☐ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

GENERATOR CERTIFICATION

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Print Generator's Name (Last, First Mi)	Z Number	Generator's Signature	Date
Hughes, Larry L.	64167	L. L. Hughes	2-11-92

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional). RECEIVED FEB 12 1992

Print Group Waste Coordinators Name (Last, First Mi) E. M. [illegible]
Mail Stop J593

DATA FORM

ID #: D899407 B

CWDR #: 19891114131005

REQUESTOR: ESQUIBEL L
GROUP: ENG1
PHONE: 53082
TA: 03
BUILDING: 29
ROOM:
WING:
Z #: 064281

SHIPPING NAME: WASTE POLYCHLORINATED BIPHENYLS
HAZARD CODE: ORM-E
D.O.T. #: UN2315

HSE-7 CODE: 37
STORAGE LOC.: MW6
RGN #:
RMTT #:

CONTAINER VOL: .210 M3

REVIEWED BY: AJM
PICK UP DATE: 11/14/89
PICKED UP BY: EV
PICK UP TIME: 13:20

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE: 00

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

CLEANUP WATER WITH PCB AND RAD
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: .000 KG

DATA FORM

ID #: D899408 B

CWDR #: 19891114131005

REQUESTOR: ESQUIBEL L
GROUP: ENG1
PHONE: 53082
TA: 03
BUILDING: 29
ROOM:
WING:
Z #: 064281

SHIPPING NAME: POLYCHLORINATED BIPHENYLS
HAZARD CODE:
D.O.T. #: UN2315

HSE-7 CODE: 27
STORAGE LOC.: MW6
RGN #:
RMTT #:

CONTAINER VOL: .210 M3

REVIEWED BY: ajm
PICK UP DATE: 11/14/89
PICKED UP BY: EV
PICK UP TIME: 13:20

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE: 00

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

CLEANUP WATER WITH PCB AND RAD
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: .000 KG

SHIPPING REPORT

CWDR #:19891114131005

ID #:D 899408B

REQUESTOR: ESQUIBEL L GROUP:ENG1 PHONE: 53082

PICKUP DATE: 11/14/89 PICKUP TIME: 13:20 PICKED UP BY:EV

TA: 03 BUILDING: 29 WING: ROOM:

CHECKED BY:_____ DATE CHECKED:_____

SHIPPING NAME: POLYCHLORINATED BIPHENYLS

DOT HAZ: DOT #: UN2315 RCRA CODE: NONE

H7 CODE: 27 STORAGE LOCATION: MW6 CONTAINER VOLUME: .21

REVBY: AJM RGN #: WEIGHT:_____

RMTT #: LINE #:00 DISPOSITION BY:

HSE-7 INTERNAL MANIFEST NUMBER: TRANSPORTED BY:

DISPOSAL LOCATION: DISPOSAL DATE:--------

CWDR/RSWD/MANIFEST/J PIT-POST-LAYER #:

TSDF DATE:--------

CERTIFICATE #: DESTRUCTION DATE:--------

****

CLEANUP WATER WITH PCB AND RAD

.208 m3 0. Kg NONE

DATA FORM

ID #: D91007415B

CWDR #: 19910604084922

REQUESTOR: SALAZAR NICK
GROUP: CTRDO
PHONE: 70362
TA: 54
BUILDING: 39
ROOM:
WING:
Z #: 038637

SHIPPING NAME: HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB FLUSH)
HAZARD CODE: ORM-E
D.O.T. #: ~~NA9188~~ NA 9188

HSE-7 CODE: 37
STORAGE LOC.: MW6
RGN #: 017
RMTT #:

CONTAINER VOL: .208 M3

REVIEWED BY: AJM
PICK UP DATE:
PICKED UP BY:
PICK UP TIME:

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE:

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

PCB FLUSH F/91004543 (709 PPM PCB)
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: 200.000 KG

Requested by	Z Number	Group	phone	Tech. Area	Buildg. Area	Wing	Room
SALAZAR NICK	038637	CTRDO	70362	54	39		

Pickup number	Reviewed	Pickup date - time	Pickup by
19910604084922	AJM	-	

NUM. CON.	VOLUME EACH	WEIGHT U. EACH	CHEMICAL NAME	CONTAINER IDENTIFIER
1	55.00	G.186.50	K.PCB OIL F/91004543 (709 PPM PCB)	D 91004631 B.
			WASTE PROFILE NUM	

H7CODE	RGN	DOT HAZARD	DOT UN OR NA
[37]	[017]	[ORM-E]	[NA9188]

DOT SHIPPING NAME
[HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB OIL)
RCRA CODES: [NONE] [ ] [ ] [ ] [ ] [ ] [ ]

CONTAINER ID	TOT VOL	LOCATION	RMTTNO	PCBID	REMOV DATE	TYPE	<>	CONC PPM
D91004631B	55.00	MW6				O	>	500.0

Type the information, then use ENTER.

91007415

DATA FORM

ID #: D91004631B

CWDR #: 19910604084922

REQUESTOR: SALAZAR NICK
GROUP: CTRDO
PHONE: 70362
TA: 54
BUILDING: 39
ROOM:
WING:
Z #: 038637

SHIPPING NAME: HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB OIL)
HAZARD CODE: ORM-E
D.O.T. #: NA9188

HSE-7 CODE: 37
STORAGE LOC.: MW6
RGN #: 017
RMTT #:

CONTAINER VOL: .210 M3

REVIEWED BY: AJM
PICK UP DATE: 06/10/91
PICKED UP BY: LE
PICK UP TIME: 10:00

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE:

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

PCB OIL F/91004543 (709 PPM PCB)
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: 186.500 KG

PICKUP DATA FORM for CHEM WASTE

Container #: C91023360

CWDR #: 1001101

Requestor: GOOSNEY GORDON
Group: P9
Phone: 75211
TA: 03
Building: 16
Room: 65
Z #: 085842

SATELLITE
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA:
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 30
Storage Code: NONE
RGN #: 17
HMTF/RMTT #:

Container Type: DM 55gal
Container Vol: ~~30~~ GAL

Reviewed By: 090019

Pickup Date&Time: 10/24/91
Picked Up By: Danny

Date Checked: 11/1/91
Checked By: [illegible]

Treat/Disp Loc:
Transported By:

EM7 Manifest#:
Other Document:

Treat/Ship By:
Treat/Ship Date:

TSDF Date:
Destruction #:
Destruction Date:

Item 1: PCB CAPACITORS (2)
Volume: 10 G
EPA Code: NONE
PCB # 02137
02138

WPN: 02182
Weight: ~~160~~ P
90.5 Kg

CMWO WASTE DATA FORM

Container # : C91023360	Requestor : GOOSNEY GORDON
	Group : P9
	Phone : 75211
CWDR # : 1001101	TA : 03
	Building : 16
	Room : 65
DT_ID # :	Z # : 085842

SATELLITE

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES

WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code : 27	Other Con # :
Storage Code : PCB-O	Container Type : DM
RGN # : 17	Container Vol : 55 GAL
Treat/Disp Loc :	Reviewed By : 090019
Transported By :	Data Entry By : 101956
	Qa Check By :
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 097501 / 24-OCT-91 10:00
	Load Check By/Date: 064281 / 24-OCT-91
Treat/Ship By:	Pickup Update Check By :
Treat/Ship Date:	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 : PCB CAPACITORS (2) PCB# 02137, 02138

WPN :	02182	**Volume:**	10 G	**Weight:**	90.5 K
EPA Code :	NONE				
RAD Code :	H3	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C91023360

EPA Code :	NONE		
RAD Code :	H3	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

CMWO WASTE DATA FORM

Container # : C91023025	Requestor : GOOSNEY GORDON
	Group : P9
	Phone : 75211
CWDR # : 1001101	TA : 03
	Building : 16
	Room : 65
DT_ID # :	Z # : 085842

SATELLITE

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES

WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Other Con # :	
Storage Code :	PCB-O	Container Type :	DM
RGN # :	17	Container Vol :	55 GAL
Treat/Disp Loc :		Reviewed By :	090019
Transported By :		Data Entry By :	101956
		Qa Check By :	
Other Document :			
AreaG/J Loc :		Picked Up By/Date&Time:	097501 / 24-OCT-91 10:00
		Load Check By/Date :	064281 / 24-OCT-91
Treat/Ship By :		Pickup Update Check By :	
Treat/Ship Date :			
		Off-Site Check By/Date :	
TSDF Date :			
Destruction # :		Update By/Date :	
Destruction Date :		Final Update Check By :	

Item 1 : PCB CAPACITORS (2) PCB# 02135, 02136

WPN :	02182	**Volume:**	4 Q	**Weight:**	96.5 K
EPA Code :	NONE				
RAD Code :	H3	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C91023025

EPA Code :	NONE		
RAD Code :	H3	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

LOS ALAMOS

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO 87545

For LLE Use Only
Reference Number

WASTE PROFILE REQUEST

Provide all information requested on both sides of this form in black or blue ink, inadequate information will result in processing delays
Send completed form to: ATTN: WPRF, MS K490

Div/Group	Telephone	Mail Stop	Tech Area	Building	Room
P-9	7-5211	K480	3	SM16	65

☐ *Knowledge of Process -->* ☐ MSDS Attached ☒ *Chemical/Physical Analyses (specify) -->* ☐ Request for analysis ☒ Analysis attached

Choose one or more of the items below which best describes your waste:

☐ flammable	☐ pesticide	☐ photographic	☐ spent coolant	☐ plastics
☐ combustible	☐ beryllium	☐ sanitary	☐ aerosol cans	☐ filter media
☐ corrosive	☐ asbestos	☐ radiochemistry	☐ motor oil	☐ vacuum filter sludge
☐ high explosive	☐ solvent	☐ paint waste	☐ pump oil	☐ cement paste
☐ oxidizer	☐ waste rags	☐ laboratory trash	☒ capacitor oil	☐ non-salvageable
☐ pyrophoric	☐ glass	☐ metallurgic	☐ UST remediation	☐ non-revyclable
☐ cyanide	☐ plating solution	☐ scrap metal	☐ soils	☐ building debris
☐ heavy metal	☐ etchant	☐ medical/biological	☐ environmental	☐ firing site debris

Additional description (optional): PCB OIL FILLED CAPACITORS (4)

General Description of Waste (check at least one block for each column):

Form	*Flash Point (°F)*	*pH*	*Reactivity*	*PCBs*
☐ solid	☐ less than 100	☐ 2.0 or less	☐ unstable	☐ < 50 ppm
☐ cemented sludge	☐ 100 to 139	☐ 2.1 to 12.4	☐ reacts with water	☐ 50-500 ppm
☐ semi-solid/sludge	☒ 140 to 200	☐ 12.5 or greater	☐ cyanides	☒ > 500 ppm
☐ absorbed liquid	☐ greater than 200	☒ not applicable	☐ sulfides	☐ no PCBs
☒ liquid	☐ none		☐ shock sensitive	
☐ gas			☐ class A or B explosive	
☐ multi-layer			☒ non-reactive	
☐ suspended solids				
☐ powder or ash				

Indicate known radioactivity of your waste:

☒ not radioactive (skip the rest of this section)

☐ < 2.0 nC/g	☐ alpha
☐ > 2.0 nC/g	☐ beta
☐ > 10.0 nC/g	☐ gamma
☐ > 100.0 nC/g	☐ tritium

List known radioistopes:

☐ determined by assay ☐ determined by estimate

radioisotope 1. _____ activity/unit of measure _____

radioisotope 2. _____ activity/unit of measure _____

radioisotope 3. _____ activity/unit of measure _____

radioisotope 4. _____ activity/unit of measure _____

GENERATOR CERTIFICATION: *Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Generator's Name (last, first, mi)	Z Number	Signature	Date
GOOSNEY, GORDON	85842	Gordon R. Goosney	8-1-91

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional) -->	Group Waste Coordinator (last first mi)	Mail Stop
	CHAPARRO GREGG A.	K480

PICKUP DATA FORM for CHEM WASTE

Container #:	C91023025	Requestor:	GOOSNEY GORDON
		Group:	P9
		Phone:	75211
		TA:	03
CWDR #:	1001101	Building:	16
		Room:	65
		Z #:	085842

SATELLITE
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YE
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code:	30	Reviewed By:	090019
Storage Code:	NONE		
RGN #:	17	Pickup Date&Time:	
HMTF/RMTT #:		Picked Up By:	
Container Type:		Date Checked:	
Container Vol:	30 GAL	Checked By:	

Treat/Disp Loc:		Treat/Ship By:	
Transported By:		Treat/Ship Date:	
EM7 Manifest#:		TSDF Date:	
Other Document:		Destruction #:	
		Destruction Date:	

Item 1: PCB CAPACITORS (2) WPN: 02182
Volume: 10 G Weight: 160 P
EPA Code: NONE

Item 2: PCB CAPACITORS (2) WPN: 02182
Volume: 4 Q Weight: 40 P
EPA Code: NONE

Item 1: PCB ~~CAPACITORS~~ 2
[redacted] #02136, 02138 [redacted] 235
[redacted]

[redacted]
[redacted] # 02135 [redacted] 35
[redacted]

PICKUP DATA FORM for CHEM WASTE

Container #: C91023025	Requestor: GOOSNEY GORDON
	Group: P9
	Phone: 75211
	TA: 03
CWDR #: 1001101	Building: 16
	Room: 65
	Z #: 085842

SATELLITE
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YE
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 30	Reviewed By: 090019
Storage Code: NONE	
RGN #: 17	Pickup Date&Time:
HMTF/RMTT #:	Picked Up By:
Container Type:	Date Checked:
Container Vol: 30 GAL	Checked By:
Treat/Disp Loc:	Treat/Ship By:
Transported By:	Treat/Ship Date:
EM7 Manifest#:	TSDF Date:
Other Document:	Destruction #:
	Destruction Date:

Item 1: PCB CAPACITORS (2) WPN: 02182
Volume: 10 G Weight: 160 P
EPA Code: NONE

Item 2: PCB CAPACITORS (2) WPN: 02182
Volume: 4 Q Weight: 40 P
EPA Code: NONE

Item 1: PCB CAPACITORS 2
PCB I.D #02136, 02138 weight 63.5
63.0

Item 2: PCB CAPACITORS
PCB ID # 02135 02137 weight 3.5
11.0 k

PICKUP DATA FORM for CHEM WASTE

Container #: C91023025

CWDR #: 1001101

Requestor: GOOSNEY GORDON
Group: P9
Phone: 75211
TA: 03
Building: 16
Room: 65
Z #: 085842

SATELLITE
WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: NO

Shipping Name: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB CAPACITORS)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 30
Storage Code: NONE
RGN #: 17
HMTF/RMTT #:

Container Type: DM
Container Vol: 55 GAL

Reviewed By: 090019

Pickup Date&Time: 10/24/91
Picked Up By: Danny

Date Checked: 11/1/91
Checked By: Lee E

Treat/Disp Loc:
Transported By:

EM7 Manifest#:
Other Document:

Treat/Ship By:
Treat/Ship Date:

TSDF Date:
Destruction #:
Destruction Date:

Item 1: PCB CAPACITORS (2)
Volume: 4 Q
EPA Code: NONE

WPN: 02182
Weight: 40 P

PCB # 02135
02136

96.5 Kg

DATA FORM

ID #: D91006760B

CWDR #: 19910807164138

REQUESTOR: SALAZAR NICOLAS
GROUP: CTRDO
PHONE: 70362
TA: 03
BUILDING: 105
ROOM: 104
WING:
Z #: 038637

SHIPPING NAME: WASTE COMBUSTIBLE LIQUID, N.O.S. (PCB OIL)
HAZARD CODE: COMBUSTIBLE LIQUID
D.O.T. #: NA1993

HSE-7 CODE: 37
STORAGE LOC.: MW1
RGN #: 101
RMTT #:

CONTAINER VOL: .210 M3

REVIEWED BY: fsv
PICK UP DATE: 08/16/91
PICKED UP BY: CWM
PICK UP TIME: 14:00

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S912958
MANIFEST LINE: 1

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

INSULATING OIL W/RAD
VOLUME: .208M3
RCRA CODE: NONE

WPN: 00666
WEIGHT: 158.758 KG

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

Reference Number: [illegible]

Complete both sides of this form using a black or blue pen. Inadequate information will result in processing delays.
Send completed form to: ATTN: WPRF, MS K490

Division/Group	Telephone	Mail Stop	Technical Area	Building	Room
CTR-DO	7-0362	K-638	3	SM-105	104

☐ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☑ Analysis Attached

Choose one or more of the items below which best describes your waste:

☐ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☐ Solvent	☐ Paint Waste	☐ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☐ Waste Rags	☐ Laboratory Trash	☑ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
3 - 55 gal Drums Insulating Oil, Radioactive (Beta)
See analysis attached

General Description Of Waste (check at least one block for each column):

FORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☐ Solid	☐ Less Than 100	☐ 2.0 or Less	☐ Unstable	☐ <50 ppm
☐ Cemented Sludge	☐ 100 to 139	☐ 2.1 to 12.4	☐ Reacts With Water	☑ 50-500 ppm
☐ Semi-Solid/Sludge	☑ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☐ >500 ppm
☐ Absorbed Liquid	☐ Greater Than 200	☑ Not Applicable	☐ Sulfides	☐ No PCBs
☑ Liquid	☐ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☑ Non-Reactive	
☐ Suspended Solids				
☐ Powder or Ash				

Indicate Known Radioactivity Of Your Waste:
☐ Not Radioactive (Go To Next Section)

☐ <2.0 nC/g	☐ Alpha
☑ >2.0 nC/g	☑ Beta
☐ >10.0 nC/g	☐ Gamma
☐ >100.0 nC/g	☐ Tritium

List Known Radioisotopes:
☑ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

GENERATOR CERTIFICATION

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Print Generator's Name (Last, First Mi)	Z Number	Generator's Signature	Date
Nicolas L. Salazar	38637	[signature]	6/20

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional).	Print Group Waste Coordinators Name (Last, First Mi)	Mail Stop
	Nicolas L. Salazar	K-638

DATA FORM

ID #: D904535 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #:
RMTT #: 077202

CONTAINER VOL: .210 M3

REVIEWED BY: AJM
PICK UP DATE: 06/08/90
PICKED UP BY: JG
PICK UP TIME: 10:30

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902728
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6
VOLUME: .208M3
RCRA CODE: F003
RCRA CODE: D001

WPN:
WEIGHT: 45.359 KG

DATA FORM

ID #: D904535 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #:
RMTT #: 077202

CONTAINER VOL: .210 M3

REVIEWED BY: ajm
PICK UP DATE: 06/08/90
PICK UP TIME:

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902728
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6
VOLUME: .208M3
RCRA CODE: ~~NONE~~ F003
D001

WPN:
WEIGHT: ~~199.581 KG~~
100 pounds

DATA FORM

ID #: D904535 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #:
RMTT #: 077202

CONTAINER VOL: .210 M3

REVIEWED BY: ajm
PICK UP DATE: 06/08/90
PICK UP TIME:

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902728
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: 199.581 KG

CMWO WASTE DATA FORM

Container # : 904536	Requestor : SHAPLAND DAVID Group : MST14 Phone : 74653
CWDR # : 19900502095357	TA : 03 Building: 29 Room: ATTIC
DT_ID # :	Z # : 084298

WASTE GENERATED OR ACCUMULATED IN A RADIOACTIVE MATERIALS MANAGEMENT AREA:

Shipping Name : "RQ" ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (PCB'S)
Hazard Class : 9
DOT ID# : UN3077 Packing Group : III
Additional Desc :

EM-7 Code : 20 - CHEMICAL/RAD WASTE	Other Con # :
Storage Code : PCB-O	Container Type :
RGN # :	Container Vol : .21 M
Treat/Disp Loc :	Reviewed By : CWM
Transported By :	Data Entry By : 101956
	DOT Check By : RPG 6/18/97
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 093697 / 08-JUN-90 10:30
	Load Check By/Date:
Treat/Ship By:	Pickup Update Check By :
Treat/Ship Date:	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 : OIL IN VERMICULITE W/PCB
WPN :
EPA Code : NONE

Volume: .2082 M **Weight:** 113.3982 K

DATA FORM

ID #: D904536 B	REQUESTOR: SHAPLAND DAVID
	GROUP: MST14
	PHONE: 74653
	TA: 03
CWDR #: 19900502095357	BUILDING: 29
	ROOM: ATTIC
	WING: 7
	Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20	REVIEWED BY: AJM
STORAGE LOC.: MW6	PICK UP DATE: 06/08/90
RGN #:	PICKED UP BY: JG
RMTT #: 077203	PICK UP TIME: 10:30
	DATE CHECKED: _____
CONTAINER VOL: .210 M3	CHECKED BY: _____
TREAT/DISP LOC:	TREAT/SHIP BY: JG
TRANSPORTED BY:	TREAT/SHIP DATE:
HSE7 MANIFEST#:	TSDF DATE:
OTHER DOCUMENT: S902740	DESTRUCTION #:
MANIFEST LINE:	DESTRUCTION DATE:

OIL IN VERMICULITE W/PCB
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: 113.398 KG

DATA FORM

ID #: D904536 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #:
RMTT #: 077203

CONTAINER VOL: .210 M3

REVIEWED BY: ajm
PICK UP DATE: 06/08/90
PICKED UP BY: JG
PICK UP TIME: 10:30

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902740
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

OIL IN VERMICULITE W/PCB
VOLUME: .208M3
RCRA CODE: ~~NONE~~ ✓

WPN:
WEIGHT: ~~199.581 KG~~
250 pounds

DATA FORM

ID #: D904536 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20	REVIEWED BY: ajm
STORAGE LOC.: MW6	PICK UP DATE: 06/08/90
RGN #:	PICKED UP BY: JG
RMTT #: 077203	PICK UP TIME: 10:30
	DATE CHECKED: _____
CONTAINER VOL: .210 M3	CHECKED BY: _____
TREAT/DISP LOC:	TREAT/SHIP BY: JG
TRANSPORTED BY:	TREAT/SHIP DATE:
HSE7 MANIFEST#:	TSDF DATE:
OTHER DOCUMENT: S902740	DESTRUCTION #:
MANIFEST LINE:	DESTRUCTION DATE:

OIL IN VERMICULITE W/PCB
VOLUME: .208M3
RCRA CODE: NONE

WPN:
WEIGHT: 199.581 KG

CMWO WASTE DATA FORM

Container # : C92026729	Requestor : MARTINEZ ROSEMARY
	Group : MST6
CWDR # : 1001765	Phone : 75843
	TA : 03
	Building : 66
	Room : B100
DT_ID # :	Z # : 078849

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name : HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	27	Other Con # :	
Storage Code :	PCB-O	Container Type :	DM
RGN # :	17	Container Vol :	55 G
Treat/Disp Loc :		Reviewed By :	090019
Transported By :		Data Entry By :	101956
		Qa Check By :	
Other Document :			
AreaG/J Loc :		Picked Up By/Date&Time:	064281 / 05-MAR-92 02:00
		Load Check By/Date:	064281 / 05-MAR-92
Treat/Ship By:		Pickup Update Check By :	
Treat/Ship Date :			
		Off-Site Check By/Date :	
TSDF Date :			
Destruction # :		Update By/Date :	
Destruction Date :		Final Update Check By :	

Item 1 :	PCB CAPACITOR ID# 02176				
WPN :	02954	**Volume:**	2 G	**Weight:**	20 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 2 :	PCB CAPACITOR ID# 02177				
WPN :	02954	**Volume:**	2 G	**Weight:**	20 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 3 :	PCB CAPACITOR ID# 02178				
WPN :	02954	**Volume:**	2 G	**Weight:**	20 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G
Item 4 :	PCB CAPACITOR ID# 02179				
WPN :	02954	**Volume:**	2 G	**Weight:**	20 P
EPA Code :	NONE				
RAD Code :	U238	0.00E+00	curies	0.00E+00	nCi/G

CONTAINER SUMMARY

C92026729

EPA Code :	NONE		
RAD Code :	U238	0 curies	0 nCi/G
	TOTAL:	0 curies	0 nCi/G

EM-7 APPROVAL

EM-7 APPROVAL STATEMENT: MY SIGNATURE CERTIFIES THAT THE WASTE DESCRIBED ON THIS APPLICATION IS ACCEPTABLE, AS DESCRIBED, FOR STORAGE BY EM-7 RADWASTE SECTION

EM-7 APPROVER(PRINT OR STAMP)	APPROVER SIGNATURE	DATE APPROVED

HEALTH PHYSICS INFORMATION

SITE	GENERATOR SITE	RECEIVING SITE
ALPHA CONTAMINATION(DPM/100CM2)	. E +/-	. E +/-
BETA-GAMMA CONT.(DPM/100CM2)	. E +/-	. E +/-
GAMMA DOSE RATE(MREM/H)	. E +/-	. E +/-
SURVEY METER MODEL/PROPERTY NO.		

THE DATA IN THIS SECTION WERE COLLECTED AS PRESCRIBED IN APPROVED PROCEDURES

PRINTED NAME		
SIGNATURE		
DATE		

STORAGE LOCATION INFORMATION

STORAGE DATE	AREA	SHAFT	BLDG.	COLUMN	LAYER	ROW	PAD	POST(S)	LAYER	POSITION

CONTAINER RECEIVED BY:	CONTAINER STORED BY:

PICKUP DATA FORM for CHEM WASTE

Container #:	C92026729	Requestor:	MARTINEZ ROSEMARY
		Group:	MST6
		Phone:	75843
		TA:	03
CWDR #:	1001765	Building:	66
		Room:	B100
		Z #:	078849

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YES
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code:	37	Reviewed By:	090019
Storage Code:	NONE		
RGN #:	17	Pickup Date&Time:	03/05/92 02:00
HMTF/RMTT #:		Picked Up By:	064281
Other Con #:			
Container Type:	DM	Date Checked:	03/05/92
Container Vol:	55 GAL	Checked By:	064281

Treat/Disp Loc:		Treat/Ship By:	
Transported By:		Treat/Ship Date:	
EM7 Manifest#:		TSDF Date:	
Other Document:		Destruction #:	
		Destruction Date:	

Item 1: PCB CAPACITOR ID# 02176 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 2: PCB CAPACITOR ID# 02177 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 3: PCB CAPACITOR ID# 02178 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

Item 4: PCB CAPACITOR ID# 02179 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE
RAD Code: U238 0.00E+00 curies 0.00E+00 nCi/G

PICKUP DATA FORM for CHEM WASTE

Container #: C92026729	Requestor: MARTINEZ ROSEMARY
	Group: MST6
	Phone: 75843
	TA: 03
CWDR #: 1001765	Building: 66
	Room: B100
	Z #: 078849

WASTE GENERATED OR ACCUMULATED IN A RADIOLOGICAL MATERIAL MANAGEMENT AREA: YE
WASTE ACCUMULATED OR STORED IN A SECURITY AREA: YES

Shipping Name: HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PCB)
Hazard Code: ORM-E
DOT #: NA9188

EM-7 Code: 07	Reviewed By: 090019
Storage Code: NONE	
RGN #: 17	Pickup Date&Time: 3/5/92 2:00 P.M.
HMTF/RMTT #:	Picked Up By: Lee E Esgrubel
Other Con #:	
Container Type: DF	Date Checked:
Container Vol: 55 GAL	Checked By:

Treat/Disp Loc:	Treat/Ship By:
Transported By:	Treat/Ship Date:
EM7 Manifest#:	TSDF Date:
Other Document:	Destruction #:
	Destruction Date:

Item 1: PCB CAPACITOR ID# 02176 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE

Item 2: PCB CAPACITOR ID# 02177 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE

Item 3: PCB CAPACITOR ID# 02178 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE

Item 4: PCB CAPACITOR ID# 02179 WPN: 02954
Volume: 2 G Weight: 20 P
EPA Code: NONE

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

HSE-8 USE ONLY
Reference Number

Complete both sides of this form using a black or blue pen. Inadequate information will result in processing delays.
Send completed form to: **ATTN: WPRF, MS K490**

Division/Group	Telephone	Mail Stop	Technical Area	Building	Room
MS-6	7-5843	G770	TA-3	SM-66	B100

☒ Knowledge of Process
☐ MSDS Attached

☐ Chemical/Physical Analyses (Specify Below)
☐ Request For Analysis ☐ Analysis Attached

Choose one or more of the items below which best describes your waste:

☐ Flammable	☐ Pesticide	☐ Photographic	☐ Spent Coolant	☐ Plastics
☐ Combustible	☐ Beryllium	☐ Sanitary	☐ Aerosol Cans	☐ Filter Media
☐ High Explosive	☐ Asbestos	☐ Radiochemistry	☐ Motor Oil	☐ Vacuum Filter Sludge
☐ Oxidizer	☐ Solvent	☐ Paint Waste	☐ Pump Oil	☐ Cement Paste
☐ Pyrophoric	☐ Waste Rags	☐ Laboratory Trash	☒ Capacitor Oil	☐ Non-Salvageable
☐ Cyanide	☐ Glass	☐ Metallurgic	☐ UST Remediation	☐ Non-Recyclable
☐ Heavy Metal	☐ Plating Solution	☐ Scrap Metal	☐ Soils	☐ Building Debris
☐ Corrosive	☐ Etchant	☐ Medical/Biological	☐ Environmental	☐ Firing Site Debris

Additional Description (Optional)
(4 ea) capacitors ID(S) # 02177, 02178 02179, 02176

General Description Of Waste (check at least one block for each column):

FORM	FLASH POINT (°F)	pH	REACTIVITY	PCBs
☒ Solid	☐ Less Than 100	☐ 2.0 or Less	☐ Unstable	☐ <50 ppm
☐ Cemented Sludge	☐ 100 to 139	☐ 2.1 to 12.4	☐ Reacts With Water	☐ 50-500 ppm
☐ Semi-Solid/Sludge	☐ 140 to 200	☐ 12.5 or Greater	☐ Cyanides	☒ >500 ppm
☐ Absorbed Liquid	☐ Greater Than 200	☒ Not Applicable	☐ Sulfides	☐ No PCBs
☒ Liquid	☒ None		☐ Shock Sensitive	
☐ Gas			☐ Class A or B Explosive	
☐ Multi-Layer			☒ Non-Reactive	
☐ Suspended Solids				
☐ Powder or Ash				

Indicate Known Radioactivity Of Your Waste:

☒ Not Radioactive (Go To Next Section)

☐ <2.0 nC/g	☐ Alpha
☐ >2.0 nC/g	☐ Beta
☐ >10.0 nC/g	☐ Gamma
☐ >100.0 nC/g	☐ Tritium

List Known Radioisotopes:

☐ Determined By Assay ☐ Determined By Estimate

Radioisotope 1. _____ Activity/Unit of Measure _____
Radioisotope 2. _____ Activity/Unit of Measure _____
Radioisotope 3. _____ Activity/Unit of Measure _____
Radioisotope 4. _____ Activity/Unit of Measure _____

GENERATOR CERTIFICATION

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on t form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submittin false information, including the possibility of fines and imprisonment for knowing violations.

Print Generator's Name (Last, First Mi)	Z Number	Generator's Signature	Date
MARTINEZ, Rosemary E	78849	[illegible]	2/7/9

If your Group's Waste Coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional).	Print Group Waste Coordinators Name,(Last, First Mi)	Mail Stop
	JAN Clements	G770

Heavy Metals (indicate whether the following heavy metals exist in your waste, at the posted concentration):

	None			KOP	Analysis	TCLP	Other
Arsenic	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☒	☐ →	☐	☐
Barium	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☒	☐ →	☐	☐
Cadmium	☒	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☒	☐ →	☐	☐
Chromium	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☒	☐ →	☐	☐
Lead	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☒	☐ →	☐	☐
Mercury	☒	☐ <0.2 ppm	☐ ≥ 0.2 ppm	☒	☐ →	☐	☐
Nickel	☒	☐ <134.0 ppm	☐ ≥ 134.0 ppm	☒	☐ →	☐	☐
Selenium	☒	☐ < 1.0 ppm	☐ ≥ 1.0 ppm	☒	☐ →	☐	☐
Silver	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☒	☐ →	☐	☐
Thallium	☒	☐ <130.0 ppm	☐ ≥ 130.0 ppm	☒	☐ →	☐	☐

Organic Compounds (indicate if the following organic compounds exist in your waste, at the posted concentration):

	None			KOP	Analysis	TCLP	Other
Benzene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☒	☐ →	☐	☐
Carbon Tetrachloride	☒	☐ <0.5 ppm	☐ ≥ 0.5 ppm	☒	☐ →	☐	☐
Chlorobenzene	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☒	☐ →	☐	☐
Chloroform	☒	☐ <6.0 ppm	☐ ≥ 6.0 ppm	☒	☐ →	☐	☐
Cresol	☒	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☒	☐ →	☐	☐
1,4-Dichlorobenzene	☒	☐ < 7.5 ppm	☐ ≥ 7.5 ppm	☒	☐ →	☐	☐
1,2-Dichloroethane	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☒	☐ →	☐	☐
1,1-Dichloroethylene	☒	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☒	☐ →	☐	☐
2,4-Dinitrotoluene	☒	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☒	☐ →	☐	☐
Hexachlorobenzene	☒	☐ < 0.13 ppm	☐ ≥ 0.13 ppm	☒	☐ →	☐	☐
Hexachlorobutadiene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☒	☐ →	☐	☐
Hexachloroethane	☒	☐ < 3.0 ppm	☐ ≥ 3.0 ppm	☒	☐ →	☐	☐
Methyl Ethyl Ketone	☒	☐ < 200.0 ppm	☐ ≥ 200.0 ppm	☒	☐ →	☐	☐
Nitrobenzene	☒	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☒	☐ →	☐	☐
Pentachlorophenol	☒	☐ < 100.0 ppm	☐ ≥ 100.0 ppm	☒	☐ →	☐	☐
Pyridine	☒	☐ < 5.0 ppm	☐ ≥ 5.0 ppm	☒	☐ →	☐	☐
Tetrachloroethylene	☒	☐ < 0.7 ppm	☐ ≥ 0.7 ppm	☒	☐ →	☐	☐
Trichloroethylene	☒	☐ < 0.5 ppm	☐ ≥ 0.5 ppm	☒	☐ →	☐	☐
2,4,5-Trichlorophenol	☒	☐ < 400.0 ppm	☐ ≥ 400.0 ppm	☒	☐ →	☐	☐
2,4,6-Trichlorophenol	☒	☐ < 2.0 ppm	☐ ≥ 2.0 ppm	☒	☐ →	☐	☐
Vinyl Chloride	☒	☐ < 0.2 ppm	☐ ≥ 0.2 ppm	☒	☐ →	☐	☐

CHECK ONE

☐ Additional hazardous components in the waste are listed below: ☒ There are no additional hazardous constituents in this waste.

	Compound Name	Concentration		Compound Name	Concentration
1.			5.		
2.			6.		
3.			7.		
4.			8.		

HSE-8/HSE-7 USE ONLY (Do Not Write Below This Line)

WASTE CLASSIFICATION

☒ Non-Radioactive, Non-Hazardous
- ☐ Solid Waste
- ☒ Non-Regulated Chemical Waste
- ☐ Sanitary Waste
- ☐ Other Non-Disposable Waste

☐ Radioactive
- ☐ Low-Level Radioactive Waste
- ☐ Transuranic Waste
- ☐ Special Nuclear Material

☐ Hazardous or Mixed
- ☐ Hazardous Waste
- ☐ Mixed Low-Level Waste
- ☐ Mixed Transuranic Waste

Hazardous or Mixed Waste Codification:

Waste Code 1	Waste Code 2	Waste Code 3	Waste Code 4	Waste Code 5	Waste Code 6	Waste Code 7

HSE-8 Reviewer's Signature	Date	Cost Center/ProgramCode For HSE Analysis Backcharge
[illegible]	2/10/92	

DATA FORM

ID #: D91002959L

CWDR #: 19910402161349

REQUESTOR: FILER TERRY
GROUP: HSE9
PHONE: 74164
TA: 50
BUILDING: 01
ROOM: 131
WING:
Z #: 082345

SHIPPING NAME: HAZARDOUS SUBSTANCE,LIQUID,N.O.S.(PCB OIL)
HAZARD CODE: ORM-E
D.O.T. #: NA9188
RCRA CODE: NONE

HSE-7 CODE: 37
STORAGE LOC.: MW6
RGN #: 017
RMTT #: 105915

CONTAINER VOL: .050 M3

REVIEWED BY: ajm
PICK UP DATE: 05/06/91
PICKED UP BY: BR
PICK UP TIME: 15:08

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S911533
MANIFEST LINE: 1

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

OIL (>50 PPM PCB)
VOLUME: .053M3
RCRA CODE: NONE
WPN: 910307-50001131-1
WEIGHT: 4.536 KG

VIALS & PIPETTES W/OIL (>50 PPM PCB)
VOLUME: .028M3
RCRA CODE: NONE
WPN: 910307-50001131-2
WEIGHT: 2.268 KG

OIL (>50 PPM PCB)
VOLUME: .002M3
RCRA CODE: NONE
WPN: 910307-50001131-1
WEIGHT: 2.500 KG

DATA FORM

ID #: D91002959L

CWDR #: 19910402161349

REQUESTOR: FILER TERRY
GROUP: HSE9
PHONE: 74164
TA: 50
BUILDING: 01
ROOM: 131
WING:
Z #: 082345

SHIPPING NAME: HAZARDOUS SUBSTANCE,LIQUID,N.O.S.(PCB OIL)
HAZARD CODE: ORM-E
D.O.T. #: NA9188
RCRA CODE: NONE

HSE-7 CODE: 37
STORAGE LOC.: MW6
RGN #: 017
RMTT #:

CONTAINER VOL: .050 M3

REVIEWED BY: AJM
PICK UP DATE: 05/06/91
PICKED UP BY: BR
PICK UP TIME: 15:08

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE: 1

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

OIL (>50 PPM PCB)
VOLUME: .053 M3
RCRA CODE: NONE
WPN: 910307-50001131-1
WEIGHT: 4.536 KG

VIALS & PIPETTES W/OIL (>50 PPM PCB)
VOLUME: .028 M3
RCRA CODE: NONE
WPN: 910307-50001131-2
WEIGHT: 2.268 KG

OIL (>50 PPM PCB)
VOLUME: .002 M3
RCRA CODE: NONE
WPN: 910307-50001131-1
WEIGHT: 2.500 KG

CMWO WASTE DATA FORM

Container # : 91004476	Requestor : FILER TERRY
CWDR # : 19910503145251	Group : HSE9
	Phone : 74164
	TA : 50
	Building : 01
	Room : 131
DT_ID # :	Z # : 082345

WASTE GENERATED OR ACCUMULATED IN A RADIOACTIVE MATERIALS MANAGEMENT AREA:

Shipping Name : "RQ" ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB'S)
Hazard Class : 9
DOT ID# : UN3077 Packing Group : III
Additional Desc :

EM-7 Code : 37 - PCB/RAD WASTE	Other Con # :
Storage Code : MW6	Container Type :
RGN # :	Container Vol : .01 M
Treat/Disp Loc :	Reviewed By : 113170
Transported By :	Data Entry By : 101956
	DOT Check By : RPA 9/18/91
Other Document :	
AreaG/J Loc :	Picked Up By/Date&Time: 088896 / 19-JUN-91 10:56
	Load Check By/Date :
Treat/Ship By :	Pickup Update Check By :
Treat/Ship Date :	
	Off-Site Check By/Date :
TSDF Date :	
Destruction # :	Update By/Date :
Destruction Date :	Final Update Check By :

Item 1 :	PIPETTES W/PCB OIL				
WPN :	910307500011312	**Volume:**	.04 M	**Weight:**	3.63 K
EPA Code :	NONE				
RAD Code :	PU238	0.00E+00	curies	0.00E+00	nCi/G
RAD Code :	PU239	0.00E+00	curies	0.00E+00	nCi/G

CMWO WASTE DATA FORM

Container # : 91004476	Requestor : FILER TERRY
CWDR # : 19910503145251	Group : HSE9
	Phone : 74164
	TA : 50
	Building : 01
	Room : 131
DT_ID # :	Z # : 082345

WASTE GENERATED OR ACCUMULATED IN A RADIOACTIVE MATERIALS MANAGEMENT AREA:
WASTE ACCUMULATED OR STORED IN A SECURITY AREA:

Shipping Name : HAZARDOUS SUBSTANCE, SOLID, N.O.S. (POLYCHLORINATED BIPHENYLS)
Hazard Code : ORM-E
DOT # : NA9188

EM-7 Code :	37 - PCB/RAD WASTE	Other Con # :	
Storage Code :	MW6	Container Type :	
RGN # :		Container Vol :	.01 M
Treat/Disp Loc :		Reviewed By :	099848
Transported By :		Data Entry By :	OLDHP
		DOT Check By :	
Other Document :			
AreaG/J Loc :		Picked Up By/Date&Time:	088896 / 19-JUN-91 10:56
		Load Check By/Date :	
Treat/Ship By :		Pickup Update Check By :	
Treat/Ship Date :			
		Off-Site Check By/Date :	
TSDF Date :			
Destruction # :		Update By/Date :	
Destruction Date :		Final Update Check By :	

Item 1 : PIPETTES W/PCB OIL
WPN : 910307500011312 **Volume:** .04 M **Weight:** 3.63 K
EPA Code : NONE

DATA FORM

ID #: G91004476L

CWDR #: 19910503145251

REQUESTOR: FILER TERRY
GROUP: HSE9
PHONE: 74164
TA: 50
BUILDING: 01
ROOM: 131
WING:
Z #: 082345

SHIPPING NAME: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB OIL)
HAZARD CODE: ORM-E
D.O.T. #: NA9188

HSE-7 CODE: 37
STORAGE LOC.: MW6
RGN #:
RMTT #: 105913

CONTAINER VOL: .010 M3

REVIEWED BY: AJM
PICK UP DATE: 06/19/91
PICKED UP BY: BR
PICK UP TIME: 10:56

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S913022
MANIFEST LINE:

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

PIPETTES W/PCB OIL
VOLUME: .040M3
RCRA CODE: NONE

WPN: 910307-50001131-2
WEIGHT: 3.630 KG

DATA FORM

ID #: G91004476L

CWDR #: 19910503145251

REQUESTOR: FILER TERRY
GROUP: HSE9
PHONE: 74164
TA: 50
BUILDING: 01
ROOM: 131
WING:
Z #: 082345

SHIPPING NAME: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB OIL)
HAZARD CODE: ORM-E
D.O.T. #: NA9188

HSE-7 CODE: 37
STORAGE LOC.: G6
RGN #:
RMTT #: 105913

CONTAINER VOL: .010 M3

REVIEWED BY: ajm
PICK UP DATE: 06/19/91
PICKED UP BY: BR
PICK UP TIME: 10:56

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S913022
MANIFEST LINE:

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

PIPETTES W/PCB OIL
VOLUME: .040M3
RCRA CODE: NONE

WPN: 910307-50001131-2
WEIGHT: 3.630 KG

DATA FORM

RSWO 5.91-3022
Ti TAG 105913

ID #: G91004476L

CWDR #: 19910503145251

REQUESTOR: FILER TERRY
GROUP: HSE9
PHONE: 74164
TA: 50
BUILDING: 01
ROOM: 131
WING:
Z #: 082345

SHIPPING NAME: HAZARDOUS SUBSTANCE, SOLID, N.O.S. (PCB OIL)
HAZARD CODE: ORM-E
D.O.T. #: NA9188
RCRA CODE: NONE ? ~~Area G, Dome Storage~~

HSE-7 CODE: 37
STORAGE LOC.: NONE
RGN #:
RMTT #:

CONTAINER VOL: .004 M3 .011

REVIEWED BY: AJM
PICK UP DATE: 6/19/91
PICKED UP BY: BRAEV.
PICK UP TIME: 1056

DATE CHECKED: 6/20/91
CHECKED BY: MG

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT:
MANIFEST LINE:

TREAT/SHIP BY:
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

PIPETTES W/PCB OIL
VOLUME: .004 M3
RCRA CODE: NONE

WPN: 910307-50001131-2
WEIGHT: 3.629 KG

Area-G TA-54
Dome Storage

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

[redacted] 0507-5080151-1

1. Division/Group	2. Telephone	3. Tech Area	4. Building	5. Room Number	6. Mail Stop
HSE-9	7-4164	TA50	One	131	E 518

- Complete for each SPENT chemical WASTE only if one gallon or more.
- If KNOWLEDGE OF PROCESS is used to characterize the waste, complete all applicable boxes and send this form to Waste Management (HSE-7), MS J593.
- If CHEMICAL and/or PHYSICAL ANALYSIS is required, complete the form through Block 10 and contact HSE-8 (5-0455) to arrange for sample collection and analysis. When the results of the analyses are received, complete the form and send it to HSE-7.
- GENERATOR CERTIFICATION must be signed to complete the form. Do not sign until the form is complete.

7. Describe the process which generated the waste.
Oil from Radioactive Screening of PCB Suspect Oils

8. Indicate the method used to characterize the waste:
☒ Knowledge of process ☐ Chemical/physical analysis *(attach copy of the analysis including detection limits)*

9. Indicate analyses performed to characterize the waste *(check all applicable)*
☐ Heavy metals ☐ Organics ☐ PCBs ☐ Pesticides ☐ Solvent screen

10. Describe the waste below:
☐ Solid ☒ Liquid ☐ Single Layer ☐ Multiphased ☒ Color: Black
☐ Sludge ☐ Gas ☒ Two Layers ☐ Suspended Solids ☐ Other:

11. Flash Point (F)	12. pH	13. Paint Filter Test	14. Reactivity
☐ <70 ☐ None	☐ ≤2.0	☐ Free Liquid	☐ Unstable at STP
☐ 70-100	☐ 2.1-6.0	☐ No Free Liquid	☐ Reacts with water
☐ 101-139	☐ 6.1-7.9		☐ May release toxic fumes
☐ 140-200	☐ 8.0-12.4		☐ Shock sensitive
☐ >200	☐ ≥12.5		☐ Class A or B explosive

[redacted]

DOT Proper Shipping Name [redacted]

EPA Hazardous Waste Code [redacted]
WW14

Lab Performing Analyses [redacted]

HS Form Number 10-3B (7/90)

37
MW6

15. Metals Analysis

Metal	Concentration (mg/L)	Test Method(s)	
		☐ TCLP ☐ Total ☐ Other: _____	☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____	☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____	☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____	☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____	☐ Knowledge of Process

16. Organics Analysis

☐ Total Organic Carbon (TOC) _____ % ☐ Total Organic Halogens (TOX) _____ %

Constituent	Concentration (mg/L)	Test Method(s)	
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process

17. Radioactivity Analysis

☒ Radioactive ☒ Low-level ☐ Transuranic ☒ ≤ 2 nCi/g ☐ >2 nCi/g ☒ Alpha ☒ Beta ☒ Gamma ☐ Tritium

Isotope	Activity (nCi/g)	Test Method(s)	
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process
		☐ Test Method: _____	☐ Knowledge of Process

GENERATOR CERTIFICATION: To the Best of my knowledge, I certify that the information provided in the unshaded areas above is correct. I also understand that I may be liable for state and federal prosecution by intentionally providing false information.

Generator's Name *(Print)*	Z Number	Telephone	Signature	Date
TERRY D FILER	82345	7-4164	Terry D Filer	3/7/91

HS-Form Number 10-38 (7/90)

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

WASTE PROFILE REQUEST

WPRF Number: 910507-5000131-2

1. Division/Group	2. Telephone	3. Tech Area	4. Building	5. Room Number	6. Mail Stop
HSE-9	7-4164	TA50	one	131	E518

- Complete for each SPENT chemical WASTE only if one gallon or more.
- If KNOWLEDGE OF PROCESS is used to characterize the waste, complete all applicable boxes and send this form to Waste Management (HSE-7), MS J593.
- If CHEMICAL and/or PHYSICAL ANALYSIS is required, complete the form through Block 10 and contact HSE-8 (5-0455) to arrange for sample collection and analysis. When the results of the analyses are received, complete the form and send it to HSE-7.
- GENERATOR CERTIFICATION must be signed to complete the form. Do not sign until the form is complete.

7. Describe the process which generated the waste.
Residual oil in Glass and Polyethylene Vials and polyethylene pipettes. This from the Radioactive Screening of oils suspected of PCB Contamination

8. Indicate the method used to characterize the waste:
☒ Knowledge of process ☐ Chemical/physical analysis *(attach copy of the analysis including detection limits)*

9. Indicate analyses performed to characterize the waste *(check all applicable)*
☐ Heavy metals ☐ Organics ☐ PCBs ☐ Pesticides ☐ Solvent screen

10. Describe the waste below:
☐ Solid ☐ Liquid ☐ Single Layer ☒ Multiphased ☐ Color: ____
☐ Sludge ☐ Gas ☐ Two Layers ☐ Suspended Solids ☐ Other: ____

11. Flash Point (F)	12. pH	13. Paint Filter Test	14. Reactivity
☐ <70 ☐ None	☐ ≤2.0	☐ Free Liquid	☐ Unstable at STP
☐ 70-100	☐ 2.1-6.0	☐ No Free Liquid	☐ Reacts with water
☐ 101-139	☐ 6.1-7.9		☐ May release toxic fumes
☐ 140-200	☐ 8.0-12.4		☐ Shock sensitive
☐ >200	☐ ≥12.5		☐ Class A or B explosive

DOT Proper Shipping Name	DOT Hazard Class	UN/NA Number
[redacted]	[redacted]	[redacted]

EPA Hazardous Waste Code(s): NONE [redacted]

Lab Performing Analyses	Address/Mail Stop	Telephone	Date
[redacted]	[redacted]	[redacted]	[redacted]

HS Form Number 10-3B (7/90)

15. Metals Analysis

Metal	Concentration (mg/L)	Test Method(s)
		☐ TCLP ☐ Total ☐ Other: _____ ☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____ ☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____ ☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____ ☐ Knowledge of Process
		☐ TCLP ☐ Total ☐ Other: _____ ☐ Knowledge of Process

16. Organics Analysis

☐ Total Organic Carbon (TOC) _____ % ☐ Total Organic Halogens (TOX) _____ %

Constituent	Concentration (mg/L)	Test Method(s)
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process

17. Radioactivity Analysis

☒ Radioactive ☒ Low-level ☐ Transuranic ☒ ≤ 2 nCi/g ☐ >2 nCi/g ☒ Alpha ☒ Beta ☒ Gamma ☐ Tritium

Isotope	Activity (nCi/g)	Test Method(s)
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process
		☐ Test Method: _____ ☐ Knowledge of Process

GENERATOR CERTIFICATION: To the Best of my knowledge, I certify that the information provided in the unshaded areas above is correct. I also understand that I may be liable for state and federal prosecution by intentionally providing false information.

Generator's Name *(Print)*	Z Number	Telephone	Signature	Date
TERRY C. FILER	83345	7-4164	Terry D. Filer	3/7/9[illegible]

HS-Form Number 10-3B (7/90)

WASTE PROFILE REQUEST FORM

** Reviewed by HSE-8 **

[redacted]

1. Division/Group	2. Telephone	3. Tech Area	4. Building	5. Room	6. Mail Stop
HSE-09	7-4164	50	001	131	E518

- Complete for each SPENT chemical WASTE only if one gallon or more.
- If KNOWLEDGE OF PROCESS is used to characterize the waste, complete all unshaded boxes and send this form to the Waste Management Group (HSE-7), MS J593.
- If CHEMICAL/PHYSICAL ANALYSES is requested, complete the form through Block 10 and contact HSE-8 (5-0455) to arrange for sample collection and analysis. When the results of the analyses are received, complete the form and send it to HSE-7.
- GENERATOR CERTIFICATION must be signed in order to complete the form. Do not sign this form until the form is complete.

7. Describe the process which generated the waste.

RESIDUAL OIL IN GLASS AND POLYETHYLENE VIALS AND POLYETHYLENE PIPETTES. THIS FROM THE RADIOACTIVE SCREENING OF OILS SUSPECTED OF PCB CONTAMINATION.

8. Indicate the method used to characterize the waste:

X Knowledge of process (skip to Box #10) ___ Chemical/physical analysis (attach copy of the analysis)

9. Indicate analyses performed to characterize the waste (check all applicable)

___ Heavy metals ___ Organics ___ Solvent screen ___ PCBs ___ Pesticides

10. Describe the waste below:

___ Solid ___ Liquid ___ Single layer X Multiphased ___ Other: _____

___ Sludge ___ Gas ___ Two layers ___ Suspended solids ___ Color: _____

11. Flash Point (°F)	12. pH	13. Paint Filter Test	14. Reactivity
___ < 70 ___ None	___ ≤ 2.0	___ Free liquid	___ Unstable at STP
___ 70-100	___ 2.1-6.0	___ No free liquid	___ Reacts with water
___ 101-139	___ 6.1-7.9		___ May release toxic fumes
___ 140-200	___ 8.0-12.4		___ Shock sensitive
___ > 200	___ ≥ 12.5		___ Class A or B explosive

Hazardous Substance, Solid, N.O.S. (PCB oil), ORM-E, NA9188

[redacted]

37 RGN— Type D Conc. >50

15. Metals Analysis

Metal	Concentration (mg/l)	Test method(s)
		___ EP Toxicity ___ Total ___ Other: _____ ___ Knowledge of Process
		___ EP Toxicity ___ Total ___ Other: _____ ___ Knowledge of Process
		___ EP Toxicity ___ Total ___ Other: _____ ___ Knowledge of Process
		___ EP Toxicity ___ Total ___ Other: _____ ___ Knowledge of Process
		___ EP Toxicity ___ Total ___ Other: _____ ___ Knowledge of Process

16. Organics Analysis

___ Total Organic Carbon (TOC) 0.000% ___ Total Organic Halogens (TOX) 0.000%

Constituent	Concentration (mg/l)	Test method(s)
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process

17. Radioactivity Analysis

X Radioactive X Low-Level ___ Transuranic X < 2 nCi/g ___ ≥ 2 nCi/g X Alpha X Beta X Gamma ___ Tritiu

Isotope	Activity (nCi/g)	Test method(s)
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process
		___ Test Method: _____ ___ Knowledge of Process

GENERATOR CERTIFICATION: To the best of my knowledge, I certify that the information provided in the unshaded areas above is correct. I also understand that I may be liable for state and federal prosecution by intentionally providing false informati

Generator's Name (print)	Z-number	Telephone	Signature	Date
TERRY D. FILER	082345	7-4164		03 / 07 / 9

DATA FORM

ID #: D904534 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB ACETONE)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #: 17
RMTT #: 077204

CONTAINER VOL: .210 M3

REVIEWED BY: AJM
PICK UP DATE: 06/08/90
PICKED UP BY: JG
PICK UP TIME: 10:30

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902729
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6
VOLUME: .208M3
RCRA CODE: F003
RCRA CODE: D001

WPN:
WEIGHT: 45.359 KG

DATA FORM

ID #: D904534 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB ACETONE)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #: 17
RMTT #: 077204

CONTAINER VOL: .210 M3

REVIEWED BY: ajm
PICK UP DATE: 06/08/90
PICKED UP BY: JG
PICK UP TIME: 10:30

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902729
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6
VOLUME: .208M3
RCRA CODE: F003
RCRA CODE: D001
~~RCRA CODE: F003~~
~~RCRA CODE: D001~~

WPN:
WEIGHT: ~~199.581 KG~~
100 pounds

DATA FORM

ID #: D904534 B

CWDR #: 19900502095357

REQUESTOR: SHAPLAND DAVID
GROUP: MST14
PHONE: 74653
TA: 03
BUILDING: 29
ROOM: ATTIC
WING: 7
Z #: 084298

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB ACETONE)
HAZARD CODE: ORM-E
D.O.T. #: NA9189

HSE-7 CODE: 20
STORAGE LOC.: MW6
RGN #: 17
RMTT #: 077204

CONTAINER VOL: .210 M3

REVIEWED BY: ajm
PICK UP DATE: 06/08/90
PICKED UP BY: JG
PICK UP TIME: 10:30

DATE CHECKED: _____
CHECKED BY: _____

TREAT/DISP LOC:
TRANSPORTED BY:

HSE7 MANIFEST#:
OTHER DOCUMENT: S902729
MANIFEST LINE:

TREAT/SHIP BY: JG
TREAT/SHIP DATE:

TSDF DATE:
DESTRUCTION #:
DESTRUCTION DATE:

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6
VOLUME: .208M3
RCRA CODE: F003
RCRA CODE: D001

WPN:
WEIGHT: 199.581 KG

DATA FORM

	REQUESTOR: SHAPLAND DAVID
	GROUP: MST14
	PHONE: 74653
	TA: 03
ID #: D 904534 B	BUILDING: 29
	ROOM: ATTIC
CWDR #: 19900502095357	Z #: 084298
	WING: 7

****

SHIPPING NAME: HAZARDOUS WASTE, SOLID, N.O.S. (PCB)
HAZARD CODE: ORM-E
D.O.T. #: NA9189
RCRA CODE: F003

****

HSE-7 CODE: 20	REVIEWED BY: AJM
STORAGE LOC.: MW6	PICK UP DATE: 06/08/90
RGN #: 0000	PICKED UP BY: JG
PROFILE #:	PICK UP TIME: 10:30
RMTT #: 077204	
WEIGHT (lbs): _____	DATE CHECKED: _____
TOTAL VOLUME: .21	CHECKED BY: _____

****

DISPOSAL LOC.:	TREAT/SHIP BY: JG
TRANSPORTED BY:	TREAT/SHIP DATE: --------
HSE7 MANIFEST#:	TSDF DATE:
OTHER DOCUMENT: S902729	LINE #:
DESTRUCTION #:	DESTRUCTION DATE

****

KIMWIPES,PBC OIL W/ACETONE,HEXANE,UF6

.208 m3 200. Kg F003

APPENDIX G

LANL PCB DISPOSAL APPROVAL AND CONDITIONS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

5 June 1980

Mr. Kenneth R. Braziel, Area Manager
Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

Post-it™ brand fax transmittal memo 7671	# of pages ▸
To John Elfin	From John
Co.	Co. EPA
Dept. 236-5739	Phone #
Fax #	Fax #

Dear Mr. Braziel:

On May 31, 1979, the United Sta[redacted] published final regulations in the Federal Register (43 FR 7150 - 7164) on Polychlorinated Biphenyls (PCBs), Disposal and Marking. These regulations prohibit the disposal of PCBs at any site not approved by EPA after July 2, 1979. The regulations also require that the owner and/or operator of a chemical waste landfill used for the disposal of PCBs submit information in accordance with Section 761.41, "Chemical Waste Landfills," to the Regional Administrator for review.

On January 25, 1979, we received your formal application for a PCB landfill at the Los Alamos Scientific Laboratory (LASL). The application was for disposal of DOE/LASL generated PCB solid waste and would not be a commercial operation. The application was distributed to Regional, Headquarters, and State personnel for comment. A March 26, 1979, news release concerning EPA's receipt of the application generated several local news stories and three written responses to the Regional Office. One letter was in favor of the site, one opposed, and one brought attention to the nearness of the LASL site to Indian lands and requested the careful review of the facility plan. The New Mexico Environmental Improvement Division and the U. S. Fish and Wildlife Service reviewed the application and indicated to EPA in writing that they had no objection to the application.

After a review of all the information, I made a tentative decision to approve your facility as an Annex II chemical landfill for PCB articles. This tentative decision was sent to you in my letter of April 14, 1980, and we solicited public comment by placing an announcement in the April 19, 1980, issue of the Albuquerque Journal. No letters were received commenting on the tentative approval.

The proposed PCB disposal site is located on top of the Mesita del Buey, which is on LASL property and is the present location of the ongoing, low-level radioactive disposal site. The proposed site meets all the technical requirements for a chemical waste landfill as required in Section 761.41 (b), except "Groundwater Monitor Wells" and "Leachate

collection systems. These systems are not considered feasible due to arid climate conditions, and soil characteristics and conditions. The Groundwater Monitor Wells and Leachate Collection System requirements are hereby waived as provided in Section 761.41, and the attached conditions are required as substitutes. These waivers will not present an unreasonable risk of injury to health or environment from PCBs.

The DOE/LASL chemical waste landfill for disposal of PCB articles is hereby approved. Conditions for the operation of your PCB chemical waste landfill are listed in Enclosure 1 of this letter.

Approval for the DOE/LASL landfill may be revoked, modified, or otherwise altered at any time evidence indicates a violation of the conditions of this approval letter, 40 CFR Part 761, or other applicable rules and regulations. Also this approval is for disposal of PCBs in a chemical waste landfill and is not to be construed to be approval for PCB incineration or for PCB liquids. The approval applies only to the Department of Energy, Los Alamos Scientific Laboratory Landfill, Los Alamos, New Mexico. This designation is non-transferrable.

Sincerely,

Frances E. Phillips, for

Adlene Harrison
Regional Administrator

Enclosures

cc: Thomas E. Baca, M.P.H. Director
Environmental Improvement Division
New Mexico Health Environment
Department

ENCLOSURE 1

Conditions for Disposal of PCBs at the Department of Energy/Los Alamos Scientific Laboratory Chemical Waste Landfill, Los Alamos, New Mexico

1. Maintain records as specified in 40 CFR 761.45 (b), "Records and Monitor

2. Advise EPA immediately of any changes, alternations, or divergencies in the operational managerial policies and procedures as outlined in the documents submitted in support of the application.

3. Report immediately to the Regional Administrator, EPA Region 6, any detect of PCBs in stormwater runoff or in groundwater samples.

4. Monitor the two springs currently monitored for the Safe Drinking Water Act at least once each year (during and after site operation) for PCBs, pH, specific conductance, and chlorinated organics.

5. Install onsite cumulative samplers for rainfall runoff collection. Water samples collected in the cumulative samplers after rainfall of suffici volume for analysis must be analyzed for PCBs, pH, specific conductance, and chlorinated organics.

6. Report to the EPA Regional Administrator, attention Chief, Solid Waste Branch every six months the following information:

   a. Types and quantities of PCB articles disposed.

   b. A summary of analytical data which must be developed under 40 CFR 761.41 (b) (6) (iii) "Water Analysis," and for conditions 4 and 5 listed above.

   c. A summary of shaft or trench construction activities for PCB article disposal and corrective maintenance work required for PCB shaft or trench stormwater diversion structures.

APPENDIX H

REGISTRATION OF PCB TRANSFORMERS WITH FIRE RESPONSE PERSONNEL

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

JUN 23 1993

Mr. James M. Flint
County Administrator
Incorporated County of Los Alamos
P. O. Box 30
Los Alamos, NM 87544

Dear Mr. Flint:

Federal Regulations (49 CFR, Sec. 761.30 [a] [1] [vi through vii]) require that all PCB transformers be registered with fire response personnel. By regulatory definition, a PCB transformer contains 500 parts per million (ppm) or more PCBs.

Please find a PCB transformer inventory list for the Los Alamos National Laboratory (LANL) enclosed for your use. The inventory includes transformer location, PCB concentration (in ppm), transformer identification number, PCB identification number, dielectric volume (in gallons), principal type of dielectric, LANL contact name and phone number, and the owner (organization responsible).

This PCB transformer inventory list supersedes that provided to the County last in 1991. If you have any questions or require further information, please call Steve Slaten of my staff at 665-5050.

Sincerely,

Joseph C. Vozella, Acting Chief
Environment, Safety and Health
Branch

LESH:3SS-023

Enclosure

cc w/enclosure:
S. Slaten, ES&H, LAAO
E. Withers, ES&H Scientech, LAAO
K. Twombly, FD, LAAO
K. Hargis, EM-8, LANL, MS-K490
R. Morales, EM-8, LANL, MS-K490

030 004070

IN-SERVICE PCB TRANSFORMERS (LOS ALAMOS NATIONAL LABORATORY)

AS OF June 11, 1993

NO.	TA-BLDG	VICINITY	CONC. (PPM)	ITEM ID#	PCB ID#	VOL (GAL)	PRINCIPAL DIELECTRIC	CONTACT/PHONE	OWNER
1	02 0051	Northeast of Bldg. 44	>500000	GE-C-863966	855021	290.00	PCB	R. Greuter/667-4058	(JCI)
2	02 0051	Northeast of Bldg. 44	>500000	GE-C-863964	855616	100.00	PCB	R. Greuter/667-4058	(JCI)
3	03 0105	West of SM-105	>500000	GE-D-583429	919191	690.00	Mineral Oil	W. Quinn/665-6677	(ADEE)
4	03 0190	Northwest Corner of SM-16	>500000	ITE-9883-63	855010	260.00	PCB	R. Greuter/667-4058	(JCI)
5	03 0229	South of Bldg. 206	>500000	GE-C-858476	855012	380.00	PCB	R. Greuter/667-4058	(JCI)
6	03 0290	West of Bldg. 287	>500000	WES-YAR-99701	855013	145.00	PCB	R. Greuter/667-4058	(JCI)
7	03 0290	West of Bldg. 287	>500000	WES-YAR-99731	855014	300.00	PCB	R. Greuter/667-4058	(JCI)
8	03 0290	West of Bldg. 287	>500000	WES-YAR-99691	855015	260.00	PCB	R. Greuter/667-4058	(JCI)
9	03 0290	West of Bldg. 287	>500000	WES-UAV4732-01	855016	203.00	PCB	R. Greuter/667-4058	(JCI)
10	03 0367	South Side Bldg. SM-216	>500000	WES-7027589	855018	170.00	PCB	R. Greuter/667-4058	(JCI)
11	03 0216	RM-17	>500000	GE-F959267	855559	210.00	PCB	B. Coulter/667-2490	(P-14)
12	15 0000	Outside	1227	GE-D583441	912124	530.00	Mineral Oil	R. Greuter/667-4058	(JCI)
13	15 0196	West of Bldg. 183	>500000	ESC-4022243	855019	325.00	PCB	R. Greuter/667-4058	(JCI)
14	16 0563	North of Bldg. 430	25000	PEN-19091-7	864997	395.00	PCB	R. Greuter/667-4058	(JCI)
15	21 0193	Southeast of Bldg. 215	>500000	GE-E68531	855017	210.00	PCB	R. Greuter/667-4058	(JCI)
16	35 0032	South of Bldg. 29	>500000	GE-C-862754	855024	340.00	PCB	R. Greuter/667-4058	(JCI)
17	35 0053	South of Bldg. 27	>500000	STA-175023 WEST	855025	350.00	PCB	R. Greuter/667-4058	(JCI)
18	39 0053	South of Bldg. 27	>500000	STA-175022 EAST	855026	350.00	PCB	R. Greuter/667-4058	(JCI)

NO.	TA-BLDG	VICINITY	OWNER	CONC. (PPM)	ITEM ID#	PCB ID#	VOL (GAL)	PRINCIPAL DIELECTRIC	CONTACT/PHONE	GROUP
19	50 0004	East of Bldg. 1		>500000	GE-E-687176	855023	265.00	PCB	R. Greuter/667-4058	(JCI)
20	52 0009	North of Bldg. 1		>500000	GE-E-688470A	855027	250.00	PCB	R. Greuter/667-4058	(JCI)
21	52 0009	North of Bldg 1		>500000	GE-E-688470B	855028	250.00	PCB	R. Greuter/667-4058	(JCI)
22	53 0051	North Side of Bldg. 2		>500000	ITE-16887	855032	330.00	PCB	R. Greuter/667-4058	(JCI)
23	53 0052	South Side of Bldg 2		>500000	GE-C-864202	855033	290.00	PCB	R. Greuter/667-4058	(JCI)
24	53 0071	North of Sector A		>500000	GE-F965698B	855034	205.00	PCB	R. Greuter/667-4058	(JCI)
25	53 0071	North of Sector A		>500000	GE-G965698A	855035	205.00	PCB	R. Greuter/667-4058	(JCI)
26	53 0172	South Side of Bldg M on MEZ		>500000	GE-G853264A	855039	205.00	PCB	R. Greuter/667-4085	(JCI)
27	53 0174	South Side of Bldg M on MEZ		>500000	GE-G853263A	855041	205.00	PCB	R. Greuter/667-4085	(JCI)
28	53 0073	North of Sector A / Bldg 3A		~~>500000~~ 570	SN 6184	844618	467.00	~~PCB~~ mineral oil	R. Greuter/667-4058	(JCI)
29	53 0179	North Side of Bldg M on Mez		>500000	GE-G853264B	855048	205.00	PCB	R. Greuter/667-4085	(JCI)
30	53 0182	South of Bldg. 3S		>500000	STA-PFH3797	855051	370.00	PCB	R. Greuter/667-4058	(JCI)
31	53 0182	South of Bldg. 3S		>500000	GE-G853266	855052	275.00	PCB	R. Greuter/667-4058	(JCI)
32	53 0593	SE Corner of Bldg. 3M		>500000	WES-PAV 0668-01	85 5057	175.00	PCB	R. Greuter/667-4058	(JCI)
33	55 0004	RM-7		>500000	ITE-PVD-5985-01	855599	241.00	PCB	R. Greuter/667-4058	(JCI)
34	55 0004	RM-46		>500000	ITE-PVD-5985-03	855602	241.00	PCB	R. Greuter/667-4058	(JCI)

End

APPENDIX I

TRANSFORMER INSPECTION RECORDS

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5612 LOCATION: TA 53 - 310 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-10-93

This Unit is Less Than 2 ppm Oil Has been Tested & P

Revision 7/92, JENV

NON-PCB Transformer

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: [redacted] LOCATION: TA 55 - PF-4 - Rm-46

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE NON PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Anson D Tucker

Initial: A.D.T. Date: 6-15-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5035 LOCATION: TA 53-1,135-

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5752 LOCATION: TA 53 - 182 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: ST 57 LOCATION: TA 53 - 1132

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Royal

Initial: TJR Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5046 LOCATION: TA 53 - 177 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-10-99

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5C32 LOCATION: TA 53 - 51 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N ~~or~~ NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Royal

Initial: [illegible] Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 05602 LOCATION: TA 55 -PF-4 - Rm-46

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N
	or	
	NO LEAK	

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N
	or	
	NO LEAK	
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): ANSON D TUCKER

Initial: ADT Date: 6-15-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: [redacted] 5603 LOCATION: TA 55 -PF-6 - Rm -401

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER? (Y)

ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.) (N)

IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER? (Y) N

DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST? (Y) N

IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.) Y (N) or (NO LEAK)

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.) Y N or (NO LEAK)

ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR? Y (N)

ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:

1. WITHIN A PCB ENCLOSURE? Y (N)
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE? Y (N)
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER? Y N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV? Y N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Auson D Tucker

Initial: ADT Date: 6-15-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5023 LOCATION: TA 50 - 4 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK
IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!		
IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-8-98

Revision 7/92, JENV

Note: non PCB Trans

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 548 LOCATION: TA 48 - 1 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N/A
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

Note: New PCB Trans.

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5549 LOCATION: TA 48 - 1 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y or NO LEAK	N

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y or NO LEAK	N
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5825 LOCATION: TA 35 - 53 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	~~Y~~	N or NO LEAK
IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!		
IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5026 LOCATION: TA 35 - 53 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N.
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5024 LOCATION: TA 35 - 32 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y or NO LEAK	N

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y or NO LEAK	N
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N

ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:

1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5027 LOCATION: TA 52 - 9 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-5-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5028 LOCATION: TA 52 - 9 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y or NO LEAK	N

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y or NO LEAK	N
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5010 LOCATION: TA 3 - 190 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	~~Y~~	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N

ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:

1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Rybal

Initial: TR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5012 LOCATION: TA 3 -229-

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TAR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5016 LOCATION: TA 3 - 290 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y or NO LEAK	N
IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!		
IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y or NO LEAK	N
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5015 LOCATION: TA 3 - 290 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5014 LOCATION: TA 3 - 290 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Rogbal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5013 LOCATION: TA 3 -290- _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 4997 LOCATION: TA 16 - 563 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: [illegible] Date: 6-16-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB ID # 2124

PCB-ID#: IVRD583441 LOCATION: TA 15 - 246 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER? Y N

ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.) Y N

IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER? ~~Y~~ N

DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST? Y N

IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.) ~~Y~~ N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.) Y N or ~~NO LEAK~~

ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR? Y N

ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:

1. WITHIN A PCB ENCLOSURE? Y N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE? Y N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER? Y N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV? Y N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Raybal

Initial: TJR Date: 6-14-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5019 LOCATION: TA 15 - 196 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Boyba

Initial: JR Date: 6-14-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5235 LOCATION: TA 53 - 52 - ____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 0034 LOCATION: TA 53 - 71 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER? Y N

ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.) Y N

IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER? Y N

DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST? Y N

IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.) ~~Y~~ N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.) Y N or NO LEAK

ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR? Y N

ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:

1. WITHIN A PCB ENCLOSURE? Y N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE? Y N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER? Y N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV? Y N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Reyes

Initial: TJR Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5012 LOCATION: TA 21 - 193 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)		N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?		N

ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:

1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-14-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PDV5985-01

PCB-ID#: D 5599 LOCATION: TA 55 - PF4 - Rm. 7

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	(Y)	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	(Y)	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	(Y)	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	*(Y)	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	(N) or NO LEAK
IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!		
IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	(N)
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	(N)
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	(N)
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Anson D Tucker

Initial: [illegible] Date: 6-15-93

Revision 7/92, JENV

* If I had a full List

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: IVR D583429 LOCATION: TA 3 - 105 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N.
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5018 LOCATION: TA 3 - 367 -

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	~~Y~~	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TJR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5559 LOCATION: TA 3 - 216 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-8-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5045 LOCATION: TA 53 - 179 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Reybal

Initial: TR Date: 6-16-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 4618 LOCATION: TA 53 - 3 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: [illegible] Date: 9-15-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 50 41 LOCATION: TA 53 - 174 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Rayal

Initial: TR Date: 6-10-93

Revision 7/92, JENV

TRANSFORMER INSPECTION CHECKLIST

PCB-ID#: 5039 LOCATION: TA 53 - 172 - _____

IS A SIX-INCH SQUARE PCB LABEL WITH THE PROPER NOTIFICATION NUMBERS VISIBLE ON THE TRANSFORMER?	Y	N
ARE ALL ACCESS AREAS MARKED WITH SIX-INCH PCB LABELS? (This includes vaults, doors, fences, hallways, or other means of access.)	Y	N
IS THE PCB TRANSFORMER MARKED WITH A PCB ID NUMBER?	Y	N
DOES THE ID NUMBER AGREE WITH THE INVENTORY LIST?	Y	N
IS THERE ANY SIGN OF A LEAK? (Examine transformer - leaks can include visible oil and shiny spots on the body, fins, drain valves, fill valves, gauges, or even under the transformer - care must be taken to inspect the concrete where the sides of the unit meet the pad.)	Y	N or NO LEAK

IF A NEW LEAK IS DISCOVERED, NOTIFY EMO AT 7-6211, AND JENV AT 7-0104 IMMEDIATELY!

IF THERE IS A LEAK, IS THE LEAK CONTAINED WITH A PLASTIC BAG OR A DRIP PAN? (Place zorball or a pan under new leak. Keep oil from running off the transformer.)	Y	N or NO LEAK
ARE THERE ANY OIL STAINS VISIBLE ON THE SOIL OR FLOOR?	Y	N
ARE THERE ANY COMBUSTIBLE MATERIALS* STORED:		
1. WITHIN A PCB ENCLOSURE?	Y	N
2. WITHIN 5 METERS (17 feet) OF A PCB TRANSFORMER ENCLOSURE?	Y	N
3. WITHIN 5 METERS (17 feet) OF AN UNENCLOSED PCB TRANSFORMER?	Y	N
4. IF YES, HAS A "PCB Transformer Combustible Notification" FORM BEEN COMPLETED AND SENT TO JENV?	Y	N

CONTACT JOE RICHARDSON AT JENV (7-0104) FOR PROBLEMS OBSERVED OR SITUATIONS NEEDING ATTENTION.

*Combustible materials can include paints, solvents, plastics, paper, sawn wood, and ladders; and they should be removed if possible.

Inspector name (printed): Tony Roybal

Initial: TR Date: 6-10-97

Revision 7/92, JENV

Johnson Controls World Services Inc.
Jackson Square Center
Bldg. 3, Ste. 3
Los Alamos, NM 87544-0350

JOHNSON CONTROLS

DATA DELIVERABLE TRANSMITTAL

June 28, 1993
JENV.93-362

Los Alamos National Laboratory
Los Alamos, NM 87545

ATTN: Distribution

We are submitting herewith the following Data Deliverable(s) as required by Subcontract #9-X86-Y7575-1:

D.D. IDENTIFIER	TITLE	REMARKS
1.5-DD-006	Polychlorinated Biphenyl (PCB) Maintenance Report	JHSE, Report originator, due as required

Very truly yours,
Michael Bailey for:
Joe J. Lopez
Manager, JHSE

Distribution: Raul Morales, EM-8, K490
Steve Rae, EM-8, K490 (w/o attachment)
R. Reines, EM-DO, MS K591, (w/o attachment)
Martin Aguilera, ENG-8, M718
ACOM
file
reading file

OSU 004192

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION		SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 53-1,135 ROOM # 0	1,500KVA	F965698A	5,035	6/10/93	(NO) | YES	(NO) | YES	
LOCATION DESCRIPTION: APPROX.30'N.OF SECTOR "A".		INSPECTED BY - SIGN NAME Tony Rybel					
TA 53- 182 ROOM # 0	1,500KVA	G-853268	5,052	6/10/93	(NO) | YES	(NO) | YES	
LOCATION DESCRIPTION: 6'S.OF SECTOR "H".		INSPECTED BY - SIGN NAME Tony Rybel					
TA 53-1,132 ROOM # 0	1,500KVA	PFH-3797	5,051	6/10/93	(NO) | YES	(NO) | YES	
LOCATION DESCRIPTION: 6'S.OF SECTOR "H".		INSPECTED BY - SIGN NAME Tony Rybel					
TA 53- 177 ROOM # 0	1,000KVA	G-853263C	5,046	6/10/93	(NO) | YES	(NO) | YES	
LOCATION DESCRIPTION: 3'N.OF SECTOR M-A.		INSPECTED BY - SIGN NAME Tony Rybel					No Longer PCB's

CODES:

1 - CLEANED TOP VALVE
2 - TIGHTENED TOP PLUG
3 - CLEANED BOTTOM VALVE
4 - TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

P.R EQUIPMENT MONTHLY INSPECTION JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 53- 51 1,000KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.4'N.OF CENTER OF BLDG.#	16887 INSPECTED BY - SIGN NAME	5,032	6/10/93	(NO) YES	(NO) YES	
TA 53- 310 3,750KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.84'NW OF NW CORNER OF B	16884 INSPECTED BY - SIGN NAME	5,617	6/10/93	(NO) YES	(NO) YES	[illegible]
TA 53- 52 0K VA ROOM # 0 LOCATION DESCRIPTION: APPROX.5'S.OF THE SW CORNER OF	C864202 INSPECTED BY - SIGN NAME	5,033	6/10/93	(NO) YES	(NO) YES	
TA 53- 71 1,500KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.30'N.OF SECTOR "A".	F965698B INSPECTED BY - SIGN NAME	5,034	6/10/93	(NO) YES	(NO) YES	

CODES:

1 - CLEANED TOP VALVE
2 - TIGHTENED TOP PLUG
3 - CLEANED BOTTOM VALVE
4 - TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

6 CLEANED BOTTOM VALVE
1 TIGHTENED BOTTOM PLUG
7 REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 2- 51 100KVA ROOM # 0	C863964	5,616	6/15/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: APPROX.65'NW OF THE NW CORNER	INSPECTED BY - SIGN NAME Jack E Martin					
TA 2- 51 750KVA ROOM # 0	C- 5(	5,021	6/15/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: APPROX.65'NW OF THE NW CORNER	INSPECTED BY - SIGN NAME Jack E. Martin					
TA 21- 193 500KVA ROOM # 0	E-686531	5,017	6/14/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: APPROX.50'SW OF THE SW.GR. 21-	INSPECTED BY - SIGN NAME Tammy Rogbel					
TA 55- 4 1,500KVA ROOM # 7	PDV5985-01	5,599	6/17/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: IN PF4, NORTH SWICHGEAR RM#7	INSPECTED BY - SIGN NAME Aaron D Neale					

CODES:

1 CLEANED TOP VALVE
2 TIGHTENED TOP PLUG
3 CLEANED BOTTOM VALVE
4 TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 55- 4 1,500KVA ROOM # 46	PDV5985-03	5,602	6/15/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: IN PF4, SOUTH SWITCHGEAR RM#46	INSPECTED BY - SIGN NAME					
TA 55- 4 1,500KVA ROOM # 46	PDV5985-04	5,601	6/15/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: IN PF4, SOUTH SWITCHGEAR RM#46	INSPECTED BY - SIGN NAME					
TA 55- 6 1,000KVA ROOM # 101	PDV5986-01	5,603	6/15/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: IN UTILITIES BUILDING	INSPECTED BY - SIGN NAME					
TA 50- 4 750KVA ROOM # 0	E-687176	5,023	6/8/93	(NO) YES	(NO) YES	
LOCATION DESCRIPTION: APPROX.40'E.OF THE NE PART OF	INSPECTED BY - SIGN NAME					

CODES:
1 - CLEANED TOP VALVE
2 - TIGHTENED TOP PLUG
3 - CLEANED BOTTOM VALVE
4 - TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 48- 1 750KVA ROOM # 26 LOCATION DESCRIPTION: BLDG. 1; ROOM 26.	F2156-1 INSPECTED BY - SIGN NAME: Tony Rayl	5,548	6/8/93	NO | YES	NO | YES	
TA 48- KVA ROOM # 26 LOCATION DESCRIPTION: BLDG.1; ROOM 26.	F2154-1 INSPECTED BY - SIGN NAME: Tony Rayl	5,549	6/8/93	NO | YES	NO | YES	
TA 35- 53 1,000KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.75'S.OF BLDG.TA-35-27.	175023 INSPECTED BY - SIGN NAME: Tony Rayl	5,025	6/8/93	NO | YES	NO | YES	
TA 35- 53 1,000KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.75'S.OF BLDG.TA-35-27.	175022 INSPECTED BY - SIGN NAME: Tony Rayl	5,026	6/8/93	NO | YES	NO | YES	

CODES:

1 CLEANED TOP VALVE
2 TIGHTENED TOP PLUG
3 CLEANED BOTTOM VALVE
4 TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 35- 32 750KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.15'S.OF BLDG.TA-35-29.	C862754 INSPECTED BY - SIGN NAME: Tony Rajko	5,024	6 / 8 / 93	NO | YES	NO | YES	
TA 52- 9 750KVA ROOM # 0 LOCATION DESCRIPTION: 6'NORTH OF BLDG.1.	E-688470A INSPECTED BY - SIGN NAME: Tony Rajko	5,027	6 / 8 / 93	NO | YES	NO | YES	
TA 52- 9 750KVA ROOM # 0 LOCATION DESCRIPTION: 6' NORTH OF BLDG.1.	E-688470B INSPECTED BY - SIGN NAME: Tony Rajko	5,028	6 / 8 / 93	NO | YES	NO | YES	
TA 3- 190 500KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.22'N.OF NW CORNER OF BL	9983-63 INSPECTED BY - SIGN NAME: Tony Rajko	5,010	6 / 8 / 93	NO | YES	NO | YES	

CODES:

1 - CLEANED TOP VALVE
2 - TIGHTENED TOP PLUG
3 - CLEANED BOTTOM VALVE
4 - TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 3- 229 1.000KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.8'S.OF BLDG.T7 SM-206	C858476	5,012	6 / 8 / 93	NO | YES	NO | YES	
	INSPECTED BY - SIGN NAME: Tony Royal					
TA 3- 290 1,000KVA ROOM # 0 LOCATION DESCRIPTION: SCYLLAC SW.GR.;40'W.OF SW < OF	UAV4732-01	5,016	6 / 8 / 93	NO | YES	NO | YES	
	INSPECTED BY - SIGN NAME: Tony Royal					
TA 3- 290 1,500KVA ROOM # 0 LOCATION DESCRIPTION: SCYLLAC SW.GR.;40'W.OF SW < OF	YAR99691	5,015	6 / 8 / 93	NO | YES	NO | YES	
	INSPECTED BY - SIGN NAME: Tony Royal					
TA 3- 290 1,500KVA ROOM # 0 LOCATION DESCRIPTION: SCYLLAC SW.GR.;40'W.OF SW < OF	YAR99731	5,014	6 / 8 / 93	NO | YES	NO | YES	
	INSPECTED BY - SIGN NAME: Tony Royal					

CODES:

1 - CLEANED TOP VALVE
2 - TIGHTENED TOP PLUG
3 - CLEANED BOTTOM VALVE
4 - TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION		SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 3- 290 ROOM # 0	300KVA	YAR99701	5,013	6/8/93	NO / YES	NO / YES	
LOCATION DESCRIPTION: SCYLLAC SW.GR.;40'W.OF SW > OF		INSPECTED BY - SIGN NAME: Tony Rafel					
TA 16- 563 ROOM # 0	500KVA	19091-7	4,997	6/14/93	NO / YES	NO / YES	
LOCATION DESCRIPTION:		INSPECTED BY - SIGN NAME: Tony Rafel					
TA 15- 246 ROOM # 0	KVA	IVR D583441	2,124	6/14/93	NO / YES	NO / YES	
LOCATION DESCRIPTION:		INSPECTED BY - SIGN NAME: Tony Rafel					
TA 15- 196 ROOM # 0	500KVA	4022243	5,019	6/14/93	NO / YES	NO / YES	
LOCATION DESCRIPTION:		INSPECTED BY - SIGN NAME: Tony Rafel					

APPROX.63'NW OF THE NW CORNER | INSPECTED BY - SIGN NAME

CODES:

1 - CLEANED TOP VALVE
2 - TIGHTENED TOP PLUG
3 - CLEANED BOTTOM VALVE
4 - TIGHTENED BOTTOM PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT SEAM
7 - REPLACE "PCB CAUTION SIGNS"
8 - OIL LEAK AT GASKET
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE IN REMARKS

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION	SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 3- 105 KVA ROOM # 0 LOCATION DESCRIPTION: WEST SIDE OF BLDG.SM-105.	IVR D583429 INSPECTED BY - SIGN NAME: Tony Rafel		6/8/93	(NO) | YES	(NO) | YES	
TA 3- 367 500KVA ROOM # 0 LOCATION DESCRIPTION: APPROX.12'E.OF BLDG.TA-3-SM-15	7027589 INSPECTED BY - SIGN NAME: Tony Rafel	5,018	6/8/93	(NO) | YES	(NO) | YES	
TA 3- 216 1,500KVA ROOM # 17 LOCATION DESCRIPTION: ROOM 17.	F-959267 INSPECTED BY - SIGN NAME: Tony Rafel	5,559	6/8/93	(NO) | YES	(NO) | YES	

PCB EQUIPMENT MONTHLY INSPECTION - JUNE , 1993

LOCATION		SERIAL #	PCB ID#	INSPECTION DATE	LEAKS	COMBUSTIBLES WITHIN 17 FEET	REMARKS
TA 53- 179 ROOM # 0	1,000KVA	G-853264B	5,048	6/10/93	NO | YES	NO | YES	
LOCATION DESCRIPTION: S'N.OF SECTOR M-A.		INSPECTED BY - SIGN NAME					
TA 53- 3 ROOM # 0	KVA	6184	4,618	6/10/93	NO | YES	NO | YES	
LOCATION DESCRIPTION: NORTH SIDE OF SECTOR A, WEST E		INSPECTED BY - SIGN NAME					
TA 53- 174 ROOM # 0	1,000KVA	G-853263B	5,041	6/10/93	NO | YES	NO | YES	
LOCATION DESCRIPTION: S'S.OF SECTOR M-A.		INSPECTED BY - SIGN NAME					
TA 53- 172 ROOM # 0	1,000KVA	G-853264A	5,039	6/10/93	NO | YES	NO | YES	
LOCATION DESCRIPTION: S'S.OF SECTOR M-A.		INSPECTED BY - SIGN NAME					

CODES:

1 - CLEANED TOP VALVE
2 - TIGH ED TOP PLUG
5 - TIGHTENED NUT ON TAP CHANGER
6 - OIL LEAK AT EAM
9 - TIGHTENED BOLTS
10 - OTHER - DESCRIBE EMARKS

APPENDIX J

LIST OF PCB SPILL REPORTS FOR NON-REPORTABLE RELEASES

7/29/93

PCB SPILL REPORT
NON-REPORTABLE RELEASE

Location	Bldg.#	Equipment	Date
TA-3	SM-1188 at SM-22	Capacitors	4-24-87
TA-3	SM-29	Elevator	5-05-88
TA-53	MPF-70	Capacitors	6-12-87
TA-16	Bldg. 565	Transformer & soil	7-28-87
NTS	5200	Capacitors	9-19-88
TA-35	Bldg. 2	Transformer	1-24-89
TA-53	Sector E	Capacitor	1-10-90
TA-8	Bldg. 23	Transformer	2-01-90
TA-53	MPF-7	Hydraulic	2-25-90
TA-53	Sector A	Transformer	3-20-90
TA-16	Bldg. 260	Transformer	5-17-90
TA-53	Bldg. 177	Transformer	6-22-90
TA-53	Bldg. 72	Transformer	7-08-90
TA-53	MPF-72	Transformer	7-08-90
TA-53	Sector M	Transformer	7-30-90
TA-21	Bldg. 61	clean-up	8-02-90
TA-59	OH-1	Glass Bottle	8-18-90
TA-3	SM-22	Transformers	8-21-90
TA-53	MPF-98	Transformer	9-13-90
TA-53	MPF-92 & 98	Transformer	11-5-90
TA-3	SM-43	Ballast	12-20-90
TA-35	Bldg. 7	Power Supply	6-21-91
TA-3	SM-66 Butler Bldg.	Capacitor	6-21-91
TA-8	Bldg. 23	Transformer	7-30-91
TA-3	SM-216	oil stain	8-12-91
TA-3	SM-29 wing 5	Transformer	8-02-91
TA-53	Bldg. 2	Transformer	9-25-91
TA-53	Metal Root	Transformer	9-27-91
TA-3	SM-105	Transformer	9-27-91
TA-21	Bldg. 210	Transformer	9-30-91
TA-53	MPF-3	Transformer	10-1-91
TA-3	SM-29	Hoist	10-7-91
TA-0	L.A. Booster 3	Switch	3-10-92
TA-16	Bldg. 563	Transformer	3-30-92
TA-18	Bldg. 142	Transformer	4-08-92
TA-35	Bldg. 101	Transformer	4-08-92
TA-3	SM-29 Rm. 2123	Ballast	5-15-92
TA-53	MPF-3 Sect. E	Transformer	6-24-92
TA-60	Bliss Lot	Capacitor	7-92
TA-43	Rm. B159	Ballast	7-13-92
TA-54	Bldg. 39	Capsure & water	7-30-92
TA-3	SM-66 Rm. B107	Ballast	9-10-92
TA-39	Bldg. 8	Ballast	10-8-92
TA-53	Bldg. 96 Sec. F	Transformer	3-11-93
TA-21	Bldg. 228	Capacitor	3-15-93
TA-46	Bldg. 36	Power Supply	3-26-93
TA-3	SM 105	Transformer	3-26-93
TA-18	Bldg. 260	Transformer	5-03-93
TA-3	SM-66 Rm. K104	Ballast	5-17-93
TA-3	SM-66 Rm. S101	Ballast	5-24-93
TA-53	MPF 365	Power Supply	5-27-93

03D 004186

NON-REPORTABLE

CLEANUP RECORD OF HIGH-CONCENTRATION SPILLS INVOLVING NON REPORTABLE RELEASES

TA- 03 - 43 .

Room A11A

Records. The responsible party shall document the cleanup with records of decontamination. The records must be maintained for a period of 5 years. The records and certification shall consist of the following:

I. Identification of the source of the spill, e.g., type of equipment.

Experimental research equipment (FRX-A), Controlled Thermonuclear Research (CTR) is owner and operator. Capacitors were used as an energy source and are suspected as the source the release.

II. Estimated or actual date and time of the spill occurrence.

Release was reported to the Environmental Protection Group (HSE-8) on the morning of December 15, 1989 during a renovation project of the room. Samples were collected and analytical results were available on December 20, 1989 which showed elevated levels of PCBs.

III. The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

Cleanup initiated, tile removed, on the morning of December 20, 1989, upon receipt of analytical results. Initial cleanup completed in the afternoon of December 20, 1989.

Subsequent cleanup efforts were done on;

Janurary 11, 1990, Penetone, double wash/double rinse

February 21, 1990, Naturalizer, double wash/double rinse

Cleanup completed on:

March 9 10, 1990, Pentek Scabbler

CLEANUP RECORD
High concentration.

TA- 03 - 43.

Room A11A

IV. A brief description of the spill location and the nature of the materials contaminated. (This information should include whether the spill occurred in an outdoor electrical substation, other restricted access location, or in a nonrestricted access area.)

Spill occurred in Room A11A at Technical Area (TA) 03, Building 43. The experimental equipment was located in the middle of room A11A and the spill area was directly under the equipment. Contaminated material was nonimpervious solid surfaces; tile floor covering, concrete floor, and impervious solid surfaces aluminium experimental structure. This location is considered as a "other restricted access area".

V. Pre-cleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces and a brief description of the sampling methodology used to establish the spill boundaries.

Spill boundaries established using visual stain under (FRX-A) experimental equipment and a grid pattern.

VI. A brief description of the solid surfaces cleaned.

The (FRX-A) experimental equipment was wrapped in plastic and buried at TA-53, area G. Floor tile which was removed was wrapped in plastic and buried at TA-54, Area G. Concrete flooring was cleaned using the double wash/double rinse methodology using various cleaning agents and final cleanup efforts were done using the Penetek Scabbler. The floor area of the entire room was encapsulated with a underlayment material and new floor covering installed. All grid points were below 10ug/100cm^2, on March 15, 1990.

VII. Approximate depth of soil excavation and the amount of soil removed.

No soil removed during this cleanup process.

VIII. Post-cleanup verification sampling data and, if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical technique used.

Post-cleanup sampling was conducted after each cleanup effort. Sampling scheme established using the MRI guidelines. Surface swipes were taken using gauze, cyclohexane, and 100cm^2 templates. Two sampling grids were established since the area of contamination had increased in size since the initial visible estimate.

Optional: 1) Estimated cost of cleanup (by man-hours, dollars, or both).

DOCUMENTATION CHECKLIST

CHECK APPROPRIATE BOX

- ☑ GRID
- ☑ ANALYTICAL
- ☐ INCIDENT REPORT
- ☑ MEMO'S
- ☐ NOTES
- ☐ COPY OF SJT OR WO'S
- ☐ PHOTOGRAPHS

APPENDIX K

SEMIANNUAL PCB DISPOSAL AND MONITORING REPORT

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

MAR 1 6 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Dr. Allyn M. Davis, Director
Hazardous Waste Management Branch
U. S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Dear Dr. Davis:

Enclosed is the Los Alamos National Laboratory (LANL) Semiannual Polychlorinated Biphenyl (PCB) Disposal and Monitoring Report for the period of July 1, 1992 to December 31, 1992, as required by condition six of the Environmental Protection Agency's June 5, 1980 approval to dispose of PCB articles in the Department of Energy's Mesita del Buey (Area G) Landfill at the LANL.

If you have any questions concerning this report, please contact Steve Slaten of my staff at FTS 8-505-665-5050.

Sincerely,

Joseph C. Vozella, Acting Chief
Environment, Safety, and Health
Branch

LESH:7SS-021

Enclosure

cc w/ enclosure:
R. King, FOB, LAAO
T. Gunderson, EM-DO, LANL, MS-J591
K. Hargis, (EM-8:93-317-1), EM-8, LANL, MS-K490
S. Rae, EM-8, LANL, MS-K490
A. Drypolcher, EM-7, LANL, MS-E517
A. Gustavsson, EM-7, LANL, MS-J593
C. Soden, EPD, AL

03D 004187

SEMIANNUAL PCB DISPOSAL AND MONITORING REPORT FOR THE DEPARTMENT OF ENERGY'S MESITA DEL BUEY (AREA G) LANDFILL AT THE LOS ALAMOS NATIONAL LABORATORY

JULY 1, 1992 - DECEMBER 31, 1992

This document is intended to supplement preceding reports. The location, descriptions and operations of the disposal site monitoring facilities, etc. can be found in any of the first six reports (June 1980-June 1983). This report is required by Enclosure 1 of a letter dated June 5, 1980 from Ms. Adlene Harrison, Regional Administrator, U.S. Environmental Protection Agency to Mr. Kenneth Braziel, Area Manager, U.S. Department of Energy, Los Alamos Area Office.

1) Monitoring of two springs in Whiterock Canyon. (Rio Grande and adjacent springs)

Monitoring required X not required __ this report.

Sample collection occurs once annually during the month of September. Samples collected are analyzed for the following parameters:

Sample #	Sample Date	PCB (ppm)	pH (s.u.)	Specific Conductance (micromhos/cm)	Chlorinated Organics (semi vol/vol)
EM-8 92.11461-TMS*[1] (Spring 3)	9/8/92	*[2]	6.89	175.00±8.80	No target compounds were detected in these two samples.
EM-8 92.11462-TMS*[1] (Spring 4)	9/8/92	*[2]	7.00	200.00±9.95	

2) Monitoring of on-site cumulative samplers.

Stormwater runoff was X was not __ collected this report.

Stormwater runoff is not collected in cumulative samplers. Runoff accumulates in a pond behind the weir (gaging station) which discharges into Canyon del Buey.

Sample #	Sample Date	PCB (ppm)	pH (s.u.)	Specific Conductance (micromhos/cm)	Chlorinated Organics (semi vol/vol)
ALR-2206-43485-1-1	6/25/92	<1.00	*[3]	*[3]	No target compounds were detected in these two samples.
ALR-2206-43484-1-1	6/25/92	<1.00	*[3]	*[3]	
EM-8 92-0221 (G-2)	8/12/92	<0.50	8.60*[3]	33.10±1.70*[3]	*[4]
EM-8 92-0222 (G-3)	8/12/92	<0.50	8.20*[3]	920.00±46*[3]	*[4]

Footnotes

These samples were not preserved at the time of collection thus holding times were greatly reduced.

*2 At the time of sample analysis, EM-9 did not analyze for PCBs.

*3 Holding times were missed for conductivity & pH.

*4 At the time of sample submittal, no request was made for analysis for chlorinated organics.

3) Types and quantities of PCBs disposed during period.

PCBs were X were not __ disposed at the Department of Energy's Mesita del Buey (Area G) Landfill.

(Receiving Site Info.)	Kilograms (kg)			
PCB ARTICLE(S)	**Pit 37**	**C-11**	**C-13**	**C-14**
EQUIPMENT				
Vacuum Pump, PN-273341, (no free liquid) Unpackaged, ≥500 ppm RSWD # L92000752, Dated 6/17/92 WPRF # 03417 Disposal Date: 12/17/92 Non-Rad.	63.63			
Diffusion Pump, 128 ppm Unpackaged, (no free liquid) RSWD # L92000770, Dated 9/10/92 WPRF # 04297 Disposal Date: 11/24/92 Non-Rad.	13.63			
Ballasts on Zorball, ≥500 ppm (no free liquid) RSWD # L92000844, Dated 10/22/92 WPRF # 04592 Disposal Date: 11/05/92 Suspect-Rad.				2886.36
MISCELLANEOUS				
Soil in Drums, ≥500 ppm RSWD # L92000647, Dated 6/11/92 WPRF # 00379 Disposal Date: 7/28/92 Non-Rad.	8236.36			
Debris in 55 Gal Drums, ≥500 ppm RSWD # L92000673, Dated 7/17/92 WPRF # 03635 Disposal Date Rad.			90.90	

PCB ARTICLE(S) (Receiving Site Info.)	Kilograms (kg) Pit 37	C-11	C-13	C-14
MISCELLANEOUS (Cont.)				
Contaminated 55 Gal Drum, 314 ppm RSWD # L92000703, Dated 7/15/92 WPRF # 04148 Disposal Date: 8/17/92 Non-Rad.	27.27			
Soil in 55-Gal. Drums, ≥500 ppm RSWD # L92000711, Dated 5/13/92 WPRF # 03305 Disposal Date: 8/19/92 Non-Rad.	8381.81			
Soil in 55 Gal Drums, ≥500 ppm RSWD # L92000717, Dated 8/17/92 WPRF # 03305 Disposal Date: 8/20/92 Non-Rad.	9690.90			
Soil in 55 Gal Drums, ≥500 ppm RSWD # L92000718, Dated 8/17/92 WPRF # 03305 Disposal Date: 8/24/92 Non-Rad.	8018.18			
Soil in 55 Gal Drum, ≥500 ppm RSWD # L92000791, Dated 8/17/92 WPRF # 03305 Disposal Date: 10/7/92 Non-Rad.			1027.27	
Concrete Slabs, ≥500 ppm From beneath transformer PCB ID # 5552 RSWD # L92000815, Dated 10/14/92 WPRF # 04618 Disposal Date: 10/19/92 Non-Rad.	140.00			
Soil in 55 Gal Drums, ≥500 ppm From transformer PCB ID # 5551 RSWD # L92000816, Dated 10/14/92 WPRF # 04503 Disposal Date: 10/19/92 Non-Rad		1400.00		

(Receiving Site Info.)	Kilograms (kg)			
PCB ARTICLE(S)	Pit 37	C-11	C-13	C-14
MISCELLANEOUS (Cont.)				
Concrete Slabs, ≥500 ppm From beneath transformer PCB ID # 5563, 5564 RSWD # L92000817, Dated 10/14/92 WPRF # 04500 Disposal Date: 10/19/92 Non-Rad.	1400.00			
Concrete Slabs, >500 ppm From beneath transformer PCB ID # 5612 RSWD # L92000818, Dated 10/14/92 WPRF # 04607 Disposal Date: 10/19/92 Non-Rad.	781.81			
Soil & Gravel in 55 Gal Drums, ≥500 ppm From beneath transformer PCB ID # 5612 RSWD # L92000819, Dated 10/14/92 WPRF # 04605 Disposal Date: 10/19/92 Non-Rad.		781.81		
Debris in 55 Gal Drums, ≥500 ppm From spill cleanup of transformer PCB ID # 5563, 5564 RSWD # L92000820, Dated 10/14/92 WPRF # 04608 Disposal Date: 10/19/92 Non-Rad.		1400.00		
Debris in 55 Gal. Drums, ≥500 ppm From spill cleanup of transformer PCB ID # 5551 RSWD # L92000821, Dated 10/14/92 WPRF # 04538 Disposal Date: 10/19/92 Non-Rad.		1400.00		
Concrete Slabs, ≥500 ppm From beneath transformer PCB ID # 5563 RSWD # L92000835, Dated 10/22/92 WPRF # 04590 Disposal Date: 10/22/92 Non-Rad.	363.63			

PCB ARTICLE(S) (Receiving Site Info.)	Pit 37	C-11	C-13	C-14
		Kilograms (kg)		
MISCELLANEOUS (Cont.)				
Concrete Slabs ≥500 ppm From beneath transformer PCB ID # 5587, 5588, 5589, 5591 RSWD # L92000846, Dated 10/22/92 WPRF # 03035 Disposal Date: 11/5/92 Non-Rad.	2886.36			
Soil in 55 Gal. Drums, 252 ppm RSWD # L92000848, Dated 10/26/92 WPRF # 04603 Disposal Date: 11/5/92 Non-Rad.	2886.36			
Soil in 55 Gal. Drums, ≥500 ppm RSWD # L92000891, Dated 11/13/92 WPRF # 03305 Disposal Date: 12/7/92 Non-Rad.	2954.54			
TOTAL (kg)	45844.48	4981.81	1118.17	2886.36
GRAND TOTAL (kg)		54830.82		

4) Summary of pit, shaft, trench, or stormwater diversion structure construction activities.

No pit, trench, or stormwater diversion construction or corrective maintenance activities were performed during this period. However, berms were installed around PCB shafts currently accepting waste to inhibit runoff water into the shaft. Also, a Laboratory work order is in place to install shaft collars on all PCB shafts within Area G that currently do not have shaft collars around them.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT

EPA-330/2-94-020

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MULTI-MEDIA COMPLIANCE INVESTIGATION
LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico
(Volume 3 of 4)

April 1994

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Kenna Yarbrough
Anne Bevington
John Ellison
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NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
Denver, Colorado

PREFACE

NEIC conducted a multi-media compliance investigation of Los Alamos National Laboratory (LANL), located near Los Alamos, New Mexico, about 25 miles northwest of Santa Fe, New Mexico. The on-site inspection of LANL, a government-owned (Department of Energy), contractor-operated (University of California) facility, was conducted August 2 through 12, 1993. The investigation findings are presented in four report volumes:

Volume 1

- Executive summary
- Environmental management
- Pollution prevention
- Critical habitat

(NOTE: Volume 1 presents an overall perspective of the facility, allowing a better understanding of individual media reports in volumes 2, 3, and 4)

Volume 2

- Resource Conservation and Recovery Act (RCRA)
- Underground Storage Tanks (UST)
- Toxic Substances Control Act (TSCA)

Volume 3

- Clean Water Act (CWA)
  - National Pollutant Discharge Elimination System (NPDES)
  - Spill Prevention Control and Countermeasures (SPCC)
  - Wetlands
- Safe Drinking Water Act (SDWA)
  - Public water supply
  - Underground Injection Control (UIC)

Volume 4

- Clean Air Act (CAA)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

GLOSSARY

GLOSSARY

ACM: asbestos containing materials
AO: administrative order
AQCR: air quality control regulations
ARs: administrative requirements
BHP: boiler horsepower
BOD: biological oxygen demand
BTU: British Thermal Unit
CAA: Clean Air Act
CAAA: Clean Air Act Amendments
CE: civil engineering
CFR: Code of Federal Regulations
CLS: Chemical Laser and Science
CME: comprehensive groundwater monitoring evaluation
COD: chemical oxygen demand
Corps: U.S. Army Corps of Engineers
CWA: Clean Water Act
DMR: discharge monitoring report
DOE: Department of Energy
EDL: economic discard limit
EDM: electrical discharging machining
EHS: extremely hazardous substance
EM: environmental management
EOD: Explosive Ordnance Disposal
EPA: Environmental Protection Agency
EPCRA: Emergency Planning and Community Right-to-Know Act
ESP: electrostatic precipitator
FFCA: federal facility compliance agreement
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
GOCO: government owned, contractor operated
GPD: gallons per day
HE: high explosives
HEPA: high efficiency particulate air
HS-5: Health Services Department
HSWA: Hazardous and Solid Waste Amendments
INEL: Idaho National Engineering Laboratory
JCI: Johnson Controls, Inc.
LANL: Los Alamos National Laboratory
lb/MBTU: pounds per million British thermal unit
LDR: land disposal restrictions
LERC: local emergency response committee
MCL: maximum contaminant level
MEK: methyl ethyl ketone
MLSS: mixed liquid suspended solids
MOU: memorandum of understanding
MSDS: material safety data sheet
NDT: nondestructive testing
NEIC: National Enforcement Investigations Center
NEPA: National Environmental Policy Act
NESHAP: National Emission Standards for Hazardous Air Pollutant
NMAQR: New Mexico Air Quality Standards and Regulations
NMED: New Mexico Environment Department
NOI: Notice of Intent
NON: Notice of Noncompliance
NPDES: National Pollutant Discharge Elimination System
NWP: Nationwide Permit
NWT: program office for aboveground experiments
NWUSTR: New Mexico Underground Storage Tank Regulations
O&M: Operations and Maintenance
OB/OD: open burning/open detonation
PCB: polychlorinated biphenyl
pCi/L: picocuries per liter
PEDE: potential effective dose equivalent
PETN: pentaerythitol tetranitrate (an explosive compound)
PTO: permit to operate
P2: pollution prevention
PVC: polyvinyl chloride
QA/QC: quality assurance/quality control
RCRA: Resource Conservation and Recovery Act
RDX: cyclonite (an explosive compound)
RMMAs: radiological material management areas
SAIC: Science Application International Corporation
SARA: Superfund Amendments Reauthorization Act
SDWA: Safe Drinking Water Act
SERC: state emergency response commission
SIP: State Implementation Plan
SOP: standard operating procedures
SPCC: Spill Prevention Control and Countermeasures

SWPPP: Storm Water Pollution Prevention Plan
SWMU: solid waste management units
SWP: special work permits
SWSC: Sanitary Wastewater Systems Consolidation
SWTR: surface water treatment rule
TA: technical area
TAPS: toxic air pollutants
TCA: 1,1,1-trichloroethane
TCE: trichloroethylene
TCLP: toxicity characteristic leaching procedure
TDS: total dissolved solids
TNT: trinitrotoluene (an explosive compound)
TRU: transuranic
TSF: Tritium Salt Facility
TSD: treatment, storage, and disposal
TSS: total suspended solids
TSTA: Tritium Systems Test Assembly
TSCA: Toxic Substances Control Act
UC: University of California
UIC: Underground Injection Control
UST: underground storage tank
VOC: volatile organic compound
WAP: waste analysis plan
WCS: waste characterization study
WMPO: Waste Minimization Program Office
WWTP: wastewater treatment plant

CLEAN WATER ACT (CWA)
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

Brian McKeown, Environmental Engineer
NEIC

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MEDIA REPORT

INTRODUCTION

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) located in Los Alamos, New Mexico. This report discusses Clean Water Act (CWA) issues and compliance with the applicable regulatory requirements.

REGULATORY SUMMARY

The LANL facility is regulated by a National Pollutant Discharge Elimination System (NPDES) permit because they discharge wastewater to numerous arroyos which are tributaries to the Rio Grande River, a water of the United States. The permit was jointly issued to the Department of Energy, the owner, and the University of California, the operator of the facility. LANL is a multidisciplinary laboratory, with its principal mission being the design and development of nuclear weapons. The laboratory also conducts basic research in nuclear energy development, physics, chemistry, metallurgy, earth sciences, biomedical and environmental science.

EPA Region 6 issued NPDES permit number NM0028355 [Appendix A] on January 30, 1990, establishing effluent limitations for the LANL facility. This permit was effective on January 31, 1990, and contained an expiration date of March 1, 1991. The state of New Mexico did not certify the proposed 1991 permit; therefore, the permit issued on January 30, 1990 was administratively extended and is currently still in effect.

NPDES permit NM0028355 authorizes the discharge of wastewater from the LANL facility from 120 outfalls. The permit establishes outfall categories (noncontact cooling water, photo wastewater, high-explosive wastewater,

sanitary wastewater, etc.) with effluent limitations which apply to all outfalls within these categories. Part III, Paragraph G of the permit allowed LANL to add and delete outfalls within specified categories if EPA was notified 60 days prior to the planned discharge. On December 14, 1990, LANL notified EPA of a number of added, deleted, and modified outfalls [Appendix B]. The number of existing permitted outfalls is currently 122.

Revisions to the proposed permit have been made, based on negotiations with the state of New Mexico. EPA Region 6 conducted a public hearing in July 1993 on the new draft NPDES permit and reissued it on September 10, 1993.

LANL has a separate NPDES permit (NM0028576) covering the discharge of wastewater from the TA-57 Geothermal site in Sandoval County, New Mexico. This permit was issued May 3, 1979; it has an effective date of October 15, 1979 and an expiration date of June 30, 1983. This permit has also been administratively extended, and remains in effect.

LANL is covered by the NPDES general permit for stormwater discharges associated with construction and industrial activity. A chronology of the NPDES stormwater permitting activities for LANL is contained in Appendix C. LANL initially submitted a group application for stormwater discharges associated with industrial activity. This application was denied by EPA. LANL then filed a Notice of Intent (NOI) to be covered under the EPA General Permit for stormwater discharges associated with industrial and construction activity. The NOI for industrial activity was returned to LANL, because the SIC codes listed were not covered under the general permit. A revised NOI was then submitted to EPA which contained the SIC codes describing industrial activities at LANL covered by 40 CFR § 122.26(b)(14).

EPA Region 6 issued an Administrative Order to the University of California [A.O. VI-92-1306 - Appendix D] and a corresponding Federal Facility Compliance Agreement [FFCA VI-92-1305 - Appendix E] to the Department of Energy which established schedules for compliance with final limits for sanitary outfalls (01S, 04S, 09S, 10S, 12S), high-explosives outfalls (Category 05A), and the steam power plant outfall (02A-007). In addition, a schedule was established for the completion of a Waste Characterization Study which, through reviewing engineering diagrams and conducting dye studies, would identify all wastewater sources and their discharge location.

WASTEWATER TREATMENT

Sanitary Wastewater

In August 1992, LANL completed the Sanitary Wastewater Systems Consolidation (SWSC) facility, a 0.6 mgd activated sludge treatment plant. This centralized wastewater treatment plant replaced the nine sanitary treatment facilities that were located throughout LANL.

The SWSC plant consists of the following treatment: mechanical bar screens, aerated grit chamber, equalization, complete mix extended aeration (with nitrification/denitrification), clarification, chlorination, dechlorination, and solids handling. A schematic of the plant is presented in Figure 1. The SWSC facility also includes approximately 50 miles of collection system, 40 lift stations, and 30 holding tanks which are pumped out by vacuum trucks and discharged to the plant.

A new outfall (13S) has been designated for the discharge from the SWSC facility to Cañada de Buey; however, LANL does not intend to discharge from this outfall until a new permit is issued. Currently, treated wastewater

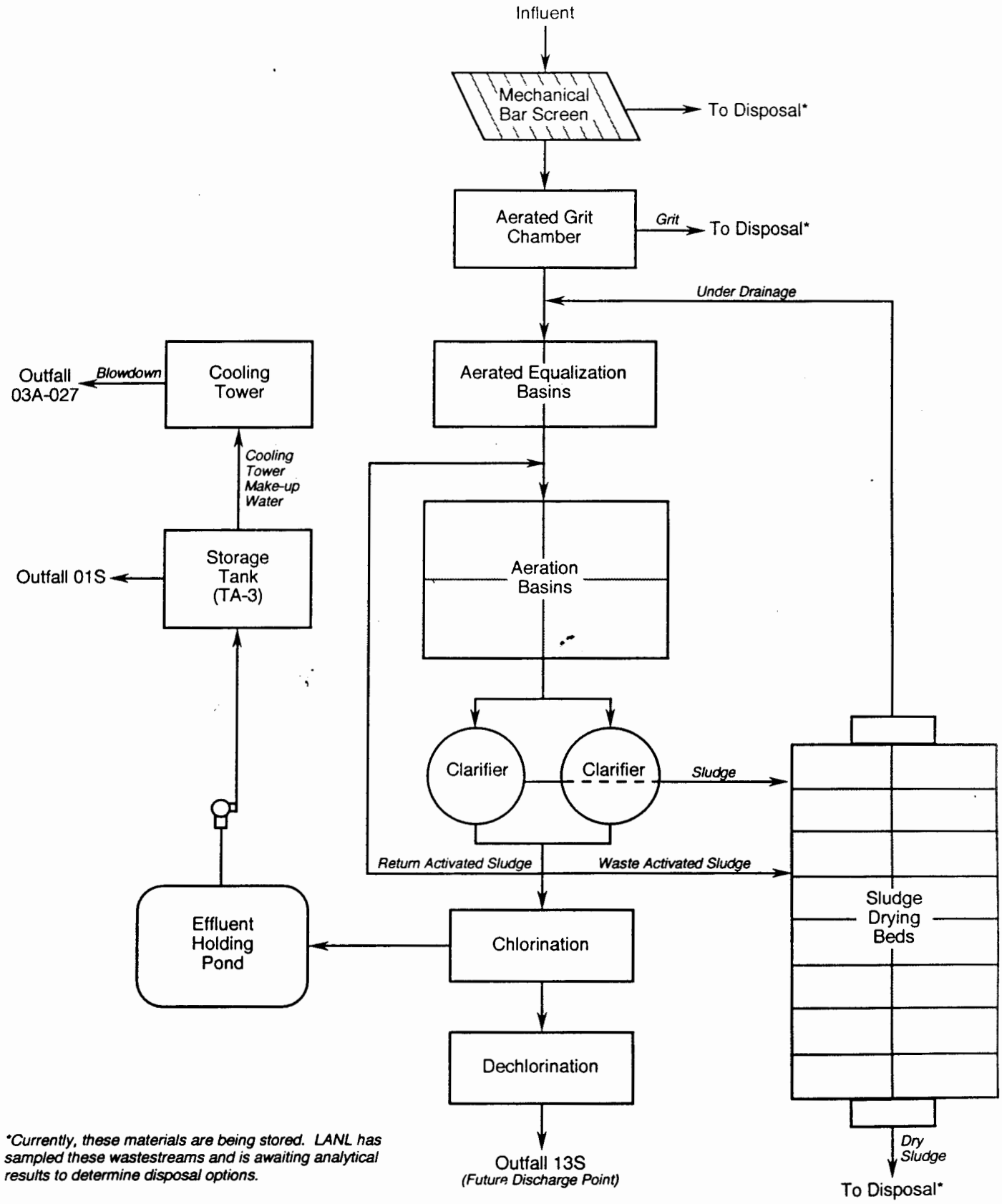

Figure 1
SANITARY WASTEWATER SYSTEMS CONSOLIDATION (SWSC) PLANT
LANL Facility (TA-46)
Los Alamos, New Mexico

is being pumped to a storage tank, located in TA-3, where it can be discharged from existing Outfall 01S (discharge point for the old TA-3 sewage plant) or be used for cooling tower make-up water at the power plant (and discharged from Outfall 03A-027 as blowdown). LANL is applying the monitoring requirements and effluent limitations for the permitted outfalls to determine compliance.

Radioactive wastewater

LANL is currently generating approximately 6 million gallons of liquid radioactive waste annually. The majority of this wastewater is conveyed to the TA-50 central processing area through a double walled collection system. This double encased collection system consists of 5 miles of pipe and serves the following TAs: 59, 48, 55, 30, 35. Some generating facilities are not served by this collection system, and wastewater is delivered by vacuum truck. Treatment at the central processing area consists of flocculation/clarification, filtration, and solids handling. A grit chamber located in the basement of TA-50-1 was found to be leaking. It was removed and is being replaced by a new pH adjustment tank which will be located in a containment tank. Wastewater is treated in a batch mode. Treated effluent is discharged to Mortandad Canyon from Outfall 051. Low level radioactive sludge is drummed and shipped to TA-54 (Area G) for disposal.

More highly radioactive liquid waste generated from the plutonium processing facility (TA-55) is pretreated (flocculation/clarification/solids handling) prior to being treated at the central processing facility. Sludge is mixed with cement and the transuranic (TRU) waste shipped to TA-54 (Area G) for storage.

A separate radioactive wastewater treatment facility is located at TA-21, consisting of flocculation, clarification, filtration, and solids handling. This

facility no longer has the capability for final pH adjustment; therefore, treated wastewater (pH > 10) is pumped to TA-50 for final pH adjustment. TA-21 effluent is tested for radionuclide (not NPDES) parameters, and depending on the results, is either discharged through Outfall 051 (after pH adjustment) or can be treated at the TA-50 central processing facility. The TA-21 collection system and pipeline to TA-50 is a single-wall steel pipe. Schematics of the radioactive wastewater treatment facilities at LANL are presented in Figures 2 and 3.

High-Explosive Wastewater

High-explosive wastewater is generated primarily from equipment cleaning and process area floor drains, and flows to sumps where potentially explosive particulate matter is removed by gravity settling. The effluent from the sumps discharges to one of the 19 permitted outfalls. The solids collected in the sump (along with some liquid effluent) are pumped out by vacuum truck and transported to the burn pad at TA-16, where they are treated in a sand filter. The solid material collected on the sand filter is burned in place. The sand filter effluent is treated by granular activated carbon prior to discharge from Outfall 05A-055.

Printed Circuit Board Wastewater

LANL manufactures printed circuit boards for detonators in TA-22-91, using a photo-etch process. Wastewater is generated from a four-stage cascading rinse system, and a final rinse step. Wastewater from the cascade rinse system is treated and then trucked to TA-54 for disposal. Treatment occurs in three tanks and consists of settling, precipitation (using calcium hydroxide), and pH adjustment. Periodically, sludge is removed from each of the three tanks and placed into drums and transported to TA-54. Wastewater

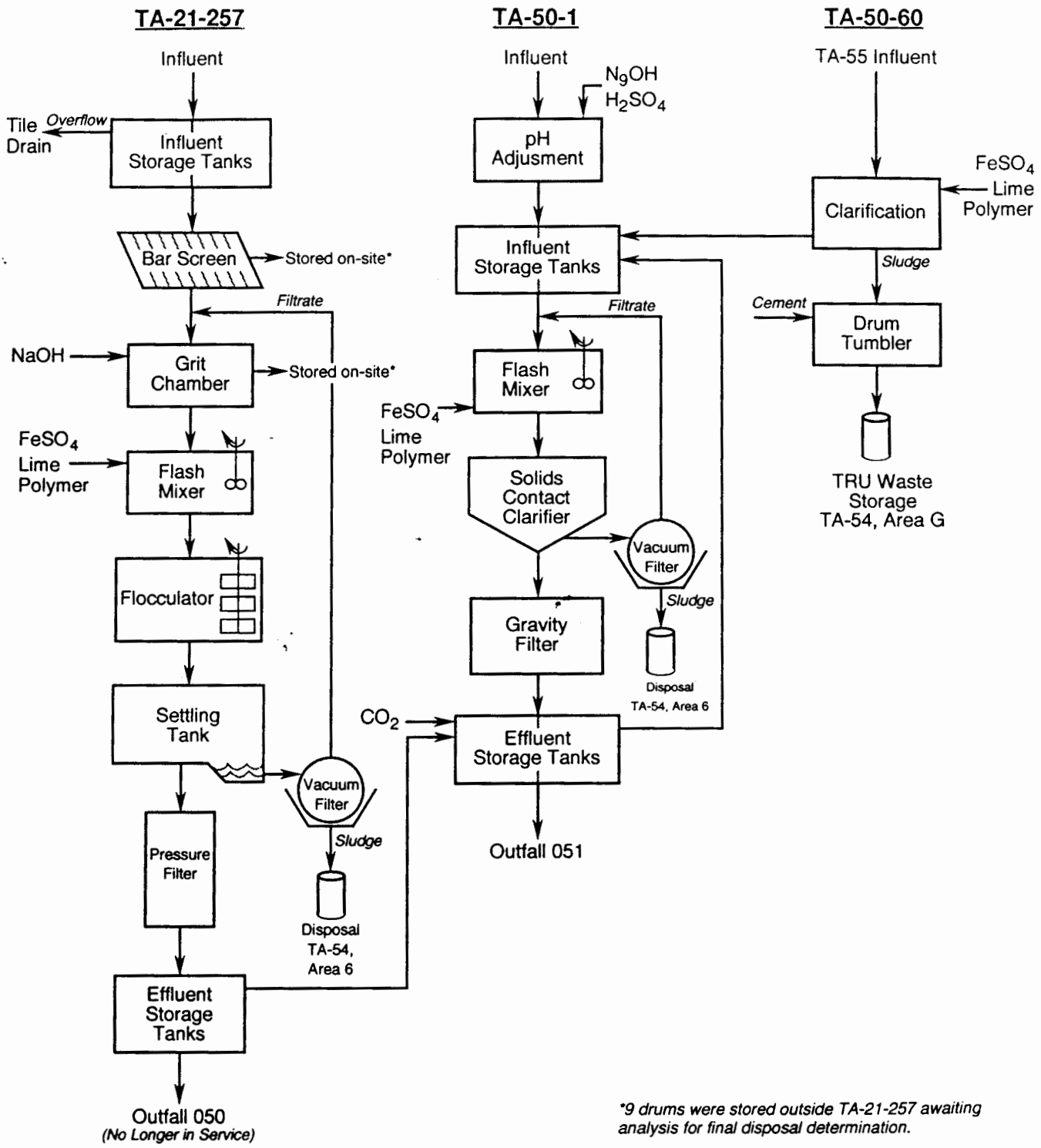

Figure 2
RADIOACTIVE WASTEWATER TREATMENT FACILITIES
LANL Facility
Los Alamos, New Mexico

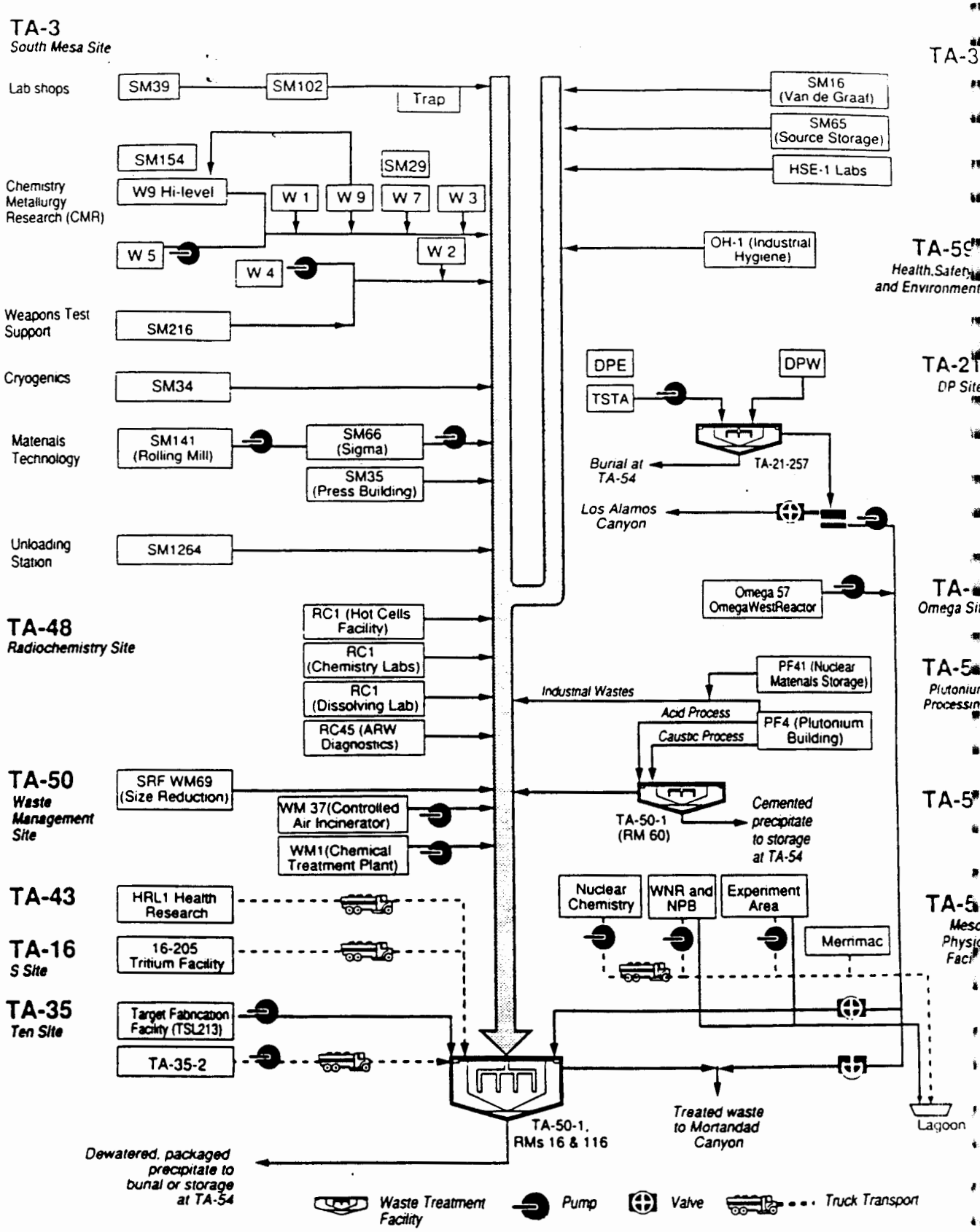

Figure 3
WASTEWATER DISCHARGED TO TA-50
Los Alamos National Laboratory
Los Alamos, New Mexico

from the final rinse is discharged untreated to Outfall 128. All spent process baths are drummed and transported to TA-54 for disposal.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL operations, including wastewater treatment, a facility tour was conducted. The following facility areas were inspected: various wastewater generation points, the SWSC facility, the radioactive wastewater treatment facilities, the high-explosives manufacturing facilities, the printed circuit board manufacturing facility, the Fenton Hill Geothermal facility, the power and steam plants, and at least one outfall monitoring location for each of the wastewater categories identified in the NPDES permit. Records/documents affiliated with the regulated activity were also reviewed.

Facility Inspection/Discussions

A discussion of major facility areas inspected follows. Included is a brief description of activities and observations noted.

SWSC Plant

The sanitary wastewater treatment plant and collection system is operated and maintained by a crew of seven (four are class 4 certified operators). On weekdays, two are assigned to inspecting the lift stations, while five operators are at the plant (one foreman, one lab technician, and three operators). There are two operators at the plant on weekends. The facility is not manned in the evenings. Daily monitoring is conducted on process parameters to identify any unusual conditions.

Sanitary effluent flow discharged through Outfall 01S is measured by a V-notch weir, which has a sonic meter for continuous depth measurement, and a totalizer. Compliance samples are collected, by an iced automatic 24-hour composite sampler, and analyzed by JCI Environmental Services (JCI). The sampling schedule is set by JCI. Samples are collected and brought back to the laboratory for any necessary preservation. Chain-of-custody forms are filled out and kept by JCI.

The SWSC plant has consistently been achieving BOD and TSS effluent concentrations of less than 10 mg/L. The only effluent quality difficulties have been inconsistent nitrogen removal efficiencies. For nitrification to occur, the influent wastewater must have sufficient alkalinity. Plant operators are manually adding soda ash to provide additional alkalinity to support nitrification. Automatic soda ash feed equipment would provide better process control. In order to attain the proper dissolved oxygen conditions within the aeration basins (to allow nitrification and denitrification), the aerators are switched on and off. If the dissolved oxygen in the basin is too high (above approximately 1.0 mg/L), it will not go to 0 mg/L during the off cycle and dentrification will not occur. Strict aeration control is essential for nitrogen removal. Sludge removal from the clarifiers is conducted in a batch mode, because there is no sludge thickening equipment. One clarifier is taken off-line, allowed to settle, and then thickened sludge is pumped to the drying beds. This batch process reduces settling capacity (with one clarifier out of service) and impact biological treatment efficiency due to the rapid change in microorganism population [Mixed Liquor Suspended Solids (MLSS) concentration]. Additional operator attention and controls are necessary without sludge thickening equipment.

During the first year of operation, facility personnel have been experimenting with plant operation in order to maximize plant performance.

An operator's manual should be developed which establishes process control parameter (MLSS, D.O., etc.) ranges for optimal plant performance. This document should be updated as additional plant performance information is developed.

There have also been unusual influent characteristics ("green coloration," "thick-like mud," "diesel-like smell"), which have negatively impacted nitrification/dentrification organisms. If process performance continues to be impacted by unusual influent characteristics, LANL should implement some upstream sampling to identify and eliminate nondomestic wastewater discharges. This could also prevent sludge contamination. To date, the SWSC facility has filled 12 of its 16 sludge beds, and has not yet disposed of sludge. The sludge beds that have been sampled to date at the SWSC plant have been below the concentration limits established in 40 CFR Part 503 for land application. Previously, sewage sludge was land applied at TA-54; however, a new site will need to be developed because the application rates at the previous disposal site exceed the new sludge regulation requirements.

While the SWSC plant was completed approximately 1 year ago, an operation and maintenance (O&M) program is not yet in place. Facility personnel stated that they have been developing a computer program (MP-2) which would schedule and track all O&M activities; however, the development and implementation of this program has been delayed due to software problems. It is essential that the O&M program be completed and implemented to ensure continued facility performance.

The sanitary collection system has 40 lift stations. Of these lift stations, 14 have autodial high-level alarms, 16 have light high-level alarms, and 10 have no protection in case of pump failure or power outage. Due to the size of the collection system and the remote location of some of these lift stations,

alarms should be provided for all these facilities. Light alarms should be converted to autodial alarms if they are not located in an area which would be noticed and responded to before a spill were to occur.

Treated sanitary effluent is being used for cooling tower make-up water at the TA-3 power plant and eventually discharged through Outfall 03A-027 as cooling tower blowdown. During July 1993, 100% of the effluent was reused and there was no discharge from Outfall 01S. During July 1993, no sanitary effluent samples were collected and analyzed, even though sanitary wastewater will be discharged through Outfall 03A-027 as cooling tower blowdown (which has no BOD or coliform limits established for this wastestream category). LANL should be collecting compliance samples of the SWSC plant effluent or analyzing the samples collected for Outfall 03A-027 for all the parameters regulated for Outfall 01S. Because the secondary treatment limitations are technology-based limits, NEIC concludes that compliance samples of the SWSC plant effluent should be collected and analyzed even during periods when 100% of the effluent is used as cooling tower make-up water.

Radioactive Wastewater Treatment Facilities

The central radioactive wastewater treatment facility is located in TA-50, building 1. This facility is 30 years old and is reaching the end of its useful lifespan. The grit chamber, located in the basement of the building, had to be taken off-line recently, because it was found to be leaking. (The ground below the grit chamber has radiological contamination, but the extent of the plume has not been determined). Wastewater is seeping from the solids contact chambers and small troughs have been bolted on the outside of the tanks to collect this wastewater. The facility installed ion exchange columns 10 years ago; however, they have not been operated except for testing purposes, and the organic resins in the columns have now broken down. The

TA-50 treatment facility is not able to consistently meet DOE's Derived Concentration Guides for Public Dose for the following parameters: Cs^{137}, Sr^{90}, $Pu^{239,240}$, and Am^{241}.

Facilities discharging wastewater to the radioactive wastewater treatment plant include laboratories where organic solvents are used (including RCRA F-listed wastes), and this treatment plant is not designed to effectively remove these chemicals. The current permit establishes a limit for COD, but not any specific organic compounds. One of the major contributors to the TA-50 wastewater treatment plant is electroplating/metal finishing operations, and it is not clear from the permit fact sheet whether the effluent guidelines for Metal Finishing included in 40 CFR § 433.10 or more stringent limits have been applied to this discharge. The central radioactive treatment facility has no backup power supply. About 10 years ago, a new double contained collection system with leak detectors was installed. LANL only recently initiated predesign studies for replacing this facility, and they estimate that it may take 10 years before a new facility can be constructed and operational.

The radioactive treatment facility at TA-21 is smaller than the central processing facility and is not continuously manned. Wastewater is stored in influent tanks, and batch treatment is conducted approximately twice per month. The influent storage tanks have an overflow pipe which discharges into a tile drain field. As a result of the inspection, a work order was issued to eliminate this overflow line. This facility no longer has the capability of adjusting the final pH; therefore, the wastewater is pumped to TA-50 for pH adjustment and discharge through Outfall 051 (Outfall 050 at TA-21 has not been used for several years). LANL personnel could not demonstrate through a mass balance that all the wastewater pumped from TA-21 was received at TA-50. Both the raw wastewater collection system and the effluent pipeline are single-walled steel pipe and do not have leak detection systems.

The NPDES permit established separate limits for Outfalls 050 and 051, and requires weekly compliance sampling for each outfall. LANL has been collecting only one weekly sample for Outfall 051, and records indicate all these samples were from the TA-50 treatment facility effluent. Only one grab sample is collected, even if two effluent tanks are discharged in a day. LANL computes the mass of pollutants discharged by multiplying the total flow (from both tanks) by the concentrations determined from the sample collected from one of the tanks. No samples have been collected of the TA-21 treatment facility effluent being discharged to Outfall 051, despite the fact that lower mass limits are established for the TA-21 facility. To ensure representative sampling, the following changes need to be initiated: (1) For every week that there is a discharge from the TA-21 treatment facility plant through Outfall 051, a compliance sample should be collected and reported (in addition to the weekly sample from the TA-50 plant); (2) if two separate tanks from one of the treatment facilities are discharged during a day that a compliance sample is scheduled to be collected, samples of each tank should be collected for determining compliance with the mass permit limitations. The permit requires continuous pH monitoring for Outfall 051. LANL is only reporting the results of a single pH grab sample, taken in conjunction with the metals sample, on their DMRs.

High-Explosive Manufacturing Facilities

The current NPDES permit identifies 19 outfalls that discharge wastewater generated from the manufacturing of high explosives (HE). These production facilities are located in TA-9, 11, 16, and 22. Current treatment consists of gravity settling in sumps prior to discharge. High-explosive manufacturing uses a number of organic compounds which will not be removed by the existing treatment facilities. LANL is currently under an administrative order to upgrade high-explosive wastewater treatment by

September 1996. The permit established COD and TSS concentration limits for the high-explosive wastewater outfalls (Category 05A). It is not clear why mass based permit limits were not established based upon the Effluent Guidelines for the Explosives Manufacturing Point Source Category [40 CFR § 457.12]. Non-high-explosive-contaminated wastewater sources discharge to these Category 05A outfalls (including cooling water, pump seal water, roof drains, etc.), providing a significant dilution factor to the high-explosive wastewater. Compliance with existing permit limits is due primarily to dilution by this water, since existing treatment methods are ineffective. Non-high-explosive sources of wastewater should be eliminated, significantly reducing the volume of wastewater requiring treatment. When the other sources are eliminated, sumps containing wastewater with high organic concentrations should be transported to the burn pad area for treatment in the existing sand and carbon filters until the new high-explosive wastewater facilities are completed.

High-explosive operations personnel collect grab samples for pH and COD analysis in addition to the routine compliance samples collected by EM-8 personnel. The additional samples are analyzed by EPA approved methods, but are not reported on DMRs. A review of this data indicates that additional permit exceedences, not reported on the DMRs, have occurred. LANL does not believe that these data should be reported because they are used for process control and are inadequately sampled. NEIC does not concur with this conclusion. The COD and pH analyses are conducted in accordance with EPA methods and holding times. LANL personnel stated that these additional COD samples are not always preserved, but this would result in a low bias. Based on a review of the supplemental data, the current monitoring frequency for these outfalls is inadequate due to the variable quality of the discharges. More frequent analyses (particularly of effluent from the burn pad treatment facility) should be required. Also, some of the organics being discharged are not readily

adsorbed on the carbon, and additional treatment (i.e. biological or stripping) may be required.

Printed Circuit Board Facility

LANL began transporting wastewater effluent from the cascading rinse treatment system to TA-54 approximately 2 years ago, in response to permit violations. The effluent is pumped to 250-gallon plastic totes, located on an inclined concrete ramp just outside the building, for temporary storage. There is a trench at the base of the concrete ramp for containing any spills. Facility personnel stated that rainwater accumulating in this trench is discharged to the canyon. The concrete ramp is not a large structure and a roof could be constructed to prevent rainwater from collecting in the trench. The untreated final rinsewater, which continues to be discharged at Outfall 128, has consistently been in compliance with permit requirements.

Fenton Hill Geothermal Site

LANL has been reporting that no discharge has been occurring from the permitted outfall at the Fenton Hill Geothermal Site. An inspection was conducted to verify this information. The Geothermal facility had been operating intermittently over the past 2 years but was completely shut in since May 1993. The future operation of this facility is dependent on securing additional funding.

Facility personnel stated that surface water discharges were primarily associated with the washing of cuttings from the drilling operation, and there has been no discharge to surface waters since approximately 1988, when drilling at the site was completed. The facility has two large lined holding ponds (1- and 5-million gallon capacity) for storing geothermal water.

Overflow pipes for these ponds were valved and locked closed. There is no blowdown associated with this operation, since recovery at the well is below 10%, and make-up water is used. An inspection of the outfall and the flow measuring device (parshall flume) showed no evidence of any recent surface water discharges from this facility.

TA-16 Steam Plant

An inspection of the TA-16 steam plant was conducted due to the number of effluent violations that have occurred at this facility (Outfall 02A-007). The NPDES permit authorizes the discharge of boiler blowdown and neutralized demineralizer regenerant to Outfall 02A-007. As a result of the LANL Waste Characterization Study, it was determined that roof drains and floor drains also discharge to this outfall, and will be eliminated.

Treatment of the wastewater discharged includes pH adjustment (CO_2 injection), followed by gravity settling in two 1,500-gallon holding tanks. Plant personnel stated past problems were due to inadequate pH adjustment capability (which has been rectified), and that the more recent effluent violations are due to inadequate boiler chemistry, which has resulted in the discharge of excess scale material. A new contract for boiler chemistry chemicals was recently issued, and should alleviate the problems. As a backup measure, plant personnel are conducting internal monitoring of pH and TSS. If the wastewater approaches permit limits, it will be removed by a vacuum truck and transported to the old TA-46 sanitary lagoon for evaporation.

TA-3 Power Plant

The NPDES permit authorizes the discharge of spent demineralizer regenerants, boiler blowdown, cooling tower blowdown, and diatamaceous earth

filter backwash from the TA-3 Power Plant to Outfall 01A-001. In May 1990, a valve on a sulfuric acid tank (used for demineralizer regenerant) was left open and approximately 1,700 gallons of sulfuric acid was discharged to a neutralization tank located outside the power plant, and eventually to Sandia Canyon from Outfall 01A-001. In response to this incident, facility modifications were made. A new neutralization tank was installed in the basement of the power plant (building 22). The spent regenerants (sulfuric acid and caustic) for the mixed anion/cation column are commingled in this neutralization tank. The pH is adjusted by adding additional caustic or carbon dioxide. If the contents of the tank are within permit limits, effluent is pumped to the old neutralization tank, located outside the building and eventually through Outfall 01A-001. This old neutralization tank has a continuous pH monitor, but automatic pH adjustment capability has been eliminated to prevent spill events, such as the May 1990 incident. Manual pH adjustment is possible, but there have not been any problems since the new system was installed.

Currently, the permit requires only a weekly grab sample for pH compliance determination. Continuous pH monitoring would be more appropriate at sites that discharge spent demineralizer regenerants. There are already pH monitors and recorders in place at both the power plant and steam plant, but this additional data is not being reported on the DMRs.

Seven 55-gallon drums, labeled as containing "oily water," were stored adjacent to Sandia Canyon, near the TA-3 steam plant. Facility personnel stated that this material was removed from an oil/water separator, taken out of service when Outfall 04A-151 was eliminated in April 1992. This material was being stored, while analysis was conducted to determine how it would be disposed. Any spills or leaks from these drums would reach Sandia Canyon, therefore, this was not an appropriate storage location for this material.

During the inspection, facility personnel moved these drums to a secondary containment structure located in the power plant facility.

Photo Wastewater

The NPDES permit authorizes photo wastewater discharges from 13 outfalls (Category 06A). Effluent guidelines have been established for photographic processing facilities that process greater than 1,600 square feet per day of film [40 CFR § 459.12]; however, these limitations were not applied to LANL in its permit. Facility personnel stated that no individual outfall met this production figure, but they did not have a total processing figure for the entire LANL facility.

One photo developing facility at TA-15, building 183 (Outfall 06A-123) was inspected. Facility personnel stated that only photo rinsewater is discharged at this outfall. All fixer and developer are reportedly drummed up for disposal. There was no silver recovery or other wastewater treatment at this site. There is a potential for spills of spent fixer and developer to be discharged from the outfall directly to the environment.

Better management and control of the photographic processing wastewater would be obtained by consolidating photographic developing facilities at LANL. After appropriate pretreatment (silver recovery), fixer and rinsewater would be amenable to biological treatment and could, therefore, be discharged to the sanitary sewer system. This would eliminate 13 outfalls, where spills of photographic processing chemicals could be discharged directly to the environment.

Noncontact Cooling Water

The NPDES permit authorizes noncontact cooling water, nondestructive testing discharge, asphalt batch plants, and water production facility discharges from 30 outfalls (Category 04A).

One noncontact cooling water outfall (Outfall 04A-013), which serves facilities in TA-46-building 30, was chosen at random for inspection. According to permit application information, the discharge from this facility was generated from noncontact cooling water from a laser operation. Noncontact cooling water was no longer being discharged to Outfall 04A-013. Laser operations in this area were placed on centralized recirculating (closed system) cooling water. Other sources of wastewater discharged to this outfall, identified as part of LANL's Wastestream Characterization Study but not included in the permit application, included floor drains, sinks, and air compressor blowdown. Facility personnel stated that they had initiated action to eliminate these sources, and temporary plugs were found in the floor drains.

The permit did not establish any limitations for Category 04A outfalls, based on the information presented in the application regarding the characteristics of the wastewater being discharged. However, the information presented in the permit application did not accurately characterize the nature of the sources and the pollutants that could potentially be discharged from Outfall 04A-013 (spills from floor drains, etc.).

Corrective actions, which have been recommended under the Wastestream Characterization Study, should be given high priority for outfalls, such as Category 04A, that discharge directly to the environment without treatment or monitoring requirements. LANL should recirculate cooling water

at other locations where it is feasible; however, the outfalls should be permanently plugged when cooling water discharges have been eliminated.

TA-2 Reactor

There is an 8 megawatt research/testing nuclear reactor at TA-2, which has been operational since 1956. As part of the Waste Characterization Study, an unpermitted outfall was identified at this site. In the basement of the reactor building, holes have been drilled in the foundation to alleviate pressure from seasonal rising groundwater levels. The groundwater entering the basement of the reactor is collected in a sump and pumped to Los Alamos Canyon, at an unpermitted discharge location.

On December 11, 1992, an emergency shutdown of the reactor occurred. During preparation for restart, it was determined that there was a leak in the reactor's primary cooling loop, causing a loss of tritiated water. Analysis of the wastewater in the basement sump in the reactor building (which is discharged to Los Alamos Canyon) shows tritium concentrations as high as 115,000 picocuries/L. During the NEIC inspection, there was no discharge from this sump, because groundwater levels had naturally receded. This outfall should be eliminated before next spring (when groundwater levels rise) and a plan developed for remediating the tritium contaminated groundwater.

Records/Document Review

A discussion of the records/documents (regarding wastewater generation, treatment, discharge, and compliance) which were reviewed follows.

Discharge Monitoring Reports

Discharge monitoring reports (DMRs) for the period of January 1990 to June 1993 were reviewed. Table 1 summarizes the reported exceedences of daily maximum effluent limitations for the industrial wastewater outfalls. Table 2 summarizes the reported exceedences of daily maximum effluent limitations for the sanitary wastewater outfalls.

Areas of noncompliance with the NPDES monitoring and reporting requirements were also identified. If a daily maximum exceedence also caused the daily average value for the month to be exceeded, LANL is not reporting this as a separate violation on the DMR. These are not proper reporting procedures. Daily average exceedences must also be reported. The DMRs for this facility were not copied; therefore, it was not possible to identify and prepare a summary of all exceedences of daily average limits. Additional effluent monitoring is being conducted by some of the user groups and not being reported on the DMRs. No monitoring is being conducted on the TA-21 treatment plant effluent. The sanitary effluent is not being monitored for all applicable parameters when it is being used as cooling tower make-up water and being discharged from a cooling tower blowdown outfall. Results from a single grab sample for pH are being reported on the DMR for Outfall 051; however, the permit requires continuous monitoring and reporting.

Compliance Schedules

LANL met the compliance schedules established in the Administrative Order for the sanitary outfalls. The SWSC facility was completed and operational by August 18, 1992. The TA-3 trickling filter facility (Outfall 01S) was shut down on September 4, 1992, and the wastewater diverted to the SWSC facility. The wastewater from the TA-18 lagoons (Outfall 04S) was

Table 1

DAILY MAXIMUM PERMIT EXCEEDENCES - INDUSTRIAL OUTFALLS
Los Alamos National Laboratory
Los Alamos, New Mexico

Date	Parameter	Outfall	Technical Area	Sample Result (mg/L)	Permit Limit (mg/L)
06/30/93	Free Cl_2	03A045	TA-48-1	0.53	0.5
06/17/93	Free Cl_2	03A034	TA-21-166	0.52	0.5
06/09/93	Foam	051	TA-50-1	present	none
06/03/93	TSS	03A160	TA-35-124	331	100
04/29/93	Phosphorus	03A023	TA-03-156	6.3	5.0
04/07/93	pH	128128	TA-22-91	9.8	6.0 - 9.0
03/25/93	TSS	03A113	TA-53-293/294	210	100
03/17/93	TSS	02A007	TA-16-540	416	100
03/09/93	TSS	02A007	TA-16-540	526	100
03/01/93	TSS	02A007	TA-16-540	441	100
01/12/93	TSS	02A007	TA-16-540	270	100
01/12/93	pH	02A007	TA-16-540	9.2	6.0 - 9.0
12/23/92	Chlorine	03A045	TA-48-1	0.56	0.5
12/21/92	Cyanide	06A132	TA-35-87	0.46	0.2
12/18/92	TSS	02A007	TA-16-540	128	100
11/19/92	Phosphorus	03A148	TA-03-1499	7.7	5.0
10/09/92	TSS	02A129	TA-21-357	135	100
10/02/92	Chlorine	03A009	TA-03-102	0.6	0.5
09/18/92	TSS	02A129	TA-21-357	155	100
09/16/92	COD	05A055	TA-16-363	1640	250
09/16/92	pH	05A055	TA-16-363	5.4	6.0 - 9.0
09/15/92	pH	03A098	TA-59-1	2.8	6.0 - 9.0
09/14/92	Phosphorus	03A047	TA-53-60	6.2	5.0

Table 1 (continued)

Date	Parameter	Outfall	Technical Area	Sample Result (mg/L)	Permit Limit (mg/L)
09/01/92	Phosphorus	03A049	TA-53-64	5.8	5.0
08/19/92	Phosphorus	03A047	TA-53-60	6.4	5.0
08/12/92	Phosphorus	03A045	TA-48-1	5.8	5.0
04/23/92	Free Cl_2	03A130	TA-11-30	15.4	0.5
04/07/92	pH	02A007	TA-16-540	9.4	6.0 - 9.0
04/07/92	pH	02A007	TA-16-540	9.3	6.0 - 9.0
03/20/92	Cyanide	06A123	TA-15-R183	0.49	0.2
02/19/92	pH	05A055	TA-401/406	9.5	6.0 - 9.0
02/03/92	pH	02A007	TA-16-540	9.3	6.0 - 9.0
11/13/91	TSS	02A007	TA-16-540	451	100
11/06/91	pH	02A007	TA-16-540	9.8	6.0 - 9.0
10/16/91	TSS	02A007	TA-16-540	1694	100
10/08/91	Phosphorus	02A007	TA-16-540	384	40
10/08/91	TSS	02A007	TA-16-540	464	100
09/16/91	Phosphorus	02A007	TA-16-540	62	40
09/05/91	Phosphorus	02A007	TA-16-540	115	40
08/21/91	Foam	03A021	TA-03-29	Present	None
08/21/91	pH	03A021	TA-03-29	5.4	6.0 - 9.0
08/12/91	pH	128128	TA-22-91	9.7	6.0 - 9.0
08/03/91	Floating solids	02A007	TA-16-540	Present	None
06/19/91	COD	05A067	TA-9B	1010	250
04/18/91	Free Cl_2	03A020	TA-2-49	1.35	0.5
03/20/91	COD	128	TA-22-91	3.9 lbs/day	3.8 lbs/day
03/16/91	TSS	03A022	TA-03-027	818	100
03/16/91	TSS	03A022	TA-03-027	2072	100
03/07/91	Foam	02A007	TA-16-540	Present	None

Table 1 (continued)

Date	Parameter	Outfall	Technical Area	Sample Result (mg/L)	Permit Limit (mg/L)
03/06/91	Foam	02A007	TA-16-540	Present	None
03/05/91	pH	01A001	TA-03-22	10.4	6.0 - 9.0
03/05/91	pH	01A001	TA-03-22	10.9	6.0 - 9.0
02/28/91	Phosphorus	03A047	TA-53-60	7.26	5.0
12/18/90	Phosphorus	03A032	TA-21-150	5.9	5.0
11/30/90	Phosphorus	03A146	TA-53-14	24.2	5.0
11/01/90	TSS	03A023	TA-3-156	300	100
10/15/90	Free Cl_2	03A020	TA-2-49	0.7	0.5
09/21/90	pH	02A007	TA-16-540	9.5	6.0 - 9.0
08/27/90	Phosphorus	03A047	TA-53-60	12.1	5.0
08/13/90	Phosphorus	03A023	TA-3-156	7.4	5.0
08/08/90	Phosphorus	03A023	TA-3-156	9.5	5.0
08/06/90	Phosphorus	03A042	TA-46-1	8.6	5.0
07/26/90	pH	02A007	TA-16-540	9.5	6.0 - 9.0
07/19/90	TSS	05A072	TA-16-460	144	45
06/11/90	TSS	01A001	TA-3-22	682	100
06/07/90	Free Cl_2	03A028	TA-15-202	1.6	0.5
05/25/90	Free Cl_2	03A025	TA-3-208	17.9	0.5
05/23/90	pH	01A001	TA-3-22	9.9	6.0 - 9.0
05/21/90	pH	01A001	TA-3-22	2.2/10.1	6.0 - 9.0
05/20/90	pH	01A001	TA-3-22	1.4	6.0 - 9.0
05/11/90	pH	01A001	TA-3-22	12.5	6.0 - 9.0
04/25/90	COD	05A055	TA-15-401/406	452	250
04/12/90	Iron	128	TA-22-91	0.25 lbs/day	0.10 lbs/day
01/02/90	Silver	06A073	TA-16-222	1.8	1.0

Table 2

DAILY MAXIMUM PERMIT EXCEEDENCES - SANITARY OUTFALLS
Los Alamos National Laboratory
Los Alamos, New Mexico

Date	Parameter	Outfall	Technical Area	Sample Result (mg/L)	Permit Limit (mg/L)
09/10/92	pH	01S	TA-3	5.6	6.0 - 9.0
09/10/91	Foam	01S	TA-3	present	none
08/29/91	Foam	01S	TA-3	present	none
04/10/91	Fecal coliform	01S	TA-3	21,400/100 mL	2,000/100 mL
09/28/90	BOD	12S	TA-46	180	45
09/28/90	TSS	12S	TA-46	105	90
09/28/90	pH	12S	TA-46	9.9	6.0 - 9.0
09/28/90	Fecal coliform	12S	TA-46	1,2000,000/ 100 mL	2,000/ 100 mL
07/17/90	BOD	01S	TA-3	47	45
05/02/90	TSS	01S	TA-3	99	45
03/02/90	BOD	05S	TA-21	77	45
03/02/90	TSS	05S	TA-21	52	45
02/08/90	pH	03S	TA-16	9.3	6.0 - 9.0

diverted to the SWSC facility on November 20, 1992. The outfall for the TA-53 lagoons (Outfall 09S) was plugged on January 31, 1993, and wastewater was diverted to SWSC on February 2, 1993. Wastewater from the TA-35 lagoons (Outfall 10S) was diverted to SWSC on November 30, 1992, and from the TA-46S lagoons (Outfall 12S) on October 14, 1992.

LANL installed a new pH neutralization system and settling tanks at the TA-16 steam plant (completed late September 1992) in accordance with the compliance schedule. While this has eliminated pH violations (with the exception of a January 12, 1993 excursion), violations of TSS have continued to occur. Plant personnel believe that violations will be eliminated by correcting the boiler chemistry. If not, additional treatment improvements, such as filtration, may be necessary to ensure compliance.

LANL did not meet the Waste Characterization Study (WCS) compliance schedule, which required all studies/reports to be completed by July 1993. The study has not been completed for TA-21 and TA-55, due to difficult access problems and complicated drain systems. The studies have been completed for all other TAs; however, less than half the reports have been finalized (others are being drafted or are in review).

The WCS identified outfalls which were unpermitted and improperly characterized in LANL's NPDES permit. Numerous corrective actions (i.e. plugging of floor drains, separation of wastestreams, etc.) will need to be taken, and LANL has requested a schedule for implementation extending to the end of fiscal year 1996. This schedule appears to be based on the degree of difficulty and cost of the corrective action, and not environmental concerns. LANL should be required to prioritize the implementation of corrective actions based on potential environmental harm posed by the identified problem. A

database is being developed to track completion of corrective action items, and a copy, updated as of August 1993, is contained in Appendix F.

Stormwater Program

LANL has developed a facility Storm Water Pollution Prevention Plan (SWPPP) dated April 1993. Appendix B of this document identifies 22 areas where site-specific SWPPPs have been developed by the user groups. Implementation of these plans is scheduled for October 1993.

There are over 800 identified Solid Waste Management Units (SWMUs) at LANL. These sites may be significant contributors of pollutants to stormwater discharges. Other significant areas of potential stormwater contamination include the blasting areas, sewage sludge disposal site, and the waste storage/disposal sites at TA-54. The LANL SWPPP outlines a three-stage sampling program for assessing the stormwater impact from SWMUs. This information will be used to prioritize site remediation activities. While this approach has merit, the plan lacks specific details and an implementation schedule. In order to ensure implementation of their SWPPP, LANL should be required to develop a specific stormwater monitoring program and schedule. Based on results of this program, the issuance of individual stormwater permits may be warranted for specific sites at LANL.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

Based on inspection observations, discussions with LANL personnel, and a review of documentation, the following areas of noncompliance of the water pollution control requirements were identified:

NPDES Permit NM0028355 Section A. Effluent Limitations and Monitoring Requirements	DMRs document 77 daily maximum limitation exceedences at industrial wastestream outfalls during the time period between January 1990 through January 1993.
NPDES Permit NM0028355 Section A. Effluent Limitations and Monitoring Requirements	DMRs document 13 daily maximum limitation exceedences at sanitary wastestream outfalls during the time period between January 1990 through January 1993.
NPDES Permit NM0028355 Section A. Effluent Limitations and Monitoring Requirements	All required effluent monitoring and reporting is not conducted: • Outfall 051 requires continuous pH monitoring; however, LANL is reporting a weekly grab sample result on the DMRs. • No monitoring is being conducted on the TA-21 radioactive treatment plant effluent. • The sanitary effluent is not being monitored for all applicable parameters when it is used as cooling tower make-up water and discharged from a cooling tower blowdown outfall.

	• Additional effluent monitoring is being conducted by some of the user groups and not being reported on the DMRs. • LANL is not reporting daily average exceedences as a separate violation on the DMR when there are daily maximum exceedences.
Administrative Order VI-92-1306 and Federal Facility Compliance Agreement VI-92-1305	LANL did not meet the Waste Characterization Study (WCS) compliance schedule, which required all reports to be completed by July 1993.
40 CFR Part 122.1(b) 40 CFR Part 122.21	Unpermitted wastewater discharges are occurring at LANL. Additionally, wastewater from sources not identified in the NPDES permit application is being discharged through permitted outfalls. The WCS identifies numerous unpermitted outfalls (such as the tritium contaminated water being discharged to Los Alamos Canyon from the TA-2 reactor basement) and permitted outfalls discharging from unauthorized sources (such as noncontact cooling water outfall 04A-013, which discharges wastewater from equipment rooms and sinks while cooling water discharges have been ceased/recycled).

AREAS OF CONCERN

Based on inspection observations, discussions with LANL personnel, and a review of documentation, the following areas of concern were identified. Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements or adverse environmental impacts.

- Although the Sanitary Wastewater Systems Consolidation (SWSC) facility provides more reliable treatment than the individual sanitary systems it replaced, a few areas of concern were identified:

  - Despite being completed approximately 1 year ago, an operation and maintenance (O&M) program is not yet in place for the facility. It is essential that the O&M program be completed and implemented to ensure continued facility performance.

  - The sanitary collection system has 40 lift stations. Due to the size of the wastewater collection system and remote locations, auto-dial, high-level alarms should be installed at all lift stations.

  - If process performance continues to be impacted by unusual influent characteristics, LANL should implement upstream sampling/analysis to identify and eliminate nondomestic wastewater discharges that could impact plant performance or contaminate sludge.

  - Automatic soda ash feed equipment would provide better process control for nitrification.

  - An operator's manual should be developed for SWSC which establishes process control parameter (MLSS, D.O., etc.) ranges for optimal plant performance. This document should be updated as additional plant performance information is developed.

- The central radioactive wastewater treatment facility is 30 years old and is reaching the end of its useful lifespan. The grit chamber has been removed because of leakage which has resulted in radiological groundwater contamination. Organic solvents are discharged to the TA-50 radioactive wastewater treatment facility. The plant is not designed to treat this type of waste and the permit only contains limits for COD (not specific organic compounds). LANL has only recently initiated predesign studies for replacing this facility, and it may take 10 years before a new facility can be constructed and operational. One of the major contributors to the TA-50 wastewater treatment plant is electroplating/metal finishing operations, and it is not clear from the permit fact sheet whether the effluent guidelines for Metal Finishing included in 40 CFR § 433.10 or more stringent limits have been applied to this discharge.

- The influent storage tanks for the radioactive treatment facility at TA-21 have an overflow pipe which discharges into a tile drain field. LANL personnel could not demonstrate through a mass balance that all the wastewater pumped from TA-21 was received at TA-50. Both the raw wastewater collection system and the effluent pipeline are single-walled steel pipe and do not have a leak detection system.

- High-explosives (HE) manufacturing at LANL results in the discharge of organic compounds which are not removed by the existing treatment facilities. High-explosive wastewater from sumps with high organic concentrations should be transported to the burn pad area for treatment in the existing carbon filters until the new centralized high-explosive wastewater facilities are

completed in accordance with the established compliance schedule. Mass based limitations were not established in the NPDES permit, in accordance with Effluent Guidelines, and non-high-explosive wastewater sources are providing significant dilution at these outfalls.

- Better management and control of the photographic processing wastewater would be obtained by consolidating these facilities. Spills of photographic processing chemicals could be discharged directly to the environment through 13 outfalls.

- LANL should be required to develop a compliance schedule for correcting deficiencies identified in the Waste Characterization Study that is prioritized based on the potential for environmental contamination.

- There are over 800 identified Solid Waste Management Units (SWMUs) at LANL, which may be significant contributors of pollutants to stormwater discharges. Other significant areas of potential stormwater contamination include the blasting areas, sewage sludge disposal site, and the waste storage/disposal sites at TA-54. The LANL Storm Water Pollution Prevention Plan (SWPPP) outlines a three-stage sampling/analysis program for assessing the stormwater impact from SWMUs. In order to ensure implementation of their SWPPP, LANL should be required to develop a specific stormwater monitoring program and schedule.

LIST OF APPENDICES

A NPDES Permit No. NM0028355 (Issued 1/31/90)
B December 14, 1990 Letter (Outfall changes)
C Storm Water Permitting Chronology
D Administrative Order VI-92-1306
E Federal Facility Compliance Agreement VI-92-1305
F Wastestream Characterization Corrective Action Database

APPENDIX A

NPDES PERMIT NO. NM0028355 (ISSUED 01/31/90)

Permit No. NM28355

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C... 1251 et. seq; the "Act"),

University of California
Management Contractor For Operation
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

and

Department of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

(See Part III.L.)

are authorized to discharge from a facility located at Los Alamos National Laboratory, Los Alamos, Los Alamos County, New Mexico

to receiving waters named various tributaries to the Rio Grande

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I (44 pages), II (14 pages), and III (5 pages) hereof.

This permit shall become effective on January 31, 1990

This permit and the authorization to discharge shall expire at midnight, March 1, 1991.

Signed and issued this 30th day of January 1990

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 01A

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 001 - this combined source shall be identified and reported as 01A.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Free Available Chlorine(*2)	N/A	N/A	0.2 mg/l	0.5 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Month	Estimate
Total Suspended Solids	1/Month	Grab
Free Available Chlorine(*2)	1/Month	Grab

001 (TA 3-22, spent demineralizer regenerants, boiler blowdown, cooling tower blowdown and diatomaceous earth filters backwash).

(*1) Report.
(*2) See Part III, Paragraph A.

OUTFALL 01A

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to where combined sources are discharged.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 02A

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 02A - neutralized demineralizer regeneration brine and boiler blowdown.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Total Iron	N/A	N/A	10 mg/l	40 mg/l
Total Copper	N/A	N/A	1 mg/l	1 mg/l
Total Phosphorus	N/A	N/A	20 mg/l	40 mg/l
Sulfite (as SO_3)	N/A	N/A	35 mg/l	70 mg/l
Total Chromium	N/A	N/A	(*1) mg/l	(*1) mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Week	Estimate
Total Suspended Solids	1/Week	Grab
Total Iron	1/Week	Grab
Total Copper	1/Week	Grab
Total Phosphorus	1/Week	Grab
Sulfite (as SO_3)	1/Week	Grab
Total Chromium	1/Month	Grab

(*1) Report

OUTFALL 02A

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge at locations as shown in Part III, Paragraph I.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 03A

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 019, 020, 021, 022, 023, 024, 025, 026, 027, 028, 031, 032, 034, 035, 036, 037, 038, 042, 043, 045, 047, 048, 049, 060, 092, 098, 103, 113, 114, 124 & 125 - cooling tower blowdown, evaporative coolers, condensers and air washer blowdown. This category shall be identified and reported as 03A.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)(*3)	(*1)(*3)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Free Available Chlorine(*2)	N/A	N/A	0.2 mg/l	0.5 mg/l
Total Phosphorus	N/A	N/A	5 mg/l	5 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Week	Estimate
Total Suspended Solids	1/Week	Grab
Free Available Chlorine(*2)	1/Week(*3)(*4)	Grab
Total Phosphorus	1/Week(*3)(*4)	Grab

(*1) Report.
(*2) See Part III, Paragraph A.
(*3) Total for all category outfalls.
(*4) Monitoring and reporting shall be conducted sequentially in accordance with Part III, Paragraph C.

OUTFALL 03A

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week(*4) by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge at locations as shown in Part III, Paragraph C.

(*4) Monitoring and reporting shall be conducted sequentially in accordance with Part III, Paragraph C.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 04A

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 009, 010, 011, 012, 013, 014, 016, 018, 040, 070, 083, 084, 086, 087, 090, 091, 093, 094, 102, 109, 110, 112, 115, 117, 118, 119, 121, 122, 126, 127 - noncontact cooling water, non-destructive testing discharge, asphalt batch plants and water production facilities. This category shall be identified and reported as 04A.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)(*2)	(*1)(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Week	Estimate

(*1) Report.
(*2) Total for all category outfalls.

OUTFALL 04A

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week(*3) by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge at locations as shown in Part III, Paragraph D.

(*3) From monitoring reports for the drinking water supply system.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 050

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 050 - radioactive waste treatment plant discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Ammonia (as N)	N/A	N/A	Report mg/l	Report mg/l
Chemical Oxygen Demand	8.6(18.8)	17.0(37.5)	N/A	N/A
Total Suspended Solids	1.7(3.8)	5.7(12.5)	N/A	N/A
Total Cadmium	0.005(0.01)	0.027(0.06)	N/A	N/A
Total Chromium	0.009(0.02)	0.04(0.08)	N/A	N/A
Total Copper	0.06(0.13)	0.06(0.13)	N/A	N/A
Total Iron	0.06(0.13)	0.06(0.13)	N/A	N/A
Total Lead	0.005(0.01)	0.014(0.03)	N/A	N/A
Total Mercury	0.003(0.007)	0.009(0.02)	N/A	N/A
Total Zinc	0.057(0.13)	0.166(0.37)	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Record
Ammonia (as N)	1/Month	Grab
Chemical Oxygen Demand	1/Week	Grab
Total Suspended Solids	1/Week	Grab
Total Cadmium	1/Week	Grab
Total Chromium	1/Week	Grab
Total Copper	1/Week	Grab
Total Iron	1/Week	Grab
Total Lead	1/Week	Grab
Total Mercury	1/Week	Grab
Total Zinc	1/Week	Grab

(*1) Report.

OUTFALL 050

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuous, record.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge from TA 21-257.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 051

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 051 - radioactive waste treatment plant discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Ammonia (as N)	N/A	N/A	Report mg/l	Report mg/l
Chemical Oxygen Demand	42.7(94)	70.9(156)	N/A	N/A
Total Suspended Solids	8.6(18.8)	29.5(62.6)	N/A	N/A
Total Cadmium	0.03(0.06)	0.14(0.30)	N/A	N/A
Total Chromium	0.09(0.19)	0.17(0.38)	N/A	N/A
Total Copper	0.28(0.63)	0.28(0.63)	N/A	N/A
Total Iron	0.45(1.0)	0.90(2.0)	N/A	N/A
Total Lead	0.03(0.06)	0.07(0.15)	N/A	N/A
Total Mercury	0.001(0.003)	0.04(0.09)	N/A	N/A
Total Zinc	0.28(0.62)	0.83(1.83)	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Record
Ammonia (as N)	1/Month	Grab
Chemical Oxygen Demand	1/Week	Grab
Total Suspended Solids	1/Week	Grab
Total Cadmium	1/Week	Grab
Total Chromium	1/Week	Grab
Total Copper	1/Week	Grab
Total Iron	1/Week	Grab
Total Lead	1/Week	Grab
Total Mercury	1/Week	Grab
Total Zinc	1/Week	Grab

(*1) Report.

OUTFALL 051

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuous, record.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge from TA 50-1.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 05A

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 052, 053, 054, 055, 056, 057, 058, 061, 062, 063, 064, 066, 067, 068, 069, 071, 072, 096 and 097 - high explosive waste discharges. This category shall be identified and reported as 05A.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)(*2)	(*1)(*2)
Chemical Oxygen Demand	N/A	N/A	150 mg/l	250 mg/l
Total Suspended Solids	N/A	N/A	30 mg/l	45 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Week	Estimate
Chemical Oxygen Demand	1/Week(*3)	Grab
Total Suspended Solids	1/Week(*3)	Grab

(*1) Report.
(*2) Total for all category outfalls.
(*3) Monitoring and reporting shall be conducted sequentially in accordance with Part III, Paragraph E.

OUTFALL 05A

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week(*3) by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge at locations as shown in Part III, Paragraph E.

(*3) Monitoring and reporting shall be conducted sequentially in accordance with Part III, Paragraph E.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 06A

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 073, 074, 075, 078, 079, 080, 081, 082, 099, 101, 104, 106, and 123 - photo waste discharges. This category shall be identified and reported as 06A.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)(*2)	(*1)(*2)
Total Cyanide	N/A	N/A	0.20 mg/l	0.20 mg/l
Total Silver	N/A	N/A	0.50 mg/l	1.00 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Week	Estimate
Total Cyanide	1/Week(*3)	Grab
Total Silver	1/Week(*3)	Grab

(*1) Report.
(*2) Total for all category outfalls.
(*3) Monitoring and reporting shall be conducted sequentially in accordance with Part III, Paragraph F.

OUTFALL 06A

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week(*3) by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge at locations as shown in Part III, Paragraph F.

(*3) Monitoring and reporting shall be conducted sequentially in accordance with Part III, Paragraph F.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 095

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 095 - compressed gas cylinder cleaning wastes.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Total Suspended Solids	N/A	N/A	N/A	100 mg/l
Total Phosphorus	N/A	N/A	20 mg/l	40 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Month	Estimate
Total Suspended Solids	1/Month	Grab
Total Phosphorus	1/Month	Grab

(*1) Report.

OUTFALL 095

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge at TA-3 170.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 128

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 128 - process wastewater from printed circuit board manufacturing using photo-etching techniques.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	1.9	3.8	N/A	N/A
Total Suspended Solids	1.25	2.5	N/A	N/A
Total Iron	0.05	0.10	N/A	N/A
Total Copper	0.05	0.10	N/A	N/A
Total Silver	N/A	N/A	(*1) mg/l	(*1) mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/Day	Totalized
Chemical Oxygen Demand	1/Week	Grab
Total Suspended Solids	1/Week	Grab
Total Iron	1/Week	Grab
Total Copper	1/Week	Grab
Total Silver	1/Month	Grab

(*1) Report.

OUTFALL 128

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the treatment plant at Technical Area 22-91 (Latitude 35° 51' 41" and Longitude 106° 19' 57") discharges to Pajarito Canyon.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 01S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 01S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	102.2(225.2)	N/A	30 mg/l	45 mg/l(*2)(*5)
Total Suspended Solids	102.2(225.2)	N/A	30 mg/l	45 mg/l
Fecal Coliform Bacteria/100 ml	N/A	N/A	1000(*3)	2000

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	3/Month	Composite(*4)
Total Suspended Solids	3/Month	Composite(*4)
Fecal Coliform Bacteria	3/Month	Grab

(*1) Report.
(*2) 7-day average.
(*3) Geometric mean.
(*4) See Part III, Paragraph B.
(*5) See Part III, Paragraph H.

OUTFALL 01S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 3/month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-3 discharge.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 02S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 02S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	0.1(0.3)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	0.1(0.3)	N/A	30 mg/l	45 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 02S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-9 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 03S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 03S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	11.4(25.0)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	11.4(25.0)	N/A	30 mg/l	45 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	2/Month	Composite(*3)
Total Suspended Solids	2/Month	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 03S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 2/month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-16 discharge.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 04S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 04S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	0.2(0.5)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	0.2(0.5)	N/A	30 mg/l	90 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average, See Part III, Paragraph H.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 04S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-18 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 05S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 05S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	1.9(4.3)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	1.9(4.3)	N/A	30 mg/l	45 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 05S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-21 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 06S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 06S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	1.0(2.3)	N/A	30 mg/l	45 mg/l(*2)(*5)
Total Suspended Solids	1.0(2.3)	N/A	30 mg/l	45 mg/l(*2)
Fecal Coliform Bacteria/100 ml	N/A	N/A	1000(*3)	2000

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*4)
Total Suspended Solids	1/3 Months	Composite(*4)
Fecal Coliform Bacteria	1/3 Months	Grab

(*1) Report.
(*2) 7-day average.
(*3) Geometric mean.
(*4) See Part III, Paragraph B.
(*5) See Part III, Paragraph H.

OUTFALL 06S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-41 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 07S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 07S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	0.6(1.3)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	0.7(1.3)	N/A	30 mg/l	45 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 07S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-46 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 08S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 08S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	0.4(0.8)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	0.4(0.8)	N/A	30 mg/l	45 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/3 Months	Grab
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 08S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-48-5 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 09S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 09S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-Day)	1.0(2.3)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	1.0(2.3)	N/A	30 mg/l	90 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-Day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report
(*2) 7-Day Average
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 09S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 09S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	1.0(2.3)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	1.0(2.3)	N/A	30 mg/l	45 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 09S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-53 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 10S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 10S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	1.4(3.0)	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	1.4(3.0)	N/A	30 mg/l	90 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Totalized Record
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 10S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-35 discharges.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 11S

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 11S - treated sanitary sewage effluents.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Biochemical Oxygen Demand (5-day)	N/A	N/A	30 mg/l	45 mg/l(*2)(*4)
Total Suspended Solids	N/A	N/A	30 mg/l	90 mg/l(*2)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	1/3 Months	Grab
Biochemical Oxygen Demand (5-day)	1/3 Months	Composite(*3)
Total Suspended Solids	1/3 Months	Composite(*3)

(*1) Report.
(*2) 7-day average.
(*3) See Part III, Paragraph B.
(*4) See Part III, Paragraph H.

OUTFALL 11S

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/3 months by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Where the sewage treatment plant at TA-8 discharges.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

NONE

APPENDIX B

DECEMBER 14, 1990 LETTER (OUTFALL CHANGES)

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

DEC. 1 4 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Myron Knudson, Director
Water Management Division, 6W
U. S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75270

Dear Mr. Knudson:

NPDES PERMIT NM0028355 ADDITIONS, DELETIONS, AND PLANNED CHANGES

The information enclosed with this letter is intended to provide all supporting documentation for amending the National Pollutant Discharge Elimination System (NPDES) Permit NM0028355. This information is provided in accordance with Paragraph G, ADDITIONAL OR DELETED OUTFALLS, Part III and Section D, REPORTING REQUIREMENTS, Part II, of the referenced permit, effective March 1, 1986.

All information contained in this letter and enclosures should be considered as an addendum to the NPDES Permit NM0028355 Reapplication submitted to the U. S. Environmental Protection Agency (EPA) on September 4, 1990.

A. OUTFALL ADDITIONS

The completed NPDES permit applications for new outfalls (Form 2D) are enclosed for the following sources and the respective outfalls.

Pajarito Well #1	OUTFALL 163
Pajarito Well #2	OUTFALL 164
Pajarito Well #3	OUTFALL 165
Pajarito Well #5	OUTFALL 166
Los Alamos Well #1B	OUTFALL 167
Los Alamos Well #2	OUTFALL 168
Los Alamos Well #3	OUTFALL 169
Los Alamos Well #5	OUTFALL 170
Guaje Well #1	OUTFALL 171
Guaje Well #1A	OUTFALL 172
Guaje Well #2	OUTFALL 173
Guaje Well #4	OUTFALL 174
Guaje Well #5	OUTFALL 175

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Guaje Well #6		OUTFALL 176
Guaje Booster #1		OUTFALL 177
Los Alamos Booster #1		OUTFALL 178
Pajarito Blowdown		OUTFALL 179
TA-43	BLDG 44	OUTFALL 180
TA-55	BLDG 6	OUTFALL 181
TA-21	BLDG 1003	OUTFALL 182
TA-03	BLDG 510	OUTFALL 183

To summarize, Outfalls 163 through 176 are discharges of well water blowdown, Category 04A (water production facilities).

Outfalls 177 and 178 are discharges from sand traps located on water well supply lines, Category 04A (water production facilities).

Outfall 179 is a drain line located on the drinking water supply system and discharges potable water during maintenance activities, Category 04A (water production facilities).

Outfalls 180 and 181 discharge cooling tower blowdown, Category 03A (treated cooling water).

Outfall 182 discharges potable water from a backflow preventer located on a drinking water supply line, Category 04A (water production facilities).

Outfall 183 will discharge photographic processing wastewater (Category 06A) to a storm sewer where it will combine with cooling tower blowdown discharged from Outfall 023 and with storm water when present, and any other source discharging to the storm sewer. (See Enclosure A)

B. **REACTIVATED OUTFALLS**

The following outfalls will be reactivated:

TA-08	BUILDING 70	OUTFALL 115
TA-53	BUILDING 14	OUTFALL 146

Outfall 115 will discharge once through laser cooling water, Category 04A.

Outfall 146 will discharge cooling tower blowdown, Category 03A. (See Enclosure B)

C. **OUTFALLS DELETED**

The following outfalls will no longer discharge and will be eliminated:

TA-41	SEWAGE PLANT	OUTFALL 06S
TA-22	BUILDING 34	OUTFALL 064
TA-15	BUILDING 40	OUTFALL 102
TA-15	BUILDING 40	OUTFALL 103
TA-03	BUILDING 66	OUTFALL 138
TA-03	BUILDING 141	OUTFALL 140

(See Enclosure C)

D. PLANNED CHANGES AND MODIFICATIONS

The following permitted outfalls should be modified as follows:

Cooling towers discharging to Outfalls 001, 027, and 148 will receive make-up water from chlorinated effluent discharged from the TA-3 Sewage Treatment Plant after final treatment but prior to discharge from Outfall 01S. The make-up water will be treated with corrosion and scale inhibiting chemicals along with biocides at the cooling tower. The cooling tower blowdown will be dechlorinated prior to discharge from each outfall. The effluent discharged from these cooling towers will contain pollutants similar in nature to the effluent discharged from Outfall 01S and include treatment chemicals added at the cooling towers.

Outfall 01S will discharge significantly less flow and possibly no flow during periods when effluent from the treatment plant is diverted for cooling tower make-up water. The permittee plans to monitor the effluent from the TA-3 Sewage Treatment Plant for conventional pollutants following final treatment prior to discharge to Outfall 01S or other outfall, and to monitor for non-conventional pollutants at individual cooling tower outfalls, if acceptable to the EPA.

Outfall 027 discharges treated cooling water from a cooling tower located at TA-3, Building 285. A discharge source from the fire protection system has been combined with Outfall 027. This source discharges approximately 80 gallons of potable water when the fire protection system is tested at the cooling tower on a frequency of once per year.

Outfall 160 regularly discharges treated cooling water from a cooling tower located at TA-35, Building 124. In the event of an emergency in the secondary cooling system at TA-35, Building 301, this outfall could discharge oil contaminated cooling water. The cooling water would first flow through an oil-water separator located in Building 301 prior to discharge to a storm drain where the effluent would discharge to Outfall 160.

Outfall 023 is located at the end of a storm drainage system and is permitted to discharge cooling tower blowdown from Cooling Tower 156 at TA-3. Although Outfall 023 presently discharges infrequently, this storm drainage system also carries discharges from other sources including storm water, unidentified sources, and future photographic processing wastewater from Outfall 183. Based on discussions with Mr. Fred Humke of your staff, the permittee is requesting that Outfall 023 be relocated and monitored for cooling tower blowdown prior to combining with other wastestreams. The point of relocation for Outfall 023 is identified in Enclosure D. The coordinates for Outfall 023 will be Latitude 35 degrees 52'28", Longitude 106 degrees 19'28" and the cooling tower blowdown will continue to discharge to Sandia Canyon through the storm drainage system. (See Enclosure D)

E. FURTHER INFORMATION

Further information is enclosed in an EPA Form 2C for the electroplating processes identified as a source to the Industrial Liquid Waste Treatment Plant at TA-50, Building 1, which discharges effluent to Outfall 051. This source discharges radioactively contaminated and potentially radioactively contaminated wastewater from electroplating operations at TA-3, Building 66 to the TA-50 plant.

The Sewage Treatment Plant located at TA-3 receives approximately 12 liters of human blood cell counter per week from TA-3, Building 409. This waste includes approximately 10 liters of buffered saline, 1.5 liters of soap solution and 300 ml of lysing reagent, which contains 0.15-1.0 grams per liter of potassium cyanide and less than 15 ml of human blood. One liter of hypochlorite bleach is added as a germicide to decontaminate this waste of potentially infective viral particles or other pathogens. (See Enclosure E)

Schematics are included in this permit modification to describe the waste stream for each new, reactivated, deleted, and modified outfall.

Also enclosed with each EPA Form 2D and with each information package concerning reactivated and modified outfalls, is a Notice of Intent to Discharge which is being submitted to the New Mexico Environmental Improvement Division (EID) in accordance with the notification requirements specified in Sections 1-201 and 3-106 of the New Mexico Water Quality Control Commission Regulations. By copy of this letter and enclosures, notification is being submitted to the EID to satisfy EID administrative requirements. A separate transmittal letter will be prepared if such is required by the EID.

Should you have any questions regarding these permit modifications, please contact Dr. Paul Schumann of my staff at (505) 665-5027, or Steven Rae of the Environmental Protection Group at (505) 665-1859.

Sincerely,

for Jerry L. Bellows
Acting Area Manager

LESH:2SF-002

Enclosures

APPENDIX C

STORMWATER PERMITTING CHRONOLOGY

August 12, 1993

Chronology of LANL NPDES Storm Water Permitting

May 15, 1991	Submitted Part I of Group Application of storm water discharges associated with industrial activity. LANL was seeking coverage of SWMU's located in the facility.
July 29, 1991	Submittal of Individual Permit Application for storm water discharges associated with construction activity for the Material Science Laboratory.
August 30, 1991	Group application denied from EPA.
September 30, 1991	Resubmittal of Part I of Group Application for storm water discharges associated with industrial activity. (SWMS related).
August 13, 1992	Group Application denied from EPA.
September 29, 1992	Submittal of NPDES General Permit Notice of Intent to discharge storm water associated with industrial activity.
October 1, 1992	Submittal of NPDES General Permit Notice of Intent to discharge storm water associated with construction activity.
January 11, 1993	Received request for more information regarding SIC Codes for construction activity on NOI submittals from EPA.
January 29, 1993	Submitted request information to EPA for construction related activity NOI.
March 4, 1993	Received authorization notice from the EPA for the General Permit coverage to discharge storm water associated with industrial and construction activity.
April 2, 1993	Received request for more information regarding SIC Codes for General Permit NOI submittals.
May 4, 1993	The Laboratory submitted revised NOI for storm water discharges associated with industrial activity under the NPDES General Permit to EPA clarifying proper SIC Codes.
May 21, 1993	DOE submitted revised NOI for storm water discharges associated with industrial activity under the NPDES General Permit to EPA clarifying proper SIC Codes.

APPENDIX D

ADMINISTRATIVE ORDER VI-92-1306

JUL 23 1992

REPLY TO: 6W-EO

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 893 525 405)

Mr. Allen J. Tiedman
Associate Director of Operations
Los Alamos National Laboratory
P.O. Box 1663, Mailstop A-120
Los Alamos, New Mexico 87545

Re: NPDES Permit No. NM0028355
Administrative Order Docket No. VI-92-1306

Dear Mr. Tiedman:

Violation of an NPDES permit requires the Environmental Protection Agency (EPA) to take appropriate enforcement action to assure compliance. Pursuant to the Clean Water Act (33 U.S.C. § 1251 et seq.), the enclosed Administrative Order is hereby served on you and the University of California for the violations described therein. This Order replaces Administrative Order Docket No. VI-91-1329, which is hereby closed.

Compliance with the provisions of this Order is expected within the maximum time periods established by each part of the Order. Your cooperation and prompt attention will be appreciated. In response hereto, please reference Docket No. VI-92-1306 and your NPDES permit number, and send correspondence to the attention of Ms. Gladys Gooden-Jackson (6W-EAT). Failure to reach a satisfactory solution to this matter will result in a referral to the United States Department of Justice for judicial action with monetary fines or an EPA administrative penalty.

This Administrative Order contains the same interim limits and schedules for compliance as the Federal Facilities Compliance Agreement Docket No. VI-92-1305, with the Department of Energy, copy enclosed.

It is the policy of EPA to achieve full compliance with the NPDES permit program as rapidly as possible. This office is prepared to help you in any way it can. If you have any questions, please contact Ms. Dianne Ratkey, EPA, Dallas, Texas at (214) 655-6470.

Sincerely yours,

/s/ Myron O. Knudson

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

Enclosures

cc: SEE NEXT PAGE

cc: Mr. Jim Piatt, Acting Chief
Surface Water Quality Bureau
New Mexico Environmental Improvement
Division

Mr. Jack B. Tillman
Area Manager
Department of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

bcc: R. File (6W-E)
Hiller (6W-ET)
Highland (6E-FF)
Gair (EN-338)
Gibson (6W-EA)
Meacham (6X)
Goetz (6X)
Read File (6W-EA)
Ayers (6E-H)
Ratkey (6W-ET)
Jones (6C-WT)

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6

IN THE MATTER OF	§	DOCKET NO. VI-92-1306
UNIVERSITY OF CALIFORNIA	§	
PROCEEDINGS UNDER SECTION 309(a)(3), CLEAN WATER ACT, [33 U.S.C. § 1319(a)(3)], In RE: NPDES PERMIT NO. NM0028335	§	ADMINISTRATIVE ORDER

The following FINDINGS are made and Order issued pursuant to the authority vested in the Administrator of the Environmental Protection Agency (EPA) by the above referenced statute (hereinafter the Act) and duly delegated to the Regional Administrator, Region 6, and duly redelegated to the undersigned Director, Water Management Division, Region 6.

I.

The University of California, management contractor for operation of the Los Alamos National Laboratory (hereinafter the Co-Permittee) is a duly authorized discharger at the Department of Energy owned facility, the mailing address for which is the Los Alamos National Laboratory, Los Alamos, New Mexico 87545.

II.

Pursuant to the authority of Section 402(a)(1) of the Act, 33 U.S.C. § 1342, Region 6 issued National Pollutant Discharge Elimination System (NPDES) Permit No. NM0028355 to the Permittee on January 30, 1990, with an effective date of February 28, 1990. The permit authorizes the discharge of specified qualities and quantities of effluent to various tributaries of the Rio Grande. The permit also requires the submission of Discharge Monitoring Reports (DMRs) and Noncompliance Reports.

III.

Part I.A. of the permit places certain limitations on the quantity and the quality of the effluent discharged by the Co-Permittee. The relevant limitations follow:

Effluent Characteristics	Discharge Limitations		
	Daily avg. (lbs/day)	Daily avg. (mg/l)	Daily max. (mg/l)
Outfall 02A (Industrial Discharge)			
Flow (MGD)	N/A	Report	Report
Total Suspended Solids (TSS)	N/A	30	100
Total Copper	N/A	1.00	1.00
Total Iron	N/A	10	40
Total Phosphorus	N/A	20	40
Sulfite (as SO_3)	N/A	Report	Report
Total Chromium	N/A	6.0	9.0
pH	N/A		
Outfall 05A (Industrial Discharge)			
Flow (MGD)	N/A	Report	Report
Chemical Oxygen Demand (COD)	N/A	150	250
TSS	N/A	30	45
pH	N/A	6.0	9.0
Outfall 04S (Sanitary Discharge)			
Flow (MGD)	N/A	Report	Report
Biochemical Oxygen Demand (BOD)	0.5	30	45, 7-day avg.
TSS	0.5	30	90, 7-day avg.
pH	N/A	6.0	9.0 max.
Outfall 05S (Sanitary Discharge)			
Flow (MGD)	N/A	Report	Report
BOD_5	1.9	30	45, 7-day avg.
TSS	1.9	30	45, 7-day avg.
Outfall 03A			
Oil	Not Permitted		
Total Phosphorus	N/A	5.0	5.0

Outfall 09S (Sanitary Discharge)

Flow (MGD)	N/A	Report	Report
BOD_5	2.3	30	45, 7-day avg.
TSS	2.3	30	45, 7-day avg.
pH	N/A	6.0 min.	9.0 max.

Outfall 10S (Sanitary Discharge)

Flow (MGD)	N/A	Report	Report
BOD_5	1.4	30	45, 7-day avg.
TSS	1.4	30	90, 7-day avg.
pH	N/A	6.0 min.	9.0 max.

Outfall 12S

BOD_5	1.3	30	45
TSS	1.3	30	45
pH		6.0 s.u., min.	9.0 s.u., max.

IV.

FINDINGS OF FACT

Sanitary and industrial wastewater treatment plants, NPDES Permit No. NM0028355 cannot continually comply with the effluent limits in the permit. On July 19, 1990, Administrative Order (AO) Docket No. VI-90-1263 was issued to the Co-Permittee citing effluent violations and establishing interim effluent limitations and schedules for compliance.

In a letter dated February 11, 1991, the Co-Permittee requested that the Order be modified to include a schedule for the waste stream characterization study being conducted at the laboratory. On August 29, 1991, AO Docket No. VI-91-1329 was issued to the Co-Permittee replacing AO Docket No. VI-90-1263 due to the addition of waste stream characterization study.

In recent progress reports, the Co-Permittee has requested that the schedule for the waste stream characterization study be modified due to rearrangements in the priority for some areas of the facility. The final completion date remains unchanged. The facility has also requested a short extension to the construction schedules. The Co-Permittee has indicated that the new sanitary treatment plant is completed; however, all of the lift stations and sewer lines are not completed. This Order establishes interim limits and incorporates the requested changes to the schedules for compliance with the permit effluent limits.

V.

FINDINGS OF VIOLATION

Based on information provided by EPA and the Permittee, the Regional Administrator, through the Director of the Water Management Division, finds that the Permittee has violated Part I.A. of the permit.

Violation of Part I.A. of the permit - Recent effluent violations follow:

Date	Outfall	Parameter	Violation	
4/91	01S	FC, max.	21,400	col/100 ml
	03A	Free Available Chlorine, avg.	0.24	mg/l
		Free Available Chlorine, max.	1.35	mg/l
6/91	05A	COD, avg.	343.33	mg/l
		COD, max.	1,010	mg/l
8/91	01S	Foam in greater than trace amounts		
	02A-007	Solids in greater than trace amounts		
	02A	TSS, avg.	31.00	mg/l
	03A	pH, min.	5.4	s.u.
	128	pH, max.	9.7	s.u.
9/91	02A	Total Phosphorous, avg.	46.99	mg/l
		Total Phosphorous, max.	115.00	mg/l

10/91	02A	Total Phosphorous, avg.	63.45	mg/l
		Total Phosphorous, max.	384.00	mg/l
		TSS, avg.	325.57	mg/l
		TSS, max.	1694	mg/l
11/91	02A	TSS, avg.	110.83	mg/l
		TSS, max.	451	mg/l
		pH, max.	9.8	s.u.
12/91	04S	TSS, loading	2.6	lbs/day
2/92	02A	pH, max.	9.3	s.u.
	05A	pH, max.	9.5	s.u.

AO Docket No. VI-91-1329 has been violated in that the Co-Permittee has failed to comply with the compliance schedules contained in that Order. Specifically, the following milestones have not been completed as Ordered:

Outfall 02A - 007

Construction completion ..... September 1991
In compliance with final limits ..... October 1991

Outfalls 04S, 05S, 09S, 10S, 12S

Construction completion ..... January 1992
Special facilities completion and facility start-up ... June 1992
In compliance with final limits ..... July 1992

VI.

Issuance of this Order does not preclude the pursuit of additional enforcement action including additional administrative penalty orders, and/or civil or criminal judicial actions for the violations cited herein. If an EPA administrative penalty order is issued or a judicial action is initiated by the U.S. Department of Justice, you will be subject to a monetary fine.

ORDER

Based on the foregoing FINDINGS OF VIOLATION and pursuant to the authority vested in the Administrator under Section 309(a)(3) of the Act, 33 U.S.C. § 1319(a)(3), and duly delegated to the Regional Administrator, Region 6, and duly redelegated to the undersigned Director, Water Management Division, Region 6, it is ordered:

A. That the Co-Permittee, efficiently operate and maintain the existing treatment works, so as to discharge effluent which does not exceed the following Interim Limitations:

From: The effective date of this Order To: The final compliance date in the respective compliance schedule:

Effluent Characteristics	Discharge Limitations		
	Daily avg. (lbs/day)	Daily avg. (mg/l)	Daily max. (mg/l)
Outfall 09S			
BOD_5	30	60	90, 7-day avg.
TSS	45	70	90, 7-day avg.
Outfall 10S			
BOD_5	30	60	60, 7-day avg.
TSS	40	70	90, 7-day avg.

B. That the Co-Permittee shall comply with the following schedules. The following milestone dates (the last date of the months identified) are the dates by which the specified activities will be completed:

Outfall 01S

Final design complete ..... Completed
Advertisement of construction contract ..... Completed
Award of construction contract ..... August 1992
Construction completion ..... September 1992
Special facilities completion and facility start-up ... October 1992
In compliance with final limits ..... November 1992

Outfall 02A - 007

Final design complete ..... Completed
Construction completion ..... September 1992
In compliance with final limits ..... October 1992

Outfall 04S

Final design complete ..... Completed
Advertisement of construction contract ..... Completed
Award of construction contract ..... Completed
Construction completion ..... September 1992
Special facilities completion and facility start-up ... October 1992
In compliance with final limits ..... November 1992

Outfall 05A

Complete Conceptual Design Report ..... July 1992
Complete Design Criteria ..... June 1993
Begin Line Item Project ..... October 1993
Complete Title I Design ..... July 1994
complete Title II Final Design ..... July 1995
Advertisement of construction contract ..... August 1995
Award of construction contract ..... October 1995
Construction completion ..... September 1996

Outfall 09S

Final design complete ..... Completed
Advertisement of construction contract ..... Completed
Award of construction contract ..... Completed
Construction completion ..... December 1992
Special facilities completion and facility start-up ... December 1992
In compliance with final limits ..... January 1993

Outfall 10S

Final design complete ..... Completed
Advertisement of construction contract ..... Completed
Award of construction contact ..... Completed
Construction completion ..... September 1992

Special facilities completion and facility start-up ... October 1992
In compliance with final limits ..... November 1992

Outfall 12S

Final design complete ..... Completed
Advertisement of construction contract ..... Completed
Award of construction completion ..... Completed
Construction completion ..... September 1992
Special facilities completion and facility start-up ... October 1992
In compliance with final limits ..... November 1992

SCHEDULE FOR WASTE STREAM
IDENTIFICATION AND CHARACTERIZATION

Sanitary Outfalls/Industrial Categories (Number of outfalls in parentheses)	Completion Date
03A Treated Cooling Water (40)-100% Complete	July 1993
01S TA-3 Treatment plant (1)-100% Complete	January 1993
051 TA-50 Rad Treatment Plant (1)-50% Complete	January 1993
07S TA-46N Lagoons (1)-100% Complete	April 1993
12S TA-46S Lagoons (1)-100% Complete	April 1993
04S TA-18 Lagoons (1)-100% Complete	January 1993
10S TA-35 Lagoons (1)-100% Complete	January 1993
09S TA-53 Lagoons (1)-100% Complete	July 1992
04A Non-Contact Cooling Water (49)-100% Complete	July 1993
051 TA-50 Rad Treatment Plant (1)-100% Complete	July 1993
05S TA-21 Treatment Plant (1)-100% Complete	July 1993

C. That the Co-Permittee report compliance or noncompliance with the requirements of (B) above, no later than fourteen (14) calendar days following the date of the specific action.

D. That the Co-Permittee shall submit quarterly progress reports beginning October 1, 1992, and continue quarterly until the final compliance date of the compliance schedule.

E. That the Co-Permittee shall report all instances of noncompliance with interim effluent limitations in Part A above, in accordance with part II.D. of the NPDES Permit No. NM0028355. During the effective period of this Order, the Co-Permittee need not report instances of noncompliance with those effluent limitations in Part I.A. of the permit for which interim effluent limitations are provided herein. Failure to comply with the interim effluent limitations, constitutes a violation of this Order and the NPDES permit.

F. That all other terms and conditions of the permit are effective as issued and require full compliance.

The effective date of this Order shall be the date it is received by the Co-Permittee.

DATED: This JUL 23 1992 day of _____, 1992.

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

APPENDIX E

FEDERAL FACILITY COMPLIANCE AGREEMENT VI-92-1305

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

DCE
FFCA

MAR 11 1993

REPLY TO: 6W-ET

MAR 15 1993

Mr. Jerry L. Bellows
Area Manager
U.S. Department of Energy
Los Alamos, New Mexico 87544

Re: NPDES Permit No. NM0028355
Federal Facilities Compliance Agreement (FFCA),
Docket No. VI-92-1305

Dear Mr. Bellows:

The enclosed Federal Facilities Compliance Agreement (FFCA) is ready for your review and signature. Please find that it will eliminate the discrepancies between LANL's current Administrative Order (Docket No. VI-92-1306) and the current FFCA (Docket No. VI-91-1328). The compliance schedule and interim limits in the document have been revised and are in agreement with the ongoing activities at LANL (per the November 19, 1992, Administrative Order Docket No. VI-92-1306 Quarterly Report).

One (1) signed original of the FFCA is enclosed. Please sign and date the agreement and return to the Environmental Protection Agency.

If any questions arise concerning this agreement, please contact Mr. Everett H. Spencer, of my staff, at (214) 655-8060.

Sincerely yours,

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

Enclosure: 1 FFCA

cc: Mr. Jim Piatt, Bureau Chief
Water Surface Bureau
New Mexico Environment Department

Mr. Allen J. Tiedman
Associate Director of Operations
University of California
P.O. Box 1663, Mailstop A-120
Los Alamos, New Mexico 87545

Printed on Recycled Paper

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 6

U.S. DEPARTMENT OF ENERGY LOS ALAMOS NATIONAL LABORATORY LOS ALAMOS, NEW MEXICO and U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 6	§ § § § § § § § §	DOCKET NO. VI-92-1305 FEDERAL FACILITY COMPLIANCE AGREEMENT

I. PRELIMINARY STATEMENT

The United States Environmental Protection Agency, Region 6 (hereinafter EPA), and the United States Department of Energy, (hereinafter DOE) Los Alamos National Laboratory, Los Alamos Area Office, are the Parties to this Federal Facility Agreement (Agreement), which is entered into pursuant to Executive Order 12088, October 13, 1978 [43 Fed. Reg. 47707]. This Agreement supersedes the previous Federal Facility Compliance Agreement VI-91-1328 dated November 22, 1991. The authority to issue and enter into this Agreement is vested in the Administrator of the U.S. Environmental Protection Agency by Section 309 (a) of the Federal Water Pollution Control Act, (also known as the Clean Water Act and referred to in this Agreement as the "Clean Water Act" or "CWA"), 33 U.S.C. §1319 (a), which authority has been delegated to the Regional Administrator of Region 6 and further delegated to the Director, Water Management Division, Region 6 (Complainant). The Office of Management and Budget and the Department of Justice will take cognizance of this Agreement pursuant to their respective duties to assure compliance with the environmental laws under Executive Order 12088 and the Clean Water Act, 33 U. S. C. §§1251, et seq.

Executive Order 12088 was promulgated to insure Federal compliance with applicable pollution control standards. This Agreement constitutes a "plan", as described in Section 1-601 of Executive Order 12088, to achieve and maintain compliance with applicable Clean Water Act standards, including the National Pollutant Discharge Elimination System (NPDES), 33 U.S.C. §§ 1251, et seq., at Los Alamos National Laboratory ("Respondent" is DOE, "Facility" is LANL).

II. Enforceability

For purposes of this Agreement and all subsequent proceedings, it is agreed that EPA has the jurisdictional authority to require Respondent to perform the activities specified in this Agreement. The Department of Energy recognizes its obligations to comply with the Clean Water Act, as amended, 33 U.S.C. §§1251, et seq.

The provisions of this Agreement, including those related to statutory requirements, regulations, permits, or corrective action, including recordkeeping, reporting and schedules of compliance, shall be enforceable under citizen suits pursuant to Section 505 of the CWA, 33 U.S.C. § 1365, including actions or suits by the State of New Mexico and its agencies. The Respondent agrees that the State of New Mexico and its agencies are a "person" within the meaning of Section 502 of the CWA, 33 U.S.C. §1362.

In the event of any action(s) filed under Section 505 of the CWA, 33 U.S.C. §1365, alleging any violation of any such requirement of this Agreement, it shall be presumed that the provisions of this Agreement including those provisions which address recordkeeping, reporting, and schedules of compliance, are related to statutory requirements, regulations, permits, or corrective action, and are thus enforceable under Section 505 of the CWA, 33 U.S.C. § 1365.

III. BINDING EFFECT

This Agreement shall apply to and be binding upon the Complainant, the United States Environmental Protection Agency, the Respondent, the United States Department of Energy, and all successors or assigns of the named Parties, as well as upon all persons, firms and other legally cognizable entities in active concert or participation with the Parties for the purpose of performing pursuant to the Agreement.

IV. OBJECTIVES

All plans, studies, construction, maintenance and monitoring programs and other obligations, shall be implemented in a manner calculated to bring the Respondent into compliance with the permit as well as with provisions of other applicable federal, state and local laws and regulations governing the discharge of pollutants into the waters of the United States.

V. DEFINITIONS

Except as provided below, the definition provided in the Clean Water Act "CWA" and its implementing regulations shall control the meaning of the terms used in this Agreement.

A. "DOE" shall mean the United States Department of the Energy, its agents, successors and/or assigns.

B. "Complainant" shall mean the Water Management Division Director, U.S. Environmental Protection Agency, Region 6.

C. "CWA" shall mean the Clean Water Act, as amended, 33 U.S.C. §§1251, et seq.

D. "Days" shall mean calendar days unless otherwise specified. In the event due date is a Saturday, Sunday or a federal holiday, the due date shall be the next day that is not a Saturday, Sunday or federal holiday.

E. "EPA" shall mean the United States Environmental Protection Agency, its agents, successors and/or assigns.

F. "Parties" shall mean the EPA and Los Alamos National Laboratory (LANL).

G. "Respondent" shall mean the Department of Energy (DOE), Los Alamos Area Office of Los Alamos National Laboratory.

H. "LANL" or "Facility" shall mean Los Alamos National Laboratory located in Los Alamos, New Mexico.

I. "UC" shall mean the Regents of the University of California (UC) which is responsible for the day to day operations at LANL.

VI. STATEMENT OF FACTS

A. The United States Department of Energy (DOE) owns the facility known as LANL, which is located in Los Alamos, New Mexico. The laboratory is operated by the UC under contract with DOE.

B. NPDES Permit No. NM0028355 ("the permit") was issued to LANL on January 30, 1990, with an effective date of February 28, 1990, and expiration date of February 28, 1992. The permit is in the reissuance process and the existing permit is administratively extended until reissuance. The permit authorizes discharges from Sanitary and Industrial Wastewater Treatment Plants at LANL to receiving waters, in accordance with effluent limitations, monitoring requirements and other conditions specified in the permit.

C. The Sanitary and Industrial Wastewater Treatment Plants ("facilities") are a "point source" as defined in Section 502(14) of the CWA, 33 U.S.C. § 1362 (14). These facilities which are subject to the permit, currently produce effluents that cannot continually meet the current NPDES permit requirements.

D. The EPA, on July 22, 1992, issued Administrative Order Docket No. VI-92-1306. The Order cites UC for permit violations, violations of a previous Order, grants interim effluent limitations, and orders UC to comply with schedules to achieve compliance as expeditiously as practicable.

VII. EFFLUENT LIMITS AND COMPLIANCE SCHEDULE

The compliance schedule for LANL is intended to achieve compliance as expeditiously as practicable, pursuant to Section 1-601 of Executive Order 12088. The schedule was determined after consultation among the EPA, DOE, and UC and the New Mexico Environment Department (NMED).

The schedule contains interim effluent discharge limits for Outfall No. 09S reflecting design and construction milestone dates and sets forth timetables to ensure that Respondent achieves full compliance with the permit no later than October 1, 1996. Whenever reasonably possible, LANL will expedite the performance of the compliance schedule.

All other parameters, effluent limits, terms, and conditions of the permit are effective as issued and require full compliance. This compliance schedule shall not be construed as a new permit under the CWA nor shall it relieve the Respondent of any other obligations under the permit or the CWA.

A. **Effluent discharge limits for applicable Outfalls**

1. Effluent discharge limits prescribed in the permit.

Effluent Characteristics	Discharge Limitations		
	Daily avg. (lbs/day)	Daily avg. (mg/l)	Daily max. (mg/l)
Outfall 05A (Industrial Discharge)			
Flow (MGD)	N/A	Report	Report
Chemical Oxygen Demand (COD)	N/A	150	250
TSS	N/A	30	45
pH	N/A	6.0 min.	9.0 max.
Outfall 09S (Sanitary Discharge)			
Flow (MGD)	N/A	Report	Report
BOD_5	2.3	30	45, 7-day avg.
TSS	2.3	30	90, 7-day avg.
pH	N/A	6.0 min.	9.0 max.

2. Interim Effluent discharge limits - The following effluent discharge limit will be in effect until the compliance schedule is completed for the listed outfall.

Outfall 09S (Sanitary Discharge)			
BOD_5	30	60	90, 7-day avg.
TSS	45	70	90, 7-day avg.
pH	N/A	6.0 min.	11.0 max.

B. Compliance Schedule

Respondent shall perform the activities specified in this subsection by the dates indicated:

Activity	Completion Date
Outfall 05A	
Complete Conceptual Design Report	July 1992
Complete Design Criteria	June 1993

Begin Line Item Project	October 1993
Complete Title I Design	July 1994
Complete Title II Final Design	July 1995
Advertisement of construction contract	August 1995
Award of construction contract	October 1995
Construction completion	September 1996
In compliance with final limits	October 1996

Outfall 09S

Final design complete	Completed
Advertisement of construction contract	Completed
Award of construction contract	Completed
Construction completion	December 1992
Special facilities completion and facility start-up .	December 1992
In compliance with final limits	January 1993

SCHEDULE FOR WASTE STREAM
IDENTIFICATION AND CHARACTERIZATION

Sanitary Outfalls/Industrial Categories (Number of outfalls in parentheses)	Completion Date
03A Treated Cooling Water (40)-100% Complete	July 1993
01S TA-3 Treatment plant (1)-100% Complete	January 1993
05I TA-50 Rad Treatment Plant (1)-50% Complete	January 1993
07S TA-46N Lagoons (1)-100% Complete	April 1993
12S TA-46N Lagoons (1)-100% Complete	April 1993
04S TA-18 Lagoons (1)-100% Complete	January 1993
10S TA-35 Lagoons (1)-100% Complete	January 1993
04A Non-Contact Cooling Water (49)-100% Complete	July 1993
05I TA-50 Rad Treatment Plant (1)-100% Complete	July 1993
05S TA-21 Treatment Plant (1)-100% Complete	July 1993

D. If the permit is modified or a new permit is issued and the modified or new permit will affect any provision of this Agreement, EPA will advise LANL of the need to modify the Agreement and the Parties will modify the Agreement in accordance with the provisions of Section IX (Modification of the Agreement).

VIII. REPORTING

Commencing at the end of the first full quarter after the effective date of this Agreement, Respondent shall submit quarterly progress reports which shall be due on the fifth (5th) day of the first month following the end of each quarter. Progress reports shall summarize the efforts taken by Respondent pursuant to this Agreement during the previous quarter.

Respondent shall notify Complainant whenever any delay in meeting any scheduled compliance date is anticipated. Whenever possible, such notification should be not less than twenty-one (21) days before the schedule compliance due date and such notification shall explicitly describe the anticipated length of the delay; the precise nature and cause(s) of the delay; when and how Respondent was first made aware of the delay;the measures taken or to be taken to eliminate or minimize the delay and any future delays of a similar nature and the alternative timetable(s) that Respondent is proposing to use. Within ten (10) days of receiving such notification, EPA will make a determination concerning the revision of the compliance schedule. If Respondent disagrees with EPA's determination and chooses to dispute the matter, the provision of Section X (Dispute Resolution) shall control.

IX. MODIFICATION OF THE AGREEMENT

In the event of an amendment to the CWA or an amendment of the existing regulations promulgated under the CWA, which affect any provision of this Agreement; or amendment of the existing permit or the issuance of a new permit; or amendment of the Agreement as a result of the dispute resolution process; the affected provision(s) of this Agreement will be re-negotiated or revised accordingly, and the re-negotiating will be governed by Executive

Order 12088. All re-negotiation conflicts shall be resolved pursuant to Section X (Dispute Resolution) of this Agreement. To the extent it is not specifically abrogated, this Agreement shall remain in effect until re-negotiated or revised.

All modifications shall be in writing and shall be effective when signed by both parties. EPA shall be the last signatory on any modification to this Agreement.

X. DISPUTE RESOLUTION

Except as specifically set forth elsewhere in this Agreement, if a dispute arises under this Agreement the procedures of this Section shall apply. In addition, during the pendency of any dispute, the DOE agrees that it shall continue to implement those portions of this Agreement which are not in dispute and which EPA determines can be reasonably implemented pending final resolution of the issue(s) in dispute. If EPA determines in writing that all or part of those portions of work which are affected by the dispute should stop during the pendency of the dispute, the DOE shall discontinue implementing those portions of the work.

All Parties to this Agreement shall make reasonable efforts to informally resolve disputes at the Project Manager or immediate supervisor level. If resolution cannot be achieved informally, the procedures of this Section shall be implemented to resolve a dispute.

A. Within thirty (30) days of the date of any action by EPA which leads to or generates a dispute, the DOE shall submit to the EPA a written statement of dispute setting forth the nature of the dispute, the DOE's position with respect to the dispute; and the information the DOE is relying upon to support its position; and any impact such dispute may have on specified schedules,

elements of work, submittals, or actions required by the Agreement. If the DOE does not provide such written statement to the EPA within this thirty (30) day period, the DOE shall be deemed to have agreed with the action taken by EPA which led to or generated the dispute.

B. Where EPA issues a Written Notice of Position, any other Party which disagrees with the Written Notice of Position may provide the issuing Party with a written statement of dispute setting forth the nature of the dispute, its position with respect to the dispute; and the information it is relying upon to support its position. If no other Party provides such a written statement of dispute within thirty (30) days of receipt of the Written Notice of Position, the Parties shall be deemed to have agreed with the Written Notice of Position.

C. Upon receipt of the written statement of dispute, the Parties shall engage in dispute resolution among the Project Managers and/or their immediate supervisors. The Parties shall have fourteen (14) days from the receipt of the EPA written statement of dispute to resolve the dispute. During this period the Project Managers shall meet as many times as are necessary to discuss and attempt resolution of the dispute. If agreement cannot be reached on any issue within this fourteen (14) day period, any Party may, within ten (10) days of the conclusion of the fourteen (14) day dispute resolution period, submit a written notice to the Parties escalating the dispute to the Dispute Resolution Committee (DRC) for resolution. If no Party escalates the dispute to the DRC within this ten (10) day escalation period, the Parties shall be deemed to have agreed with the EPA position with respect to the dispute.

D. The DRC will serve as a forum for resolution of disputes for which agreement has not been reached pursuant to Subsection A, B, or C of this Section. The Parties shall each designate one individual and one alternate to serve on the DRC. The individuals designated to serve on the DRC shall be employed at the policy level (SES or equivalent) or be delegated authority to participate on the DRC for purposes of dispute resolution under this Agreement. The EPA representative on the DRC is the Water Management Division Director of EPA Region 6 (Division Director). The DOE designated member is the Area Manager, Los Alamos Area Office, Department of Energy. Notice of any delegation of authority from a Party's designated representative on the DRC shall be in writing and be immediately provided to all other Parties.

E. Following escalation of a dispute to the DRC, the DRC shall have twenty-one (21) days to unanimously resolve the dispute and issue a written decision. If the DRC is unable to unanimously resolve the dispute within this twenty-one (21) day period, any Party may, within seven (7) days of the conclusion of the twenty-one (21) day dispute resolution period, forward a written notice of dispute to the Senior Executive Committee (SEC) for resolution. In the event the dispute is not escalated to the SEC within the designated seven (7) day period, the Parties shall be deemed to have agreed with the EPA DRC representative's position with respect to the dispute.

F. The SEC will serve as the forum for resolution of the disputes for which agreement has not been reached by the DRC. The EPA representative on the SEC is the Regional Administrator of EPA Region 6. The DOE's designated member is the Manger of the DOE Albuquerque Field Office. The SEC members shall, as appropriate, confer, meet and exert their best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the

dispute is not reached within twenty-one (21) days, the EPA Regional Administrator, Region 6 shall issue a written position on the dispute. The DOE may, within fourteen (14) days of the Regional Administrator's issuance of EPA's position, issue a written notice escalating the dispute to the Administrator of the EPA for resolution in accordance with all applicable laws, directives and procedures. In the event the dispute is not escalated to the Administrator within the designated seven (7) day period, the Parties shall be deemed to have agreed with the EPA DRC representative's position with respect to the dispute. In the event the DOE elects not to elevate the dispute to the Administrator within the designated fourteen (14) day escalation period, the DOE shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute.

G. Upon escalation of the dispute to the Administrator of EPA pursuant to Subsection F, the Administrator will review and resolve the dispute within twenty-one (21) days. Upon request and prior to resolving the dispute, the EPA Administrator shall meet and confer with the Secretary of Energy to discuss the issue(s) under dispute. Upon resolution, the Administrator shall provide the DOE with a written final decision setting forth resolution of the dispute.

H. The pendency of any dispute under this Section shall not affect the DOE's responsibility for timely performance of the work required by this Agreement, except that the time period for completion of work affected by such dispute shall be extended for a period of time usually not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the work required by this

Agreement which are not affected by the dispute shall continue and be completed in accordance with the applicable schedule.

I. Within fourteen (14) days of resolution of a dispute pursuant to the procedures specified in this Section, the DOE shall incorporate the resolution and final determination into the appropriate plan, schedule or procedures and proceed to implement this Agreement according to the amended plan, schedule or procedures.

J. When dispute resolution is in progress, work affected by the dispute will immediately be discontinued if the Division Director requests in writing, that work related to the dispute be stopped, because,in EPA's opinion, such work is inadequate or defective, and such inadequacy or defect is likely to yield an adverse effect on human health or the environment, or is likely to have a substantial adverse effect or the implementation process. To the extent possible, EPA shall consult with the DOE prior to initiating a work stoppage request. After stoppage of work, if the DOE believes that the work stoppage is inappropriate or may have potential significant adverse impacts, the DOE may meet with the Division Director to discuss the work stoppage.. Following this meeting, and further consideration of the issues, the Division Director will issue, in writing a final decision with respect to the work stoppage. The final written decision of the Division Director may immediately be subjected to formal dispute resolution or such dispute may be brought to either the DRC or the SEC, at the discretion of the DOE.

K. Resolution of a dispute pursuant to this Section constitutes a final resolution of any dispute arising under this Agreement. All applicable laws, directives, and procedures apply to resolution of the disputes under this

Section. All Parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section.

XI. FORCE MAJEURE

A Force Majeure shall mean any event arising from causes beyond the control of Respondent which cause a delay in or prevents the performance of any obligation under this Agreement. Force Majeure includes but is not limited to, Acts of God; fire; war; insurrection; civil disturbance; explosion; adverse weather conditions that could not be reasonably anticipated; unusual delays in transportation, beyond the control of Respondent; restraint by court order or order of public authority; inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approvals, permits, or licenses due to action or inaction of any governmental agency or authority other than the DOE; delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence; and failure to obtain approval of adequate authorizations and/or appropriations from Congress, if Respondent shall have made timely request for such funds as part of the budgetary process as set forth in Section XIII (Funding) of this Agreement. A Force Majeure shall also include any strike or other labor dispute, whether or not within the control of the Parties affected hereby. A Force Majeure shall not include increased costs of activities covered by this Agreement, whether or not anticipated at the time such activities were initiated.

XII. NOTICES

Documents, including reports, approvals, disapprovals, and other correspondence, which must be submitted under this Agreement, may be submitted by express mail, overnight mail, hand delivery, certified mail, return receipt requested, facsimile copies (with the original sent within twenty-four (24) hours by another of these methods) or any other method that includes proof of delivery, to the following addressees or any other addressee which EPA or Respondent so designated in writing:

EPA:

U.S. Environmental Protection Agency
Mr. James L. Graham, P.E., Section Chief
Water Enforcement Branch, Texas/New Mexico Section (6W-ET)
1445 Ross Avenue
Dallas, TX 75202-2733

Send copies to:

NMED:

Mr. Jim Piatt
Chief, Water Surface Bureau
New Mexico Environment Department
P.O. Box 968
Santa Fe, New Mexico 87504-0968

XIII. FUNDING

Respondent shall request, through the DOE and the Department of Energy, all funds and/or authorizations from Congress necessary to meet the conditions of this Agreement and it shall be sought in accordance with Sections 1-4 and 1-5 of Executive Order 12088 as implemented by the Office of Management and Budget Circular A-106 (as amended).

With regard to finding, the timetables and schedules are fixed and definite except to the extent that the Congress of the United States may fail to

approve authorizations and/or appropriations requests necessary to exercise the timetables and schedules.

Although failure to obtain approval of adequate authorization and/or appropriations from Congress may alter the established timetable and schedules in accordance with Section XI, (Force Majeure), it does not release Respondent from its obligations of compliance with the CWA and the terms and conditions of this Agreement. If sufficient funds are not appropriated by the Congress as requested and existing funds are not available to achieve compliance with the schedules provided in this Agreement, and the Respondent reports the lack of funds in accordance with Section XII (Notices), then pursuant to Section XI (Force Majeure), the Parties will revise the compliance schedule as necessary.

No provision of this Agreement shall be interpreted to require obligation of funds in violation of the Anti-Deficiency Act, 31 U.S. C. §1341.

XIV. COMPLIANCE WITH THIS AGREEMENT

In the event of violations of this Agreement by Respondent, the compliance provisions of Section 1-604 of Executive Order 12088 and Section 1-604 of Executive Order 12146 are available as enforcement mechanisms.

XVI. TERMINATION DATE

This Agreement will terminate after Respondent has complied with all of the terms and conditions specified in Section VII (Interim Limits and Compliance Schedule) of this Agreement, notified EPA, in accordance with Section XII (Notices) in writing of its compliance and request for termination, and

received written notice from EPA that the terms and conditions of this Agreement have been satisfied. EPA will file a termination notice with the Regional Hearing Clerk, EPA Region 6, and provide Respondent with a copy of the notice.

XV. EFFECTIVE DATE

This Agreement is effective on the date that it is filed with the Regional Hearing Clerk, EPA Region 6.

THIS AGREEMENT CAN BE AND IS HEREBY EXECUTED IN COUNTERPART.

Myron O. Knudson, P. E.
Director
Water Management Division

Dated this MAR 11 1993 day of _____ 1993, at Dallas, Texas.

AGREED:

LOS ALAMOS NATIONAL LABORATORY

Dated: _____

BY: Jerry L. Bellows
Area Manager
Los Alamos Area Office
Department of Energy

APPENDIX F

WASTESTREAM CHARACTERIZATION CORRECTIVE ACTION DATABASE

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 63 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug 93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
2	1	2-1-OPN-01	051	1CCD1	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CCD2	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD1	FLOOR WASHINGS	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD2	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD3	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD4	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD5	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD6	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-01	051	1CFD7	NONE	OMEGA REACTOR ROOM	MODIFY				INC DO
2	1	2-1-OPN-04	01S	1SD07	HAND WASHING/CHEMICAL RINS	CHEMISTRY LABORATORY	REPIPE				INC DO
2	1	2-1-OPN-04	01S	1SD08	HAND WASHING/CHEMICAL RINS	CHEMISTRY LABORATORY	REPIPE				INC DO
2	1	2-1-OPN-04	01S	1SD09	HAND WASHING/CHEMICAL RINS	CHEMISTRY LABORATORY	REPIPE				INC DO
2	1	2-1-OPN-04	01S	1SD10	HAND WASHING/CHEMICAL RINS	CHEMISTRY LABORATORY	REPIPE				INC DO
2	1	2-1-OPN-04	01S	1TD1	NONE	WAREHOUSE AREA - TRENCH	PLUG				INC DO
2	1	2-1-OPN-04	N/A	1TD2	NONE	WAREHOUSE AREA	PLUG				INC DO
2	1	2-1-OPN-04	N/A	1TD3	NONE	WAREHOUSE AREA	PLUG				INC DO
2	1	2-1-OPN-04	N/A	BFD2	NONE	ELEVATOR EQUIPMENT ROOM	PLUG				INC DO
2	1	2-1-OPN-05	N/A	BFD1	BACKFLOW PREVENTER DRAIN	BASEMENT	PIPE TO S.S				INC DO
2	1	2-1-OPN-05	N/A	BSP1	GROUND WATER	BASEMENT	NOI	NOI	3/24/92	3/24/92	EM 8
2	1	2-1-OPN-05	N/A	BSP2	GROUND WATER	BASEMENT	NOI	NOI	3/24/92	3/24/92	EM 8
2	1	2-1-OPN-05	N/A	RD1	STORM WATER	ROOF	SEPARATE				INC DO
2	1	2-1-OPN-06	N/A	N/A	FIRE LINE DRAIN	METAL SHOP	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	1	2-1-OPN-07	N/A	N/A	FIRE LINE DRAIN	METAL SHOP	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	1	2-1-OPN-08	N/A	N/A	FIRE LINE DRAIN	METAL SHOP	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	1	2-1-OPN-09	N/A	N/A	FIRE LINE DRAIN	METAL SHOP	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	1	2-1-OPN-11	N/A	N/A	FIRE LINE DRAIN	WEIGHT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	1	2-1-OPN-12	N/A	N/A	FIRE LINE DRAIN	WEIGHT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	1	2-1-OPN-15	N/A	N/A	FIRE LINE DRAIN	CONFERENCE ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	44	2-44-OPN-1	N/A	1WH1	WATER HTR. DRAIN	MECHANICAL ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
2	44	2-44-OPN-3	051	1CFD1	AIR COMPRES. BLOWOFF/BFP D	MECHANICAL ROOM	MODIFY				INC 5
2	44	2-44-OPN-3	051	1CFD2	NONE	MECHANICAL ROOM	VERIFY				INC 5
2	44	2-44-OPN-3	051	1CFD3	NOT FOUND	MECHANICAL ROOM	VERIFY				INC 5
2	44	2-44-OPN-3	051	1CSD1	HAND WASHING	MECHANICAL ROOM	VERIFY				INC 5
2	46	2-46-OPN-1	N/A	N/A	COOLING WATER	COOLING WATER SURGE TANK	SAMPLE				INC 5
2	51	TA 2-51	N/A	N/A	NONE	ELECTRICAL SUBSTATION	MODIFY				INC 5
2	57	2-57-OPN-1	N/A	N/A	FIRE LINE DRAIN	WATER VALVE HOUSE	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
2	63	2-63-OPN-1	01S	1ED4	AIR COMPRESSOR BLOWOFFS(2)	MECHANICAL ROOM	CONTAINERIZE				INC 5
2	70	TA 2-70	N/A	N/A	NONE	WATER STORAGE TANK	SEC. CONTAIN				INC 5

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 48 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
3	474	3-474-OPN-02	N/A	N/A	WTR HTR PRV DRAIN	JANITOR CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	474	3-474-OPN-03	N/A	N/A	EVAP AIR COOLER DRAIN	ROOF	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	474	3-474-OPN-04	N/A	N/A	EVAP AIR COOLER DRAIN	ROOF	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	495	3-495-OPN-02	N/A	N/A	EVAP AIR COOLER DRAIN	ROOF	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	496	3-496-OPN-02	N/A	N/A	EVAP AIR COOLER DRAIN	ROOF	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	496	3-496-OPN-03	N/A	N/A	WTR HTR PRV DRAIN	JANITOR CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	512	3-512-OPN-02	N/A	N/A	WTR HTR PRV DRAIN	CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	512	3-512-OPN-03	N/A	N/A	A/C COIL CONDENSATE DRAIN	FURNACE RM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	513	3-513-OPN-02	N/A	N/A	A/C COIL CONDENSATE DRAIN	FURNACE RM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	514	3-514-OPN-02	N/A	N/A	A/C COIL CONDENSATE DRAIN	FURNACE RM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	514	3-514-OPN-03	N/A	N/A	WTR HTR PRV DRAIN	FURNACE RM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	514	3-514-OPN-04	N/A	N/A	WTR SYS DRAIN	FURNACE RM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1353	3-1353-OPN-02	N/A	N/A	WTR HTR PRV DRAIN	MECH CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1353	3-1353-OPN-03	N/A	N/A	WTR SYS DRAIN	MECH CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1353	3-1353-OPN-04	N/A	N/A	EVAP AIR COOLER DRAIN	ROOF	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1353	3-1353-OPN-05	N/A	N/A	EVAP AIR COOLER DRAIN	ROOF	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1353	3-1353-OPN-06	N/A	N/A	A/C COIL CONDENSATE DRAIN	EXT GND MOUNT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1527	3-1527-OPN-01	N/A	N/A	A/C COIL CONDENSATE DRAIN	EXT WALL MOUNT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1539	3-1539-OPN-02	N/A	N/A	WTR HTR PRV DRAIN	RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
3	1539	3-1539-OPN-03	N/A	N/A	FIRE SPRINKLER DRAIN	ELECTRONIC PTS STORAGE	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
3	1539	3-1539-OPN-04	N/A	N/A	FIRE SPRINKLER DRAIN	ELECTRONIC PTS STORAGE	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 43 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
3	440	3-440-OPN-01	01S	N/A	BATTERY LEAKAGE	BATTERY STORAGE	SEC. CONTAIN.				OS DIV
3	440	3-440-OPN-02	01S	1FD4	FUEL PUMPS	MECHANICAL ROOM	SEC. CONTAIN.				OS DIV
3	440	3-440-OPN-02	01S	1FD4	AIR COMPRESSOR BLOWDOWN	MECHANICAL ROOM	CONTAINERIZE				OS DIV
3	440	3-440-OPN-02	01S	N/A	BATTERY LEAKAGE	BATTERY STORAGE	SEC. CONTAIN.				OS DIV
3	440	3-440-OPN-04	N/A	N/A	FIRE LINE DRAIN	ENTRY AREA	NOI	NOI	10/31/91	10/31/91	EM-8
3	440	3-440-OPN-08	N/A	N/A	PRESSURE RELIEF VALVE DRAIN	MECHANICAL ROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	440	3-440-OPN-09	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8
3	440	3-440-OPN-10	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8
3	468	3-468-OPN-2	N/A	N/A	PRESSURE RELIEF VALVE DRAIN	OFFICE	NOI	NOI	3/24/92	3/24/92	EM 8
3	468	3-468-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
3	468	3-468-OPN-4	N/A	N/A	EQUIP. CONDENSED WATER DRA	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
3	470	3-470-OPN-2	N/A	N/A	PRESSURE RELIEF VALVE DRAIN	RESTROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	470	3-470-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
3	1520	3-1520-OPN-2	N/A	N/A	PRESSURE RELIEF VALVE DRAIN	RESTROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	1520	3-1520-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	EXTERIOR	NOI	NOI	3/24/92	3/24/92	EM 8
3	1537	3-1537-OPN-2	N/A	N/A	PRESSURE RELIEF VALVE DRAIN	RESTROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	1537	3-1537-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	EXTERIOR	NOI	NOI	3/24/92	3/24/92	EM 8
3	1593	3-1593-OPN-2	N/A	N/A	PRESSURE RELIEFVALVE DRAIN	RESTROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	1593	3-1593-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	EXTERIOR	NOI	NOI	3/24/92	3/24/92	EM 8
3	1763	3-1763-OPN-2	N/A	N/A	PRESSURE RELIEF VALVE DRAIN	RESTROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	1763	3-1763-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	EXTERIOR	NOI	NOI	3/24/92	3/24/92	EM 8
3	1764	3-1764-OPN-2	N/A	N/A	PRESSURE RELIEFVALVE DRAIN	RESTROOM	NOI	NOI	3/24/92	3/24/92	EM 8
3	1764	3-1764-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DRA	EXTERIOR	NOI	NOI	3/24/92	3/24/92	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 37 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	365	53-365-OPN-17	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER SYS	N O I	N O I	10/31/91	10/31/91	EM 8
53	757	53-757-OPN-01	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	757	53-757-OPN-02	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	757	53-757-OPN-03	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	757	53-757-OPN-04	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	757	53-757-OPN-05	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	758	53-758-OPN-01	N/A	N/A	FIRE SPRINKLER DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	758	53-758-OPN-02	N/A	N/A	FIRE SPRINKLER DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	758	53-758-OPN-03	N/A	N/A	FIRE SPRINKLER DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	758	53-758-OPN-04	N/A	N/A	(1) BFP DRAIN	FIRE SPRINKLER EQUIP	N O I	N O I	10/31/91	10/31/91	EM 8
53	759	53-759-OPN-01	N/A	N/A	EMER SHOWER (TO GROUND)	HYDROGEN GAS MANIFOLD ST	N O I	N O I	3/24/92	3/24/92	EM 8
53	759	53-759-OPN-02	N/A	N/A	EMER EYE WASH (TO GROUND)	HYDROGEN GAS MANIFOLD ST	N O I	N O I	3/24/92	3/24/92	EM 8
53	760	53-760-OPN-01	N/A	N/A	TANK CONDENSATE DRAIN	HYDROGEN GAS STORAGE TAN	N O I	N O I	3/24/92	3/24/92	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 37 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *10-Aug-93*

IA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
3	365	53 365 OPN 01	09S	1ED01	A/C COIL CONDENSATE	SUPPORT AREA	LABEL				AT 10
3	365	53 365 OPN 01	09S	1FD01	PLUGGED	GTA TUNNEL (WEST)	LABEL				AT 10
3	365	53 365 OPN 01	09S	1FD02	NO SOURCES	GTA TUNNEL (WEST)	VERIFY				AT 10
3	365	53 365 OPN 01	09S	1FD03	GND WTR SEEPAGE INTO TUNNE	GTA TUNNEL (WEST)	LABEL				AT 10
3	365	53 365 OPN 01	09S	1FD04	PLUGGED	GTA TUNNEL (WEST)	LABEL				AT 10
3	365	53 365 OPN 01	09S	1FD05	NO SOURCES	SUPPORT AREA	MODIFY				AT 10
3	365	53 365 OPN 01	09S	1FD07	NO SOURCES	SUPPORT AREA	MODIFY				AT 10
3	365	53 365 OPN 01	09S	1FD08	NO SOURCES	SUPPORT AREA	MODIFY				AT 10
3	365	53-365-OPN-01	09S	1FD10	GND WTR SEEPAGE INTO TUNNE	GTA TUNNEL (EAST)	LABEL				AT 10
3	365	53-365-OPN-01	09S	1FD11	NO SOURCES	GTA TUNNEL (EAST)	PLUG				AT 10
3	365	53-365-OPN-01	09S	1FD12	PLUGGED	GTA TUNNEL (EAST)	LABEL				AT 10
3	365	53 365 OPN 01	09S	1FD13	GND WTR SEEPAGE INTO TUNNE	GTA TUNNEL (EAST)	LABEL				AT 10
3	365	53-365-OPN-01	09S	1FD14	NO SOURCES	GTA TUNNEL (EAST)	PLUG				AT 10
3	365	53-365-OPN-01	09S	1FD15	PLUGGED	GTA TUNNEL (EAST)	LABEL				AT 10
3	365	53 365 OPN 01	09S	1FD16	NO SOURCES	GTA TUNNEL (EAST)	PLUG				AT 10
3	365	53 365 OPN 01	09S	1FD17	GND WTR SEEPAGE INTO TUNNE	GTA TUNNEL (EAST)	LABEL				AT 10
1	365	53-365-OPN-01	09S	1FD23	NO SOURCES	ASSEMBLY AREA OFFICE	MODIFY				AT 10
1	365	53-365-OPN-01	09S	1FD24	NO SOURCES	ASSEMBLY AREA	PLUG				AT 10
1	365	53 365-OPN-01	09S	1FD25	NO SOURCES	ASSEMBLY AREA OFFICE	PLUG				AT 10
1	365	53 365 OPN 01	09S	1FD26	NO SOURCES	ASSEMBLY AREA	PLUG				AT 10
	365	53 365 OPN 01	09S	1FD27	NO SOURCES	MACHINE SHOP	PLUG				AT 10
	365	53-365-OPN-01	09S	1OI01	1FD22 ONLY	OIL INTERCEPTOR (OUTSIDE)	MODIFY				AT 10
	365	53-365-OPN-01	09S	1SD04	GENERAL CLEANING	MACHINE SHOP	LABEL				AT 10
	365	53-365-OPN-01	09S	1SP01	GTA TUNNEL FD'S	GTA TUNNEL (WEST) SUMP PU	REPIPE				AT 10
	365	53-365-OPN-01	09S	1SP02	GTA TUNNEL FD'S	GTA TUNNEL (EAST) SUMP PUM	REPIPE				AT 10
	365	53-365-OPN-02	09S	4FD01	(3) AIR COMPRESSOR DRAINS	FAN/BOILER ROOM	CONTAINERIZE				AT 10
	365	53-365-OPN-02	09S	4FD01	(1) COMP AIR STOR TANK DR	FAN/BOILER ROOM	CONTAINERIZE				AT 10
	365	53 365-OPN-02	09S	4FD03	NO SOURCES	FAN/BOILER ROOM	PLUG				AT 10
	365	53-365-OPN-02	09S	4FD06	NO SOURCES	FILTER ROOM	PLUG				AT 10
	365	53 365 OPN 02	09S	4FD07	UNDER FILTER HOUSING	FILTER ROOM	PLUG				AT 10
	365	53-365-OPN-02	09S	4FD08	(1) METERED COOLTWR BLOWD	FILTER ROOM	MODIFY				AT 10
	365	53 365 OPN 07	N/A	N/A	STORM WTR RUNOFF (VALVED)	EXT TRANSFORMER PAD	MODIFY				AT 10
	365	53 365-OPN-08	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER SYS	N O I	N O I	10/31/91	10/31/91	EM 8
	365	53 365-OPN-09	N/A	N/A	STORM WTR/CONDENSATE	EXHAUST STACK DRAIN	SAMPLE				AT 10
	365	53 365 OPN 10	N/A	N/A	TREATED COOLING WTR	COOLING TWR OVERFLOW DR	PIPE TO S S				AT 10
	365	53-365-OPN-11	N/A	N/A	NITROGEN GAS VENT	ASSEMBLY AREA	LABEL				AT 10
	365	53 365 OPN 12	N/A	N/A	VAC PUMP AIR DISCH	ASSEMBLY AREA	LABEL				AT 10
	365	53 365 OPN 13	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER SYS	N O I	N O I	10/31/91	10/31/91	EM 8
	365	53 365 OPN 14	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER SYS	N O I	N O I	10/31/91	10/31/91	EM 8
	365	53 365 OPN 15	N/A	N/A	FIRE SYS DRAIN	FIRE SPRINKLER SYS	N O I	N O I	10/31/91	10/31/91	EM 8
	365	53 365 OPN 16	N/A	N/A	CAPPED STUB	GTA TUNNEL	MODIFY				AT 10

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 34 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	20	53-20-OPN-1	09S	1SD01	GENERAL CLEANING	JANITOR CLOSET	LABEL				HS-DIV
53	21	53-21-OPN-2	N/A	N/A	WATER HTR PRV DISCH	JANITOR CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	394	53-394-OPN-1	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	395	53-395-OPN-2	N/A	N/A	WATER HTR PRV DISCH	RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	395	53-395-OPN-3	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	396	53-396-OPN-1	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	396	53-396-OPN-2	N/A	N/A	A/C CONDENSATE	EXTERIOR A/C UNIT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	397	53-397-OPN-2	N/A	N/A	WATER HTR PRV DISCH	JANITOR CLOSET	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	397	53-397-OPN-3	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	398	53-398-OPN-2	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	399	53-399-OPN-1	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	406	53-406-OPN-2	N/A	N/A	WTR HTR PRV DISCH(ABANDON	RESTROOM	ELIMINATE				P DIV
53	406	53-406-OPN-3	N/A	N/A	WTR HTR PRV DISCH(NEW)	RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	406	53-406-OPN-4	N/A	N/A	WTR HTR PRV DISCH(NEW)	RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	406	53-406-OPN-5	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	407	53-407-OPN-2	N/A	N/A	WTR HTR PRV DISCH(ABANDON	RESTROOM	ELIMINATE				P DIV
53	407	53-407-OPN-3	N/A	N/A	WTR HTR PRV DISCH(NEW)	RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	407	53-407-OPN-4	N/A	N/A	WTR HTR PRV DISCH(NEW)	RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	407	53-407-OPN-5	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	882	53-882-OPN-2	N/A	N/A	NON TREATED EVAP DRAIN	ROOFTOP EVAP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

ASTE STREAM REPORT # 33 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
30	53 30 OPN 5	N/A	N/A	FIRE SPRINKLER SYSTEM	LANSCE EXPER AREA	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
30	53 30 OPN 6	N/A	N/A	FIRE SPRINKLER SYSTEM	LANSCE EXPER AREA	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
36	53-36-OPN-1	N/A	1CFD01	DI WATER DRAIN/COOL TWR D	P-DIV DI PUMP/HT EXCH RM	PLUG				MP 8
36	53 36-OPN-2	N/A	N/A	A/C UNIT CONDENSATE	BLDG EXTERIOR	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
37	53-37-OPN-2	N/A	N/A	WTR HTR PRV	GUARD BLDG RESTROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
368	53-368-OPN-1	N/A	1CFD01	DI WATER SYSTEM DRAIN	TGT 4 EQUIP ROOM	LABEL				P-DO
622	53-622-OPN-09	09S	3FS01	ENCL A/H CABINET DRAINS	EXTERIOR A/H CABINET	LABEL				ADR LANS
622	53-622-OPN-09	09S	3FS02	ENCL A/H CABINET DRAINS	EXTERIOR A/H CABINET	LABEL				ADR LANS
622	53-622-OPN-10	N/A	N/A	FIRE SPRINKLER SYSTEM	MECHANICAL ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
622	53-622-OPN-12	N/A	N/A	FIRE SPRINKLER SYSTEM	MECHANICAL ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
1031	53-1031-OPN-1	N/A	N/A	SPILLS/POSS STORM WTR	OIL/WASTE STORAGE BLDG	MODIFY				ADR LANS

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 33 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	15	53 15 OPN 5	N/A	N/A	AIR COMPRESSOR TANK DRAIN	BLDG EXTERIOR	CONTAINERIZE				BLDG MGR
53	16	53-16-OPN 1	09S	N/A	CAPPED STUB	MACHINE SHOP	LABEL				BLDG MGR
53	16	53-16-OPN-2	N/A	N/A	AIR COMPRESSOR TANK DRAIN	BLDG EXTERIOR	CONTAINERIZE				BLDG MGR
53	28	53 28-OPN-01	09S	1FD07	ELECTRONICS CAB CONDENSAT	PSR EQUIPMENT BLDG	MODIFY				BLDG MGR
53	28	53 28-OPN-01	09S	1FD12	AIR COMP TANK DRAIN	MECHANICAL ROOM	CONTAINERIZE				BLDG MGR
53	28	53 28-OPN 01	09S	1FD14	NO DIRECT SOURCES	PSR EQUIPMENT BLDG	MODIFY				BLDG MGR
53	28	53 28-OPN 01	09S	1FD15	NO DIRECT SOURCES	PSR EQUIPMENT BLDG	MODIFY				BLDG MGR
53	28	53 28-OPN 01	09S	1FD16	ELECTRONICS CAB CONDENSAT	PSR EQUIPMENT BLDG	MODIFY				BLDG MGR
53	28	53 28-OPN-01	09S	1FD17	NO DIRECT SOURCES	PSR EQUIPMENT BLDG	MODIFY				BLDG MGR
53	28	53 28-OPN-02	N/A	1CFD01	RAD DI WATER SYSTEM	PSR EQUIPMENT BLDG	LABEL				MP 5
53	28	53 28 OPN 03	03A130	N/A	TREATED TWR WATER BD	PSR COOLING TWR BLOWDOW	REPIPE				MP 5
53	28	53 28 OPN 05	N/A	N/A	LEACH LINE INLET STUBS	BLDG EXTERIOR	LABEL				MP 5
53	28	53 28 OPN 06	N/A	N/A	FIRE SPRINKLER SYSTEM	PSR EQUIPMENT BLDG	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
53	28	53 28-OPN-07	N/A	N/A	FIRE SPRINKLER SYSTEM	PSR EQUIPMENT BLDG	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
53	28	53 28-OPN-08	N/A	N/A	FIRE SPRINKLER SYSTEM	PSR EQUIPMENT BLDG	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
53	28	53-28-OPN-09	N/A	N/A	A/C SYSTEM CONDENSATE	BLDG EXTERIOR	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	28	53-28-OPN-10	N/A	N/A	A/C SYSTEM CONDENSATE	BLDG EXTERIOR	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	28	53 28 OPN 11	N/A	N/A	FIRE SPRINKLER SYSTEM	PSR EQUIPMENT BLDG	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
53	28	53 28-OPN-12	N/A	N/A	A/C SYSTEM CONDENSATE	BLDG EXTERIOR	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	29	53-29-OPN-1	N/A	N/A	A/C SYSTEM CONDENSATE	BLDG EXTERIOR	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	29	53-29-OPN-2	N/A	N/A	A/C SYSTEM CONDENSATE	BEAM EXPER AREA	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	29	53-29-OPN-3	N/A	N/A	OLD PIPE STUB	BEAM EXPER AREA	ELIMINATE				P DIV
53	29	53-29-OPN-4	N/A	N/A	A/C SYSTEM CONDENSATE	BLDG EXTERIOR	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	30	53-30-OPN-1	09S	1FS02	COMP AIR FILTER DRAIN	MECHANICAL ROOM	CONTAINERIZE				BLDG MGR
53	30	53-30-OPN-2	N/A	1CFD02	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53-30 OPN-2	N/A	1CFD03	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53-30 OPN-2	N/A	1CFD04	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30-OPN-2	N/A	1CFD05	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30-OPN-2	N/A	1CFD06	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30-OPN-2	N/A	1CFD07	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30-OPN 2	N/A	1CFD08	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53-30-OPN-2	N/A	1CFD09	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53-30-OPN-2	N/A	1CFD10	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30-OPN 2	N/A	1CFD11	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53-30-OPN 2	N/A	1CFD12	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53-30 OPN 2	N/A	1CFD13	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30-OPN-2	N/A	1CFD14	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30 OPN 2	N/A	1CFD15	NO DIRECT SOURCES	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30 OPN 2	N/A	1CSD01	CLEAN UP	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30 OPN 2	N/A	1CSD02	CLEAN UP	LANSCE EXPER AREA	LABEL				ADR LANS
53	30	53 30 OPN 2	N/A	1CSD03	CLEAN UP	LANSCE EXPER AREA	LABEL				ADR LANS

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 33 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92 1306 REPORT DATE 10-Aug 93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	7	53-7-OPN-01	N/A	S1CSP01	DI WATER SYSTEM	LINE D TUNNEL	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD01	BFPS & HWS/HWR DRAIN	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD02	ONE HWS DRAIN	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD03	NO DIRECT SOURCES	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD04	NO DIRECT SOURCES	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD05	A/H CONDENSATE DRAINS	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD06	HWS DRAIN	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	1FD07	A/H CONDENSATE DRAIN	EQUIPMENT ROOM	LABEL				MP 6
53	7	53-7-OPN-02	09S	S1FD13	REMOVED	TGT #1 SERVICE AREA	PLUG				MP 6
53	7	53-7-OPN-02	09S	S1FD14	REMOVED	TGT #1 SERVICE AREA	PLUG				MP 6
53	7	53-7-OPN-02	09S	S1SD03	REMOVED	TGT #1 SERVICE AREA	PLUG				MP 6
53	7	53-7-OPN-02	09S	S1SD04	REMOVED	TGT #1 SERVICE AREA	PLUG				MP 6
53	7	53-7-OPN-02	09S	S1SH01	REMOVED	TGT #1 SERVICE AREA	PLUG				MP 6
53	7	53-7-OPN-02	09S	S1TL03	REMOVED	TGT #1 SERVICE AREA	PLUG				MP 6
53	7	53-7-OPN-03	09S	S1FD05	NO DIRECT SOURCES	CORRIDOR	LABEL				MP 6
53	7	53-7-OPN-03	09S	S1FD06	NO DIRECT SOURCES	CORRIDOR	LABEL				MP 6
53	7	53-7-OPN-03	09S	S1FD07	COOLING TOWER DRAINS	LCR MECHANICAL ROOM	LABEL				MP 6
53	7	53-7-OPN-03	09S	S1FD08	NO DIRECT SOURCES	LCR MECHANICAL ROOM	LABEL				MP 6
53	7	53-7-OPN-03	09S	S1FD09	A/H CONDENSATE DRAINS	LCR MECHANICAL ROOM	LABEL				MP 6
53	7	53-7-OPN-03	09S	S1FD10	NO DIRECT SOURCES	BLUE ROOM CORRIDOR	PLUG				MP 6
53	7	53-7-OPN-03	09S	S1FD11	NO DIRECT SOURCES	BLUE ROOM CORRIDOR	PLUG				MP 6
53	7	53-7-OPN-03	09S	S1FD12	NO DIRECT SOURCES	BLUE ROOM CORRIDOR	PLUG				MP 6
53	7	53-7-OPN-05	N/A	S1HD01	CAPPED	TGT # 1 SERVICE AREA	LABEL				MP 6
53	7	53-7-OPN-07	N/A	S1CFD09	NO DIRECT SOURCES	LINE D TUNNEL	LABEL				MP 6
53	7	53-7-OPN-07	N/A	S2CFD10	TGT #4 TUNNEL DRAIN	TGT # 2 (BLUE ROOM)	LABEL				MP 6
53	7	53-7-OPN-07	N/A	S2CFD10	DISCH FROM 53-368-OPN-1	TGT # 2 (BLUE ROOM)	LABEL				MP 6
53	7	53-7-OPN-07	N/A	S2CFD11	NO DIRECT SOURCES	TGT # 2 (BLUE ROOM)	LABEL				MP 6
53	7	53-7-OPN-07	N/A	S2CFD12	NO DIRECT SOURCES	TGT # 2 (BLUE ROOM)	LABEL				MP 6
53	7	53-7-OPN-07	N/A	S2CFD13	NO DIRECT SOURCES	TGT # 2 (BLUE ROOM)	LABEL				MP 6
53	7	53-7-OPN-12	N/A	S1FD01	NO DIRECT SOURCES	LCR CONTROL ROOM	PLUG				MP 6
53	7	53-7-OPN-12	N/A	S1FD02	NO DIRECT SOURCES	LCR CONTROL ROOM	PLUG				MP 6
53	7	53-7-OPN-12	N/A	S1FD03	NO DIRECT SOURCES	LCR CONTROL ROOM	PLUG				MP 6
53	7	53-7-OPN-13	N/A	N/A	FIRE SPRINKLER SYSTEM	EQUIPMENT ROOM	N O I	N O I	10/31/91	10/31/91	EM 8
53	7	53-7-OPN-14	N/A	N/A	FIRE SPRINKLER SYSTEM	EQUIPMENT ROOM	N O I	N O I	10/31/91	10/31/91	EM 8
53	7	53-7-OPN-15	N/A	N/A	FIRE SPRINKLER SYSTEM	EQUIPMENT ROOM	N O I	N O I	10/31/91	10/31/91	EM 8
53	7	53-7-OPN-16	N/A	N/A	FIRE SPRINKLER SYSTEM	EQUIPMENT ROOM	N O I	N O I	10/31/91	10/31/91	EM 8
53	8	53-8-OPN-1	N/A	1CFD01	DI WATER SYSTEM	PROTON STORAGE RING	LABEL				MP 6
53	8	53-8-OPN-1	N/A	1CFD14	DI WATER SYSTEM	PROTON STORAGE RING	LABEL				MP 5
53	15	53-15-OPN-2	N/A	N/A	FIRE SPRINKLER SYSTEM	MECHANICAL ROOM	N O I	N O I	10/31/91	10/31/91	EM 8
53	15	53-15-OPN-3	N/A	N/A	FIRE SPRINKLER SYSTEM	MECHANICAL ROOM	N O I	N O I	10/31/91	10/31/91	EM 8
53	15	53-15-OPN-4	N/A	N/A	FIRE SPRINKLER SYSTEM	USER'S LAB	N O I	N O I	10/31/91	10/31/91	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 32 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	4	53-4 OPN-1	09S	1SD2	HAND WASHING	H P LAB	ELIMINATE				
53	4	53-4 OPN-3	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	N O I.	N O I	10/31/91	10/31/91	EM 8
53	4	53-4 OPN-4	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	N O I.	N O I	10/31/91	10/31/91	EM 8
53	14	53 14 OPN 03	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	N O I.	N O I	3/24/92	3/24/92	EM 8
53	14	53-14-OPN-04	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	N O I.	N O I	3/24/92	3/24/92	EM 8
53	14	53-14 OPN-05	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	N O I.	N O I	3/24/92	3/24/92	EM 8
53	14	53 14 OPN 06	N/A	N/A	FIRE LINE DRAIN	SHOP	N O I.	N.O I	10/31/91	10/31/91	EM 8
53	14	53 14 OPN-08	N/A	N/A	AIR COMPRESSOR BLOWOFF	EXTERIOR AREA	CONTAINERIZE				AT DIV
53	14	53-14-OPN-09	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	N O I.	N O I	10/31/91	10/31/91	EM 8
53	14	53-14-OPN-10	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	14	53 14 OPN-11	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	N O I.	N.O I	10/31/91	10/31/91	EM 8
53	14	53 14 OPN-12	N/A	N/A	DISCONNECTED DRAIN	MECHANICAL ROOM	ELIMINATE				AT DIV
53	14	53-14-OPN-13	N/A	N/A	DISCONNECTED DRAIN	MECHANICAL ROOM	ELIMINATE				AT DIV
53	14	53-14-OPN-14	N/A	AD1	SECONDARY CONTAINMENT DRA	EXTERIOR AREA	N.O.I.	N O I.	3/24/92	3/24/92	EM 8
53	14	53-14-OPN-14	N/A	AD2	SECONDARY CONTAINMENT DRA	EXTERIOR AREA	N.O.I.	N O I.	3/24/92	3/24/92	EM 8
53	27	53-27-OPN-2	N/A	N/A	BACKFLOW PREVENTER DRAIN	BATHROOM	N.O.I.	N O I.	3/24/92	3/24/92	EM 8
53	27	53-27-OPN-3	N/A	N/A	PRESSURE RELIEF DRAIN	BATHROOM	N.O.I.	N.O I	3/24/92	3/24/92	EM 8
53	465	53-465-OPN-1	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N.O.I.	N O I.	3/24/92	3/24/92	EM 8
53	544	53-544-OPN-2	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N.O.I.	N.O I.	3/24/92	3/24/92	EM 8
53	549	53-549-OPN-1	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N.O.I.	N O I.	3/24/92	3/24/92	EM 8
53	564	53 564-OPN-1	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N O I.	N O I.	3/24/92	3/24/92	EM 8
53	566	53-566-OPN-1	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N O I.	N O I	3/24/92	3/24/92	EM 8
53	570	53-570-OPN-2	N/A	N/A	WATER PRESSURE RELIEF DRA	MECHANICAL ROOM	N O I.	N O I	3/24/92	3/24/92	EM 8
53	576	53 576-OPN-1	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N O I.	N O I.	3/24/92	3/24/92	EM 8
53	576	53 576-OPN-2	N/A	N/A	EQUIP. CONDENSED WATER DR	OFFICE	N O I.	N O I.	3/24/92	3/24/92	EM 8
53	675	53-675-OPN-2	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	N O I.	N.O.I.	3/24/92	3/24/92	EM 8
53	694	53-694-OPN-1	09S	1SH1	SHOWER	BATHROOM	PLUG				JCI
53	694	53-694-OPN-2	N/A	N/A	WATER PRESSURE RELIEF DRA	WATER HEATER CLOSET	ELIMINATE				JCI
53	694	53-694-OPN-3	N/A	N/A	EQUIP. CONDENSED WATER DR	ROOF	N O I.	N O I	3/24/92	3/24/92	EM 8
53	889	53 889 OPN-2	N/A	N/A	WATER PRESSURE RELIEF DRA	BATHROOM	N O I.	N O I	3\24\92	3\24\92	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 30 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	31	53-31-OPN-08	N/A	N/A	FIRE LINE DRAIN	STAIRWELL	NOI	NOI	10/31/91	10/31/91	EM 8
53	31	53-31-OPN-10	N/A	N/A	EQUIP. CONDENSATE WATER D	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	31	53-31-OPN-15	N/A	N/A	EQUIP. CONDENSATE WATER D	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	293	53-293-OPN-1	03A113	N/A	COOLING TOWER BLOWDOWN	COOLING TOWER	MODIFY				MP DIV
53	294	53-294-OPN-1	03A113	N/A	COOLING TOWER BLOWDOWN	COOLING TOWER	MODIFY				MP DIV
53	400	53-400-OPN-2	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	401	53-401-OPN-2	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	403	53-403-OPN-2	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	404	53-404-OPN-2	N/A	N/A	WATER HEATER RELIEF VALVE	MECHANICAL CLOSET	NOI	NOI	3/24/92	3/24/92	EM 8
53	404	53-404-OPN-3	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	405	53-405-OPN-2	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	409	53-409-OPN-2	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	409	53-409-OPN-3	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	577	53-577-OPN-2	N/A	N/A	WATER HEATER RELIEF VALVE	MECHANICAL CLOSET	NOI	NOI	3/24/92	3/24/92	EM 8
53	577	53-577-OPN-3	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	577	53-577-OPN-4	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	577	53-577-OPN-5	N/A	N/A	CONDENSED WATER DRAIN	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8
53	1032	53-1032-OPN-1	03A113	N/A	COOLING TOWER BLOWDOWN	COOLING TOWER	MODIFY				BLDG MGR

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 30 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1 -6 REPORT DATE: *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	6	53-6-OPN-01	09S	1FD2	AIR COMPRESSOR DRAIN	MECHANICAL ROOM	CONTAINERIZE				AT DO
53	6	53-6-OPN-02	09S	1ED2	BFP/BOILER PRESS. RELIEF	MECHANICAL ROOM	SEC. CONTAIN.				AT DO
53	6	53-6-OPN-05	N/A	N/A	FIRE LINE DRAIN	STAIRWELL	NOI	NOI	10/31/91	10/31/91	EM 8
53	6	53-6-OPN-06	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	N.O.I.	NOI	3/24/92	3/24/92	EM 8
53	6	53-6-OPN-07	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8
53	6	53-6-OPN-08	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8
53	6	53-6-OPN-10	N/A	1IM1	ICE MACHINE DRAIN	BREAK ROOM	NOI	NOI	3/24/92	3/24/92	EM 8
53	6	53-6-OPN-12	N/A	N/A	FIRE LINE DRAIN	AUDITORIUM	NOI	NOI	10/31/91	10/31/91	EM 8
53	6	53-6-OPN-15	N/A	N/A	FIRE LINE DRAIN	OFFICE	NOI	NOI	10/31/91	10/31/91	EM 8
53	6	53-6-OPN-16	N/A	N/A	FIRE LINE DRAIN	OFFICE	NOI	NOI	10/31/91	10/31/91	EM 8
53	17	53-17-OPN-1	09S	1ED1	DOMESTIC WATER PRV DRAIN	MECHANICAL ROOM	CONTAINERIZE				BLDG MGR
53	17	53-17-OPN-2	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8
53	17	53-17-OPN-3	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8
53	17	53-17-OPN-4	N/A	N/A	WATER HEATER RELIEF VALVE	MECHANICAL ROOM	NOI	NOI	3/24/92	3/24/92	EM 8
53	17	53-17-OPN-5	N/A	N/A	FIRE LINE DRAIN	ELECTRONICS LAB	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-03	N/A	N/A	FIRE LINE DRAIN	STAIRWELL	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-04	N/A	N/A	FIRE LINE DRAIN	MACHINE SHOP	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-05	N/A	N/A	WATER BACKFLOW PREVENTER	EXPERIMENT AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	18	53-18-OPN-06	N/A	N/A	WATER BACKFLOW PREVENTER	EXPERIMENT AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	18	53-18-OPN-07	N/A	N/A	FIRE LINE DRAIN	EXPERIMENT AREA	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-08	N/A	N/A	FIRE LINE DRAIN	EXPERIMENT AREA	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-09	N/A	N/A	FIRE LINE DRAIN	EXPERIMENT AREA	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-10	N/A	N/A	FIRE LINE DRAIN	EXPERIMENT AREA	NOI	NOI	10/31/91	10/31/91	EM 8
53	18	53-18-OPN-11	N/A	N/A	WATER FILL LINE	EXPERIMENT AREA	ELIMINATE				AT DO
53	18	53-18-OPN-12	N/A	N/A	WATER FILL LINE	EXPERIMENT AREA	ELIMINATE				AT DO
53	18	53-18-OPN-13	N/A	N/A	EQUIP. CONDENSATE WATER D	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	18	53-18-OPN-14	N/A	N/A	FIRE LINE DRAIN	SHOP	NOI	NOI	10/31/91	10/31/91	EM 8
53	19	53-19-OPN-01	09S	1ED1	AIR COMPRESSOR DRAIN	MECHANICAL ROOM	CONTAINERIZE				AT DO
53	19	53-19-OPN-02	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	19	53-19-OPN-03	04A133	N/A	DE-IONIZED WATER(ABANDONE	SHOP	ELIMINATE				AT DO
53	19	53-19-OPN-04	N/A	N/A	FIRE LINE DRAIN	JANITOR'S CLOSET	NOI	NOI	10/31/92	10/31/92	EM 8
53	19	53-19-OPN-05	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	19	53-19-OPN-08	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/92	10/31/92	EM 8
53	19	53-19-OPN-09	N/A	N/A	CONDENSED WATER DRAIN	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	19	53-19-OPN-10	N/A	N/A	CONDENSED WATER DRAIN	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	19	53-19-OPN-11	N/A	N/A	CONDENSED WATER DRAIN	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	19	53-19-OPN-12	N/A	N/A	CONDENSED WATER DRAIN	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	19	53-19-OPN-14	N/A	N/A	EQUIP. CONDENSED WATER DR	EXTERIOR AREA	NOI	NOI	3/24/92	3/24/92	EM 8
53	31	53-31-OPN-01	09S	1ED1	AIR COMPRESSOR DRAIN	MECHANICAL ROOM	CONTAINERIZE				AT DO
53	31	53-31-OPN-01	09S	1ED2	AIR COMPRESSOR DRAIN	MECHANICAL ROOM	CONTAINERIZE				AT DO
53	31	53-31-OPN-04	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	NOI	NOI	10/31/91	10/31/91	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 29 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	1	53-1-OPN-01A	09S	1FS01	KITCHEN EQUIPMENT	CAFETERIA	MODIFY				MP 1
53	1	53-1-OPN-01B	09S	1SD18	CLEAN-UP	LABORATORY	LABEL				MP 1
53	1	53-1-OPN-01B	09S	BAD01	STORM WATER	AIR INTAKE WELL	REPIPE				MP 1
53	1	53-1-OPN-01B	09S	BAD02	STORM WATER	AIR INTAKE WELL	REPIPE				MP 1
53	1	53-1-OPN-01B	09S	BAD03	STORM WATER	AIR INTAKE WELL	REPIPE				MP 1
53	1	53-1-OPN-01B	09S	BAD04	STORM WATER	AIR INTAKE WELL	REPIPE				MP 1
53	1	53-1-OPN-01B	09S	BFD07	CHILLER DRAIN	MECHANICAL RM.	CONTAINERIZE				MP 1
53	1	53-1-OPN-01B	09S	BFD10	AIR COMP. DISCH.	FAN ROOM	CONTAINERIZE				MP 1
53	1	53-1-OPN-01C	09S	BAD05	STORM WATER	AIR INTAKE WELL	REPIPE				MP 1
53	1	53-1-OPN-01C	09S	BAD06	STORM WATER	AIR INTAKE WELL	REPIPE				MP 1
53	1	53-1-OPN-01C	09S	BFD11	FLOOR DRAINAGE	MECHANICAL ROOM	CONTAINERIZE				MP 1
53	1	53-1-OPN-01C	09S	BFD12	CHILLER DRAIN & BFP'S	MECHANICAL ROOM	CONTAINERIZE				MP 1
53	1	53-1-OPN-01C	09S	BFD13	FLOOR DRAINAGE	MECHANICAL ROOM	CONTAINERIZE				MP 1
53	1	53-1-OPN-01D	09S	BFD15	FLOOR WASH	STORAGE	VERIFY				MP 1
53	1	53-1-OPN-01D	09S	BFS02	DI WATER, STEAM CONDENSATE	MECHANICAL ROOM	REPIPE				MP 1
53	1	53-1-OPN-01D	09S	BFS03	POTABLE WATER & VAC PUMP D	MECHANICAL ROOM	REPIPE				MP 1
53	1	53-1-OPN-08	N/A	N/A	REMOVED VAC. PUMP AIR DIS	LIGHT PIPE SHOP	ELIMINATE				MP 1
53	1	53-1-OPN-09	N/A	N/A	FIRE TEST DISCH.	FIRE SUPPRESSION SYS.	NOI	NOI	10/31/91	10/31/91	EM 8
53	1	53-1-OPN-11	N/A	N/A	FIRE TEST DISCH.	FIRE SUPPRESSION SYS.	NOI	NOI	10/31/91	10/31/91	EM 8
53	1	53-1-OPN-12	N/A	N/A	FIRE TEST DISCH.	FIRE SUPPRESSION SYS.	NOI	NOI	10/31/91	10/31/91	EM 8
53	1	53-1-OPN-14	N/A	N/A	ROOM A/C UNIT CONDENSATE	OFFICE	NOI	NOI	3/24/92	3/24/92	EM 8
53	1	53-1-OPN-15	N/A	N/A	FIRE TEST DISCH.	FIRE SUPPRESSION SYS.	NOI	NOI	10/31/91	10/31/91	EM 8
53	1	53-1-OPN-16	N/A	N/A	AIR WASHER BLOWDOWN	FAN ROOM	REPIPE				MP 1
53	1	53-1-OPN-17	N/A	N/A	STEAM VAPOR VENT	RAD LABORATORY	NOI	NOI	3/24/92	3/24/92	EM 8
53	1	53-1-OPN-21	N/A	N/A	CAUSTIC TANK VENT (VAPOR)	NEUTRALIZATION STOR TANK	ELIMINATE				MP 1
53	1	53-1-OPN-22	N/A	1ED01	EMER SHWR. & ICE MACH CON	RAD LAB. CORRIDOR	MODIFY				MP 1
53	1	53-1-OPN-23	N/A	N/A	SUPPLY FEED TO CAUSTIC TA	NEUT. CAUSTIC STOR. TANK	ELIMINATE				MP 1
53	1	53-1-OPN-24	N/A	N/A	FIRE TEST DISCH.	FIRE SUPRESSION SYS.	NOI	NOI	10/31/91	10/31/91	EM 8
53	1	53-1-OPN-27	N/A	N/A	STM. BOILER PRV	MECHANICAL ROOM	REPIPE				MP 1
53	526	53-526-OPN-2	09S	1WF01	COOLING WATER	ROOF	NOI	NOI	3/24/92	3/24/92	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 28 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug 93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	23	53 23-OPN 1	N/A	N/A	CHILLER DRAIN	COMPUTER MAINTENANCE BUI	N O I.	N O I	3/24/92	3/24/92	EM 8
53	23	53 23-OPN 3	N/A	N/A	FIRE WATER DRAIN	COMPUTER MAINTENANCE BUI	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	24	53 24-OPN-04	N/A	N/A	AIR CONDITIONER DRAIN	ROOF	N O I.	N O I.	3/24/92	3/24/92	EM 8
53	24	53-24-OPN-05	N/A	N/A	FIRE WATER DRAIN	DATA ANALYSIS BUILDING	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	24	53-24-OPN-06	N/A	N/A	FIRE WATER DRAIN	DATA ANALYSIS BUILDING	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	24	53-24-OPN-09	N/A	N/A	FIRE WATER DRAIN	DATA ANALYSIS BUILDING	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	24	53-24-OPN-11	N/A	N/A	FIRE WATER DRAIN	DATA ANALYSIS BUILDING	N O I.	N O I	10/31/91	10/31/91	EM 8
53	26	53-26-OPN-2	N/A	N/A	FIRE WATER	SHOP	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	26	53-26-OPN-3	N/A	N/A	FIRE WATER	SHOP	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	26	53-26-OPN-4	N/A	N/A	FIRE WATER	SHOP	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	26	53 26-OPN-6	N/A	N/A	FIRE WATER	SHOP	N.O.I.	N O I	10/31/91	10/31/91	EM 8
53	41	53-41-OPN-1	N/A	N/A	FIRE WATER	WAREHOUSE	N O I.	N O I	10/31/91	10/31/91	EM 8
53	41	53-41-OPN 2	N/A	N/A	FIRE WATER	WAREHOUSE	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	41	53 41-OPN-3	N/A	N/A	FIRE WATER	WAREHOUSE	N O I.	N O I	10/31/91	10/31/91	EM 8
53	61	53-61-OPN 2	N/A	N/A	FIRE WATER	COOLING TOWER UTILITY BUIL	N O I	N O I	10/31/91	10/31/91	EM 8
53	61	53 61-OPN 3	DAYLIGHT	1FD1	BOILER BLOWDOWN	COOLING TOWER UTILITY BUIL	MODIFY				BLDG MGR
53	61	53 61-OPN 3	DAYLIGHT	1FD2	AIR COMPRESSOR DRAIN	COOLING TOWER UTILITY BUIL	CONTAINERIZE				BLDG MGR
53	61	53 61-OPN 3	DAYLIGHT	1FD3	TREATMENT CHEMICAL POTENTI	COOLING TOWER UTILITY BUIL	SEC. CONTAIN.				BLDG MGR
53	63	53-63-OPN-4	N/A	N/A	FIRE WATER DRAIN	COOLING TOWER UTILITY BUIL	N O I.	N O I.	10/31/91	10/31/91	EM 8
53	63	53 63-OPN 5	N/A	N/A	FIRE WATER DRAIN	COOLING TOWER UTILITY BUIL	N.O.I.	N O.I.	10/31/91	10/31/91	EM 8
53	63	53 63-OPN-7	DAYLIGHT	1FD1	AIR COMPRESSOR DRAIN	COOLING TOWER UTILITY BUIL	CONTAINERIZE				BLDG MGR
53	63	53 63-OPN-7	DAYLIGHT	1FD1	TREATMENT CHEMICAL POTENT	COOLING TOWER UTILITY BUIL	SEC. CONTAIN.				BLDG MGR
53	63	53-63-OPN-7	DAYLIGHT	1FD2	BOILER BLOWDOWN	COOLING TOWER UTILITY BUIL	MODIFY				BLDG MGR
53	63	53-63-OPN-7	DAYLIGHT	1FD2	TREATMENT CHEMICAL POTENTI	COOLING TOWER UTILITY BUIL	SEC. CONTAIN.				BLDG MGR
53	65	53-65-OPN-1	03A049	1FD1	AIR COMPRESSOR DRAIN	COOLING TOWER UTILITY BUIL	CONTAINERIZE				HS 4
53	65	53 65-OPN-1	03A049	1FD1	TREATMENT CHEMICAL POTENTI	COOLING TOWER UTILITY BUIL	SEC. CONTAIN.				HS 4
53	65	53-65-OPN-1	03A049	1FD2	TREATMENT CHEMICAL POTENTI	COOLING TOWER UTILITY BUIL	SEC. CONTAIN.				BLDG MGR
53	65	53-65-OPN-2	N/A	N/A	FIRE WATER	COOLING TOWER UTILITY BUIL	N O I.	N O I	10/31/91	10/31/91	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 27 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
53	2	53 2 OPN 01	03A114	1ED1	EYE WASH DRAIN	MAGNET LAB AREA	PIPE TO S S				MP 8
53	2	53 2 OPN 01	03A114	1FD1	DRYER DRAIN	FURNACE ROOM	PLUG				MP 8
53	2	53 2 OPN 01	03A114	1SD10	INDIR DRAIN	MAGNET LAB AREA	PIPE TO S S.				MP 8
53	2	53-2-OPN-01	03A114	1SD11	HAND WASH	MAGNET LAB AREA	PIPE TO S S.				MP 8
53	2	53 2 OPN-01	03A114	1SP1	SUMP PIT W/PUMP	EXTERIOR - SOUTHWEST SIDE	MODIFY				MP 8
53	2	53 2-OPN-01	03A114	1WF1	WATER FOUNTAIN	MAGNET LAB AREA	PIPE TO S.S.				MP 8
53	2	53-2-OPN 02	N/A	1SD12	EQUIP. RINSE	ASSEMBLY & TESTING LAB	CONTAINERIZE				MP 8
53	2	53 2 OPN-02	N/A	1SD13	EQUIP RINSE	ASSEMBLY & TESTING	CONTAINERIZE				MP 8
53	2	53-2-OPN-02	N/A	1SD15	HAND WASH	ASSEMBLY & TESTING LAB	MODIFY				MP 8
53	2	53-2-OPN-03	N/A	1SD3	EQUIP. RINSE	KLYSTRON LAB	CONTAINERIZE				MP 8
53	2	53 2 OPN-03	N/A	1SD4	EQUIP. RINSE	KLYSTRON LAB	CONTAINERIZE				MP 8
53	2	53 2 OPN-03	N/A	1SD5	EQUIP RINSE	KLYSTRON LAB	CONTAINERIZE				MP 8
53	2	53 2 OPN-03	N/A	1SD6	EQUIP. RINSE	KLYSTRON LAB	CONTAINERIZE				MP 8
53	2	53 2-OPN-03	N/A	1SH3	SHOWER DRAIN	LAB AREA	MODIFY				MP 8
53	2	53 2 OPN-08	N/A	N/A	WATER DRAIN	ASSEMBLY & TESTING LAB	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	2	53 2-OPN-09	N/A	N/A	BFP DRAIN	ASSEMBLY & TESTING LAB	MODIFY				MP 8
53	2	53 2 OPN-10	N/A	N/A	BFP DRAIN	ASSEMBLY & TESTING LAB	MODIFY				MP 8
53	2	53-2-OPN-19	N/A	N/A	BFP DRAIN	MECHANICAL ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	2	53-2-OPN-21	N/A	N/A	WATER HTR DRAIN	KLYSTRON LAB	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
53	2	53 2 OPN-27	N/A	N/A	FIRE LINE DRAIN	MECHANICAL ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 24 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI 92-1306 REPORT DATE *10-Aug 93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
15	306	15 306 OPN 7	N/A	N/A	CONDENSED WATER	CHILLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	306	15 306 OPN 8	N/A	N/A	CONDENSED WATER	COMPRESSOR DRAIN	CONTAINERIZE				M DIV
15	313	15-313-OPN-12	N/A	N/A	CHILLER WATER	CHILLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	313	15 313-OPN 12	N/A	N/A	CONDENSED WATER	CHILLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	313	15-313-OPN-6	N/A	1FD11	RAIN	SHOP	PLUG	PLUG	3/16/93	3/16/93	M DIV
15	313	15 313-OPN 6	N/A	1FD12	RAIN	SHOP	PLUG	PLUG	3/16/93	3/16/93	M DIV
15	313	15 313-OPN-6	N/A	1FD15	RAIN	SHOP	PLUG	PLUG	3/16/93	3/16/93	M DIV

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 24 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
15	185	15 185 OPN 4	03A028	BFD08	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15 185 OPN 4	03A028	BFD09	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD10	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD11	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD12	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15 185-OPN-4	03A028	BFD13	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD14	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15 185 OPN-4	03A028	BFD15	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD16	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD17	COOLING WATER	EQUIPMENT ROOM	MODIFY				M DIV
15	185	15-185-OPN-4	03A028	BFD18	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BS1	HAND WASHINGS	EQUIPMENT ROOM	ELIMINATE				M DIV
15	185	15-185-OPN-6	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
15	186	15-186-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
15	186	15-186-OPN-3	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
15	194	15-194-OPN 1	N/A	1S1	COUNTERTOP SINK	LABORATORY	ELIMINATE				M DIV
15	194	15-194-OPN-2	N/A	N/A	POTABLE WATER	BACK FLOW PREVENTER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	194	15-194-OPN-3	N/A	N/A	HOT WATER	WATER HEATER VENT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	203	15-203-OPN-1	04A093	N/A	NON CONTACT COOLING WATER	EQUIPMENT ROOM	MODIFY	MODIFIED	3/16/93	3/16/93	M DIV
15	203	15 203-OPN-2	N/A	N/A	CONDENSED WATER	COMPRESSOR BLOWDOWN	CONTAINERIZE	ELIMINATE	3/16/93	3/16/93	M DIV
15	203	15 203-OPN-3	N/A	N/A	POTABLE WATER	BACK FLOW PREVENTER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	242	15-242-OPN-1	N/A	1S1	HAND WASHINGS	MAKE UP BUILDING	ELIMINATE				M DIV
15	242	15-242-OPN-2	N/A	1HW1	HOT WATER	MAKE UP BUILDING	ELIMINATE		3/16/93		M DIV
15	263	15-263-OPN-1	N/A	N/A	POTABLE WATER	BACK FLOW PREVENTER	NOI	NOI	3/24/92	3/24/92	EM 8
15	263	15-263-OPN-2	N/A	N/A	CHILLED WATER	CHILLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	280	15-280-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	NOI	NOI	10/31/91	10/31/91	EM 8
15	285	15-285-OPN-3	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	NOI	NOI	10/31/91	10/31/91	EM 8
15	285	15-285-OPN-4	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	NOI	NOI	10/31/91	10/31/91	EM 8
15	285	15-285-OPN-5	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	NOI	NOI	10/31/91	10/31/91	EM 8
15	306	15-306-OPN-1	N/A	1FD1	FLOOR WASHINGS	TEST BUILDING	PLUG				M DIV
15	306	15-306-OPN-1	N/A	1FD2	FLOOR WASHINGS	TEST BUILDING	PLUG				M DIV
15	306	15-306-OPN-1	N/A	1FD3	FLOOR WASHINGS	TEST BUILDING	PLUG				M DIV
15	306	15-306-OPN-1	N/A	1FD4	FLOOR WASHINGS	TEST BUILDING	PLUG				M DIV
15	306	15-306-OPN-1	N/A	1FD5	FLOOR WASHINGS	TEST BUILDING	PLUG				M DIV
15	306	15 306-OPN-1	N/A	1WF1	DRINKING WATER	TEST BUILDING	ELIMINATE	ELIMINATE	3/16/93	3/16/93	M DIV
15	306	15-306 OPN-1	N/A	RD1	RAIN	TEST BUILDING	SEPARATE				M DIV
15	306	15-306-OPN-2	N/A	N/A	CONDENSED WATER	CHILLLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	306	15 306 OPN 3	N/A	N/A	CONDENSED WATER	CHILLLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	306	15 306 OPN 4	N/A	N/A	CONDENSED WATER	CHILLLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	306	15 306 OPN 5	N/A	N/A	CONDENSED WATER	CHILLLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8
15	306	15 306 OPN 6	N/A	N/A	CONDENSED WATER	CHILLLER DRAIN	NOI	NOI	3/24/92	3/24/92	EM 8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 24 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI 92-1306 REPORT DATE: *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
15	183	15-183-OPN-1	N/A	BFD03	NON CONTACT COOLING WATER	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-1	N/A	BFD04	FLOOR WASHINGS	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-1	N/A	BFD05	FLOOR WASHINGS	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-1	N/A	BFD06	FLOOR WASHINGS	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-1	N/A	BFD07	FLOOR WASHINGS	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BFD08	NON CONTACT COOLING WATER	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-1	N/A	BFD09	BFP, CHILLER & STEAM PRV	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-1	N/A	BFD10	HOT WATER & BFP	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BFD11	FLOOR WASHINGS	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BFD12	FLOOR WASHINGS	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BFD13	RAIN	BASEMENT	MODIFY				M DIV
15	183	15-183-OPN-1	N/A	BS1	HAND WASHINGS	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BS2	HAND WASHINGS	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BS3	HAND WASHINGS	BASEMENT	PIPE TO S S.				M DIV
15	183	15-183-OPN-1	N/A	BWF1	DRINKING WATER	BASEMENT	PIPE TO S S				M DIV
15	183	15-183-OPN-3	06A123	1S7	NOT USED	SHOP	ELIMINATE				M DIV
15	183	15-183-OPN-3	06A123	1S8	HAND WASHINGS	OFFICE	ELIMINATE				M DIV
15	183	15-183-OPN-3	06A123	1WF2	DRINKING WATER	SHOP	PIPE TO S S.				M DIV
15	184	15-184-OPN-1	04A139	1FD01	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD02	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD03	VACUUM PUMP DRAIN	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD04	NON CONTACT COOLING WATER	PHERMEX CHAMBER	MODIFY				M DIV
15	184	15-184-OPN-1	04A139	1FD05	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD06	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD07	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD08	CHILLER DRAIN	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD09	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD10	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-1	04A139	1FD11	FLOOR WASHINGS	PHERMEX CHAMBER	PLUG				M DIV
15	184	15-184-OPN-4	N/A	N/A	CONDENSED WATER	CHILLER DRAIN	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	185	15-185-OPN-4	03A028	1FD1	NONE	OFFICE	PLUG				M DIV
15	185	15-185-OPN-4	03A028	1FD2	NONE	OFFICE	PLUG				M DIV
15	185	15-185-OPN-4	03A028	1FD3	NONE	OFFICE	PLUG				M DIV
15	185	15-185-OPN-4	03A028	1FD4	NONE	OFFICE	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD01	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD02	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD03	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD04	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD05	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD06	FLOOR WASHING	EQUIPMENT ROOM	PLUG				M DIV
15	185	15-185-OPN-4	03A028	BFD07	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				M DIV

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 24 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI 92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
15	9	15 9	N/A	N/A	NONE	SHOP	PLUG				M DIV
15	20	15 20-OPN 1	N/A	1S1	SINK	SHOP	ELIMINATE				M DIV
15	20	15 20-OPN-1	N/A	1TD1	FLOOR WASHINGS	SHOP	PLUG				M DIV
15	20	15-20 OPN-1	N/A	1WF1	DRINKING WATER	SHOP	ELIMINATE				M DIV
15	20	15 20-OPN-2	N/A	N/A	WATER HEATER	SHOP	N O I	N O I	3/24/92	3/24/92	EM 8
15	20	15 20-OPN-4	N/A	N/A	CONDENSED WATER	AIR CONDITIONER DRAIN	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	20	15 20 OPN 5	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE				M DIV
15	20	15 20-OPN-6	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE				M DIV
15	27	15-27	N/A	N/A	NONE	CONTROL CHAMBER	PLUG				M DIV
15	40	15-40-OPN 1	04A102	BFD01	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-1	04A102	BFD02	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15 40-OPN-1	04A102	BFD10	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-1	04A102	BFD11	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-1	04A102	RD1	RAIN	ROOF	SEPARATE	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-1	04A102	RD4	RAIN	ROOF	SEPARATE	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN 2	04A103	1HB1	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	BFD03	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN 2	04A103	BFD04	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	BFD05	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	BFD06	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40 OPN-2	04A103	BFD07	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	BFD08	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	BFD09	POTABLE WATER	PIPE ALLEY	MODIFY	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	RD2	RAIN	ROOF	SEPARATE	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-2	04A103	RD3	RAIN	ROOF	SEPARATE	REPIPED	3/16/93	3/16/93	M DIV
15	40	15-40-OPN-4	N/A	N/A	CONDENSED WATER	AIR CONDITIONER DRAIN	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	40	15-40-OPN-5	N/A	N/A	CONDENSED WATER	AIR CONDITIONER DRAIN	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
15	46	15 46	N/A	N/A	NONE	LAB	PLUG				M DIV
15	50	15-50-OPN-1	N/A	1EQ1	WATER FROM A SHOWER	EQUIPMENT ROOM	PLUG				M DIV
15	50	15-50-OPN-1	N/A	1SH1	SANITARY WASTE	EQUIPMENT ROOM	REPIPE				M DIV
15	50	15-50-OPN-2	N/A	1TD1	FLOOR WASHINGS	SHOP	PLUG				M DIV
15	50	15-50-OPN-3	N/A	N/A	HOT WATER	WATER HEATER PRESSURE RE	N O I	N O I	3/24/92	3/24/92	EM 8
15	50	15-50-OPN-4	N/A	N/A	POTABLE WATER	BACK FLOW PREVENTER	N O I	N O I	3/24/92	3/24/92	EM 8
15	50	15 50-OPN-7	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N O I	N O I	10/31/91	10/31/91	EM 8
15	50	15 50-OPN-8	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N O I	N O I	10/31/91	10/31/91	EM 8
15	50	15 50-OPN-9	N/A	N/A	DIONIZED WATER	DI WATER DRAIN	N O I	N O I	3/24/92	3/24/92	EM 8
15	138	15-138	N/A	N/A	NONE	ELECTRONIC BUNKER	PLUG				M DIV
15	183	15-183 OPN-1	N/A	1S1	HAND WASHINGS	OFFICE	PIPE TO S S				M DIV
15	183	15-183 OPN 1	N/A	1S9	HAND WASHINGS	OFFICE	PIPE TO S S				M DIV
15	183	15 183 OPN 1	N/A	BFD01	FLOOR WASHINGS	BASEMENT	PIPE TO S S				M DIV
15	183	15 183 OPN 1	N/A	BFD02	CHILLER DRAIN	BASEMENT	PIPE TO S S				M DIV

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 23 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
8	70	8-70-OPN-2	N/A	1FD7	FLOOR WASHINGS	EQUIPMENT	PLUG				WX-3
8	70	8-70-OPN-2	N/A	1FD8	FLOOR WASHINGS	MEN'S RESTROOM	PLUG				WX-3

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 23 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
8	22	8 22 OPN-1	06A074	1FD7	DISCONNECTED	X RAY	ELIMINATE		8/1/94		WX 12
8	22	8 22 OPN-1	06A074	1SD1	PHOTO RINSE	PHOTO LAB	MODIFY		8/1/94		WX 12
8	22	8 22 OPN-1	06A074	1SD2	PHOTO RINSE	PHOTO LAB	MODIFY		8/1/94		WX-12
8	22	8 22-OPN-1	06A074	1SD3	SANITARY WASTE	PHOTO LAB	MODIFY		8/1/94		WX 12
8	22	8 22-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
8	22	8 22-OPN-3	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
8	22	8 22 OPN-4	N/A	1CD2	COOLING WATER	INSPECTION LAB	MODIFY		8/1/94		WX-12
8	22	8 22 OPN-4	N/A	1CD3	COOLING WATER	INSPECTION LAB	MODIFY		8/1/94		WX 12
8	22	8 22-OPN-4	N/A	1FD01	DISCONNECTED	PHOTO LAB	MODIFY		8/1/94		WX 12
8	22	8 22-OPN-4	N/A	1FD08	FLOOR WASHINGS	X-RAY COOLING WATER	MODIFY		8/1/94		WX 12
8	22	8 22-OPN-4	N/A	1FD09	FLOOR WASHINGS	HVAC	PLUG		N/A		WX 12
8	22	8 22 OPN 4	N/A	1FD10	FLOOR WASHINGS	OFFICE LAB	PLUG		N/A		WX 12
8	22	8 22 OPN-4	N/A	1FD11	FLOOR WASHINGS	OFFICE LAB	PLUG		N/A		WX 12
8	22	8 22-OPN 5	N/A	1FD12	FLOOR WASHINGS	INSPECTION LAB	PLUG		8/1/96		WX 12
8	22	8 22-OPN 5	N/A	1FD13	FLOOR WASHINGS	INSPECTION LAB	PLUG		8/1/96		WX 12
8	23	8 23 OPN 1	N/A	BFD1	RAIN	BASEMENT	MODIFY		8/1/96		WX 12
8	23	8 23 OPN-1	N/A	BFD2	TRANSFORMER OIL A POTENTI	BASEMENT	PLUG		8/1/96		WX 12
8	23	8 23-OPN-1	N/A	BFD3	RAIN	BASEMENT	MODIFY				WX 12
8	23	8 23-OPN-2	N/A	1SD3	HAND WASHINGS	OFFICE LAB	LABEL		8/1/96		WX 12
8	23	8-23-OPN-2	N/A	1SD4	HAND WASHINGS	OFFICE LAB	LABEL		8/1/96		WX 12
8	24	8 24 OPN-1	N/A	1SD1	HAND WASHINGS	X RAY	RECIRCULATE				WX 3
8	24	8-24-OPN-1	N/A	1WF1	DRINKING WATER	X-RAY	RECIRCULATE				WX 3
8	24	8-24-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/92	10/31/92	EM 8
8	24	8-24-OPN-3	N/A	N/A	CONDENSATE	FURNACE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
8	24	8-24-OPN-4	N/A	N/A	CONDENSATE	STEAM RELIEF VALVE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
8	24	8-24-OPN 5	N/A	N/A	CONDENSATE	GAS LINE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
8	25	8 25-OPN-1	N/A	1FD1	FLOOR WASHINGS	BOILER	MODIFY				WX 3
8	29	8 29-OPN-1	N/A	1FD1	FLOOR WASHINGS	BOILER	MODIFY		8/1/98		WX-12
8	30	8 30-OPN-1	N/A	1SD1	HAND WASHINGS	RAD LAB	PLUG		8/1/98		WX 12
8	30	8 30 OPN-1	N/A	1SD2	HAND WASHINGS	RAD LAB	PLUG		8/1/98		WX 12
8	30	8-30-OPN-1	N/A	1SD3	HAND WASHINGS	RAD LAB	PLUG		8/1/98		WX 12
8	70	8 70-OPN-1	04A115	1FD3	X-RAY COOLING WATER	LAB	MODIFY				WX 3
8	70	8-70-OPN-1	04A115	1FD9	FLOOR WASHINGS	OFFICE LAB	PLUG				WX 3
8	70	8 70-OPN-1	04A115	1SD2	LAB SINK	LAB	ELIMINATE				WX 3
8	70	8-70 OPN-1	04A115	RD1	RAIN	ROOF	SEPARATE				WX 3
8	70	8 70 OPN-1	04A115	RD2	RAIN	ROOF	SEPARATE				WX 3
8	70	8 70-OPN-1	04A115	RD3	RAIN	ROOF	SEPARATE				WX 3
8	70	8 70 OPN 1	04A115	RD4	RAIN	ROOF	SEPARATE				WX 3
8	70	8 70 OPN-1	04A115	RD5	RAIN	ROOF	SEPARATE				WX 3
8	70	8 70 OPN 1	04A115	RD6	RAIN	ROOF	SEPARATE				WX 3
8	70	8 70 OPN 2	N/A	1FD10	FLOOR WASHINGS	OFFICE LAB	PLUG				WX 3

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 23 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
8	1	TA 8 1	N/A	N/A	ABANDONED	LAB & SHOP	MODIFY				MP DO
8	2	TA 8-2	N/A	N/A	ABANDONED	SHOP & STORAGE	MODIFY				MP DO
8	3	TA 8 3	N/A	N/A	ABANDONED	LAB	MODIFY				MP DO
8	21	8 21-OPN-1	06A075	1CD1	COVERED	OFFICE LAB	PIPE TO S S.		8/1/96		WX-12
8	21	8-21-OPN-1	06A075	1FD1	FLOOR WASHINGS	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1FD2	FLOOR WASHINGS	PHOTO LAB	PIPE TO S S		8/1/96		WX 12
8	21	8 21-OPN 1	06A075	1FD3	FLOOR WASHINGS	PHOTO LAB	PIPE TO S S		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1FD4	FLOOR WASHINGS	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	1FD5	COVERED	OFFICE LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN 1	06A075	1FD6	FLOOR WASHINGS	PHOTO LAB	PIPE TO S S		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	1FD7	FLOOR WASHINGS	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1FD8	COVERED	OFFICE LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1FD9	COVERED	OFFICE LAB	PIPE TO S.S.		8/1/96		WX 12
8	21	8-21-OPN 1	06A075	1SD01	PHOTO RINSE	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	1SD02	PHOTO RINSE	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN 1	06A075	1SD03	PHOTO RINSE	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1SD04	PHOTO RINSE	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1SD05	PHOTO RINSE	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1SD06	PHOTO RINSE	PHOTO LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1SD07	SANITARY WASTE	OFFICE LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	1SD08	SANITARY WASTE	OFFICE LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	1SD09	SANITARY WASTE	OFFICE LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	1SD10	SANITARY WASTE	OFFICE LAB	PIPE TO S S		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	1SD17	SANITARY WASTE	COFFEE	PIPE TO S.S.		8/1/96		WX 12
8	21	8 21-OPN 1	06A075	1WF1	DRINKING WATER	HALLWAY	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN 1	06A075	1WF4	DRINKING WATER	HALLWAY	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BCD1	NONE	STORAGE	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BCD2	NONE	STORAGE	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BFD1	FLOOR WASHINGS	BOILER/EQUIPMENT	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BFD2	AIR COMPRESSOR	BOILER/EQUIPMENT	PIPE TO S.S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BFD3	AIR COMPRESSOR	BOILER/EQUIPMENT	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BFD5	COVERED	HALLWAY	PIPE TO S S.		8/1/96		WX 12
8	21	8-21-OPN-1	06A075	BSD1	SANITARY WASTE	COFFEE	PIPE TO S S		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	BSD5	SANITARY WASTE	OFFICE/LAB	PIPE TO S S.		8/1/96		WX 12
8	21	8 21-OPN-1	06A075	BWF1	DRINKING WATER	HALLWAY	PIPE TO S.S.		8/1/96		WX 12
8	21	8 21-OPN 3	N/A	N/A	FIRE WATER	FIRE WATER	N O I.	N O I	10/31/91	10/31/91	E M 8
8	21	8 21-OPN-4	N/A	N/A	CONDENSED WATER	AIR CONDITIONER	N O I	N O I	3/24/92	3/24/92	E M 8
8	22	8 22-OPN-1	06A074	1CD1	X-RAY COOLING WATER	X-RAY LAB	MODIFY		8/1/94		WX 12
8	22	8 22 OPN 1	06A074	1FD2	FLOOR WASHINGS	PHOTO LAB	PLUG		8/1/94		WX 12
8	22	8 22 OPN 1	06A074	1FD3	FLOOR WASHINGS	PHOTO LAB	PLUG		8/1/94		WX 12
8	22	8 22 OPN 1	06A074	1FD5	FLOOR WASHINGS	PHOTO LAB	PLUG		8/1/94		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

/ASTE STREAM REPORT # 20 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

A	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
1	2	11 2 OPN 1	N/A	1FD1	NO WATER SUPPLY	STORAGE ROOM	PLUG				WX 12
1	2	11-2-OPN-1	N/A	1HW1	NO WATER SUPPLY	STORAGE ROOM	ELIMINATE				WX 12
1	2	11 2 OPN 1	N/A	1S1	NO WATER SUPPLY	STORAGE ROOM	PLUG				WX 12
1	3	11-3-OPN-2	N/A	1FD1	FLOOR WASHINGS	REST ROOM	PLUG		4/1/96		WX 12
1	24	11-24-OPN-1	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	MODIFY		10/1/96		WX 12
1	24	11 24 OPN 1	N/A	1FD2	BOILER BLOWDOWN	EQUIPMENT ROOM	MODIFY		10/1/96		WX 12
1	24	11 24 OPN 1	N/A	1S1	HAND WASHINGS	EQUIPMENT ROOM	MODIFY		10/1/96		WX 12
1	24	11 24-OPN 1	N/A	1WF1	DRINKING WATER	EQUIPMENT ROOM	MODIFY		10/1/96		WX 12
1	30	11 30-OPN-1	03A130	1FD3	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG				WX 12
1	30	11-30-OPN-2	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	MODIFY		4/1/94		WX 12
1	30	11-30-OPN-2	N/A	1FD2	FLOOR WASHINGS	EQUIPMENT ROOM	MODIFY		4/1/94		WX 12
1	33	11 33 OPN 1	N/A	N/A	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	CONTAINERIZE		4/1/94		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 19 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
6	1	TA 6-1	N/A	N/A	NONE	CARPENTER SHOP	MODIFY				ENG 6
6	2	TA 6-2	N/A	N/A	NONE	COMPRESSOR BUILDING	MODIFY				
6	3	TA 6-3	N/A	N/A	NONE	FABRICATION BUILDING	MODIFY				EM 9
6	5	TA 6-5	N/A	N/A	NONE	LABORATORY	MODIFY				CTR DO
6	6	TA 6-6	N/A	N/A	NONE	LAB OFFICE & SHOP BUILDING	MODIFY				CTR DO
6	7	TA 6-7	N/A	N/A	NONE	CHEMICAL STORAGE BUILDING	MODIFY				CTR DO
6	8	TA 6-8	N/A	N/A	NONE	LABORATORY	MODIFY				CTR DO
6	9	TA 6-9	N/A	N/A	NONE	LABORATORY	MODIFY				CTR DO
14	23	14-23-OPN-1	N/A	1FD4	HOT WATER	EQUIPMENT ROOM	MODIFY	MODIFY	3/16/93	3/16/93	M DIV
14	23	14-23-OPN-1	N/A	1FD4	HOT WATER	EQUIPMENT ROOM	MODIFY	MODIFY	3/16/93	3/16/93	M DIV
14	23	14-23-OPN-1	N/A	1FD4	HOT WATER	EQUIPMENT ROOM	PLUG	PLUGGED	3/16/93	3/16/93	M DIV
14	23	14-23-OPN-2	N/A	1SP1	HE WASHINGS	LAB	PLUG & ALARM	PLUG & ALARM	3/16/93	3/16/93	M DIV
14	39	14-39-OPN-1	N/A	1FD1	SUMP UNDER A FIRING SITE	FIRING SITE	PLUG & ALARM				M DIV
14	43	14-43-OPN-1	N/A	1FD1	FLOOR DRAIN	ASSEMBLY ROOM	PLUG	PLUG	3/16/93	3/16/93	M DIV

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 17 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *10 Aug 93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	260	16-260-OPN-01	05A056	1TD11	HE WASH DOWN	HE PROCESSING BAY	SEC CONTAIN.		12/1/95		WX 12
16	260	16-260-OPN-01	05A056	1TD23	HE WASH DOWN	HE PROCESSING BAY	MODIFY		12/1/92		WX 12
16	260	16-260-OPN-03	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-04	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-05	N/A	N/A	CHILLED WATER DRAIN	CHILLER DRAIN	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	260	16-260-OPN-06	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-08	N/A	N/A	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	CONTAINERIZE		12/1/95		WX 12
16	260	16-260-OPN-09	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-10	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-11	N/A	N/A	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	CONTAINERIZE		10/1/94		WX 12
16	260	16-260-OPN-12	N/A	N/A	AIR DRYER DRAIN	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	260	16-260-OPN-13	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-14	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-15	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-16	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-17	N/A	1FD09	FLOOR WASHINGS	HALLWAY	PLUG				WX 12
16	260	16-260-OPN-19	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	260	16-260-OPN-21	N/A	1FD6	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		12/1/95		WX 12
16	260	16-260-OPN-21	N/A	1FD7	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		12/1/95		WX 12
16	260	16-260-OPN-22	N/A	1FD8	FIRE WATER	HALLWAY	PLUG		12/1/95		WX 12
16	261	16-261-OPN-1	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	261	16-261-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	263	16-263-OPN-1	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	263	16-263-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	265	16-265-OPN-1	05A057	1EW1	POTABLE WATER	REST HOUSE	MODIFY				WX 12
16	265	16-265-OPN-1	05A057	1SD1	HAND WASHINGS	REST HOUSE	MODIFY				WX 12
16	265	16-265-OPN-1	05A057	1WF1	DRINKING WATER	REST HOUSE	MODIFY				WX 12
16	265	16-265-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	265	16-265-OPN-3	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	265	16-265-OPN-4	N/A	1FD1	CHILLED WATER	CHILLER DRAIN	MODIFY				WX 12
16	267	16-267-OPN-1	05A149	1EW1	POTABLE WATER	REST HOUSE	MODIFY		7/1/98		WX 12
16	267	16-267-OPN-1	05A149	1WF1	DRINKING WATER	REST HOUSE	MODIFY		7/1/98		WX 12
16	267	16-267-OPN-2	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	267	16-267-OPN-3	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	267	16-267-OPN-4	N/A	1FD1	CHILLED WATER	CHILLER DRAIN	MODIFY		7/1/98		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 16 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	437	16-437-OPN-2	N/A	1PD1	VALVE PIT	REST HOUSE	MODIFY		3/1/95		WX-12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 16 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	101	16 101	N/A	N/A	NONE	GUARD HOUSE	MODIFY		10/1/96		WX 12
16	410	16-410-OPN-1	05A053	1FD1	BATTERY LEAKAGE	FLOOR DRAIN (BATTERY ROOM	MODIFY		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1FD2	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	MODIFY		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1FD3	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	MODIFY		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1FD4	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	MODIFY		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1FZD1	CONDENSED WATER	FREEZER DRAIN	PIPE TO S.S.		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1FZD1	CONDENSED WATER	FREEZER DRAIN	PIPE TO S.S.		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1TAE1	CONDENSED WATER	HVAC EQUIPMENT DRAIN	PIPE TO S.S.		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	1WF1	DRINKING WATER	WATER FOUNTAIN DRAIN	ELIMINATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	2FD1	HVAC DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	2FD2	CHILLER WATER	EQUIPMENT ROOM	PIPE TO S.S.		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	BFD1	FLOOR WASHINGS	STAIR WELL DRAIN	PLUG		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD1	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD2	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD3	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD4	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD5	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD6	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-1	05A053	RD7	RAIN	ROOF	SEPARATE		3/1/99		WX 12
16	410	16-410-OPN-3	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	410	16-410-OPN-4	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	410	16-410-OPN-5	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	410	16-410-OPN-6	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	411	16-411-OPN-1	N/A	1EWD1	EYE WASH	REST HOUSE	CONTAINERIZE		10/1/98		WX 12
16	411	16-411-OPN-1	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	CONTAINERIZE		10/1/98		WX 12
16	411	16-411-OPN-1	N/A	1SD1	HAND WASHINGS	REST HOUSE	CONTAINERIZE		10/1/98		WX 12
16	411	16-411-OPN-3	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	411	16-411-OPN-4	N/A	1PD1	VALVE PIT	REST HOUSE	MODIFY		10/1/98		WX 12
16	413	16-413-OPN-1	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	413	16-413-OPN-2	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	413	16-413-OPN-3	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	413	16-413-OPN-4	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	413	16-413-OPN-5	N/A	1PD1	VALVE PIT	REST HOUSE	MODIFY		3/1/95		WX 12
16	415	16-415-OPN-1	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	415	16-415-OPN-2	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	415	16-415-OPN-3	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	415	16-415-OPN-4	N/A	N/A	STEAM CONDENSATE	REST HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	415	16-415-OPN-5	N/A	1PD1	VALVE PIT	REST HOUSE	MODIFY		3/1/95		WX 12
16	435	16-435-OPN-1	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM DRAIN	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	435	16-435-OPN-2	N/A	1PD1	VALVE PIT	REST HOUSE	MODIFY		3/1/95		WX 12
16	437	16-437-OPN-1	N/A	1FD1	FLOOR WASHING	EQUIPMENT ROOM DRAIN	PLUG		10/1/92		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 15 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	192	16-192-OPN-1	03S	RD1	RAIN	ROOF	REPIPE	REPIPED	9/1/92	9/1/92	WX 12
16	192	16-192-OPN-1	03S	RD2	RAIN	ROOF	REPIPE	REPIPED	9/1/92	9/1/92	WX 12
16	192	16-192-OPN-1	03S	RD3	RAIN	ROOF	REPIPE	REPIPED	9/1/92	9/1/92	WX 12
16	193	16-193-OPN-2	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	193	16-193-OPN-3	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	193	16-193-OPN-4	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	193	16-193-OPN-6	03S	1FD08	LAUNDRY WATER	LAUNDRY ROOM	MODIFY		4/1/94		WX 12
16	193	16-193-OPN-6	03S	1FD09	FLOOR WASHINGS	LAUNDRY ROOM	MODIFY		4/1/94		WX 12
16	193	16-193-OPN-6	03S	1FD10	FLOOR WASHINGS	LAUNDRY ROOM	MODIFY		4/1/94		WX 12
16	195	16-195-OPN-1	03S	1OI1	FLOOR DRAINS	LUBRICANT	MODIFY		12/1/95		WX 12
16	195	16-195-OPN-3	N/A	N/A	OILY WATER	OIL INTERCEPTOR DRAIN	VERIFY		12/1/95		WX 12
16	200	16-200-OPN-1	N/A	N/A	HOT WATER HEATER	UTILITY ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	200	16-200-OPN-2	N/A	N/A	AIR COND DRAIN & STEAM CON	COMMUNICATIONS	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	200	16-200-OPN-4	N/A	BFD1	AIR COMPRESSOR CONDENSAT	EQUIPMENT ROOM	CONTAINERIZE		5/1/96		WX 12
16	200	16-200-OPN-4	N/A	BFD2	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		5/1/96		WX 12
16	202	16-202-OPN-1	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	202	16-202-OPN-5	04A083	1FD4	FLOOR WASHINGS	SHOP	PLUG		4/1/98		WX 12
16	202	16-202-OPN-5	04A083	1FD9	FLOOR WASHINGS	SHOP	PLUG		4/1/98		WX 12
16	202	16-202-OPN-5	04A083	1SD5	HAND WASHINGS	SHOP	ELIMINATE		4/1/98		WX 12
16	202	16-202-OPN-5	04A083	1SD7	HAND WASHINGS	SHOP	ELIMINATE		4/1/98		WX 12
16	202	16-202-OPN-5	04A083	1SPD1	CONDENSATE	SUMP	PLUG		4/1/98		WX 12
16	202	16-202-OPN-5	04A083	1SPD2	CONDENSATE	SUMP	ELIMINATE		4/1/98		WX 12
16	202	16-202-OPN-5	04A083	1WF3	DRINKING WATER	SHOP	REPIPE		4/1/98		WX 12
16	202	16-202-OPN-6	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	202	16-202-OPN-7	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	202	16-202-OPN-8	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	204	16-204-OPN-1	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	204	16-204-OPN-2	N/A	N/A	AIR CONDITIONER DRAIN	SWAMP COOLER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	207	16-207-OPN-1	03S	RD01	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD02	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD03	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD04	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD05	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD06	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD07	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD08	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD09	RAIN	ROOF	REPIPE				WX 12
16	207	16-207-OPN-1	03S	RD10	RAIN	ROOF	REPIPE				WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 14 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug 93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
61	23	61-23-OPN-1	01S	1FD1	FLOOR WASHINGS	MODEL SHOP	PLUG				JCI
61	26	61-26-OPN-1	N/A	N/A	CONDENSATE FROM RX STACK	BLOWER MAST	MODIFY				JCI

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 13 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI 92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
36	1	36-1	SEPTIC TANK	N/A	NONE	SEPTIC TANK	ELIMINATE				M DO
36	1	36-1-OPN-1	N/A	1SD3	SANITARY WASTE	STORAGE	PIPE TO S.S.				M DO
36	1	36-1-OPN-1	N/A	1SD4	SANITARY WASTE	MECHANICAL ROOM	PIPE TO S.S.				M DO
36	1	36-1-OPN-1	N/A	1SD5	SANITARY WASTE	MECHANICAL	PIPE TO S.S.				M DO
36	1	36-1-OPN-1	N/A	1WF1	DRINKING WATER	HALLWAY	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	1FD1	BFP	EQUIPMENT ROOM	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	1FD1	BOILER DRAIN	EQUIPMENT ROOM	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	1FD1	AIR COMPRESSOR BLOW DOWN	EQUIPMENT ROOM	CONTAINERIZE				M DO
36	1	36-1-OPN-2	06A106	1FD1	WATER HEATER PRVs (2)	EQUIPMENT ROOM	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	1FD2	FLOOR WASHINGS	LOCKER ROOM	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	1SD1	DISH WASHINGS	KITCHEN	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	1SD2	DISH WASHINGS	KITCHEN	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	2ED1	PHOTO RINSE	PHOTO PROCESSING	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	2ED2	PHOTO RINSE WATER FROM 2SD	PHOTO PROCESSING	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	2FD2	FLOOR WASHINGS	PHOTO PROCESSING	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	2FD3	FLOOR WASHINGS	RESTROOM	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	2SD1	PHOTO RINSE WATER	PHOTO PROCESSING	PIPE TO S.S.				M DO
36	1	36-1-OPN-2	06A106	2SD3	PHOTO RINSE WATER	PHOTO PROCESSING	PIPE TO S.S.				M DO
36	22	36-22	SEPTIC TANK	N/A	NONE	SEPTIC TANK	ELIMINATE				M DO
36	48	36-48	N/A	N/A		SEEPAGE PIT	ELIMINATE				M DO
36	48	36-48-OPN-1	N/A	1CD1	FUME HOOD CUP DRAIN	LABORATORY	ELIMINATE				M DO
36	48	36-48-OPN-1	N/A	1SD1	NON-CONTACT COOLING WATER	LABORATORY	MODIFY				M DO
36	48	36-48-OPN-1	N/A	1SD1	NON-CONTACT COOLING WATER	LABORATORY	ELIMINATE				M DO
36	48	36-48-OPN-3	N/A	N/A	WATER DRAIN	COOLING WATER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
36	48	36-48-OPN-5	N/A	N/A	WATER HEATER PRV	WATER HEATER PRV	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
36	48	36-48-OPN-6	N/A	N/A	A/C CONDENSATE	A/C CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
36	55	36-55-OPN-1	N/A	1LV1	SANITARY WASTE	RESTROOM	MODIFY				M DO
36	55	36-55-OPN-1	N/A	1TL1	SANITARY WASTE	RESTROOM	MODIFY				M DO
36	81	36-81	SEPTIC TANK	N/A	NONE	SEPTIC TANK	ELIMINATE				M DO
36	84	36-84	SEPTIC TANK	N/A	NONE	SEPTIC TANK	ELIMINATE				M DO
36	86	36-86-OPN-1	N/A	1SP1	RAIN	SUMP PUMP	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
36	86	36-86-OPN-2	N/A	1SP2	RAIN	SUMP PUMP	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
36	141	36-141-OPN-1	N/A	N/A	RAIN	OIL TANK SECONDARY CONTAI	MODIFY				M DO
36	142	36-142-OPN-1	N/A	N/A	RAIN	OIL TANK SECONDARY CONTAI	MODIFY				M DO

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

VASTE STREAM REPORT # 12 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

A	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
6	7	16-7-OPN-2	N/A	N/A	STEAM CONDENSATE	HEATING SYSTEM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	16	16-16-OPN-2	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
6	16	16-16-OPN-3	N/A	N/A	HOT WATER HEATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	27	TA 16-27	N/A	N/A	NO SOURCES	STORAGE BUILDING	MODIFY				WX 12
6	54	16-54-OPN-2	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	54	16-54-OPN-3	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	54	16-54-OPN-4	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	54	16-54-OPN-5	N/A	1FD16	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	88	TA 16-88	N/A	N/A	NO SOURCES	CASTING REST HOUSE	PLUG		12/1/95		WX 12
6	180	16-180-OPN-1	03S	1FD1	FLOOR WASHINGS	TRUCK BAY	MODIFY		2/1/97		WX 12
6	180	16-180-OPN-1	03S	1FD7	FLOOR WASHINGS	TRUCK BAY	MODIFY		2/1/97		WX 12
6	180	16-180-OPN-1	03S	RD1	RAIN	ROOF	REPIPE		2/1/97		WX 12
6	180	16-180-OPN-1	03S	RD2	RAIN	ROOF	REPIPE		2/1/97		WX 12
6	180	16-180-OPN-1	03S	RD3	RAIN	ROOF	REPIPE		2/1/97		WX 12
6	180	16-180-OPN-1	03S	RD4	RAIN	ROOF	REPIPE		2/1/97		WX 12
6	210	16-210-OPN-3	N/A	N/A	POTABLE WATER	HOT WATER HEATER	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
6	515	TA 16-515	N/A	N/A	NO SOURCES	PROCESS BUILDING	MODIFY		6/1/96		WX 12
6	520	TA 16-520	N/A	N/A	NO SOURCES	TEST BUILDING	MODIFY		6/1/96		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 11 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	370	16-370-OPN-2	04A092	1FD01	FLOOR WASHINGS	TOOL STORAGE	PLUG		8/1/93		WX-12
16	370	16-370-OPN-2	04A092	1FD02	FLOOR WASHINGS	TOOL STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD03	FLOOR WASHINGS	TOOL STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD04	FLOOR WASHINGS	TOOL STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD05	FLOOR WASHINGS	TOOL STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD06	FLOOR WASHINGS	METAL SHOP	PLUG		8/1/93		WX-12
16	370	16-370-OPN-2	04A092	1FD07	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD08	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD09	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD10	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD11	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD12	FLOOR WASHINGS	METAL SHOP	PLUG		8/1/93		WX-12
16	370	16-370-OPN-2	04A092	1FD13	FLOOR WASHINGS	STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD14	FLOOR WASHINGS	STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD15	FLOOR WASHINGS	STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD16	FLOOR WASHINGS	STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD17	FLOOR WASHINGS	STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	1FD18	NON CONTACT COOLING WATER	STORAGE	MODIFY		7/1/99		WX-12
16	370	16-370-OPN-2	04A092	1WF1	DRINKING WATER	STORAGE	REPIPE		8/1/94		WX-12
16	370	16-370-OPN-2	04A092	2FD05	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG	PLUGGED	7/20/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	3FD07	FLOOR WASHINGS	STORAGE	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-2	04A092	3FD08	FLOOR WASHINGS	STORAGE	PLUG		8/1/93		WX-12
16	370	16-370-OPN-2	04A092	3S1	HAND WASHINGS	STORAGE	ELIMINATE		8/1/94		WX-12
16	370	16-370-OPN-3	SEPTIC TANK	3FD01	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-3	SEPTIC TANK	3FD02	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-3	SEPTIC TANK	3FD03	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-3	SEPTIC TANK	3FD04	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-3	SEPTIC TANK	3TD1	FLOOR WASHINGS	METAL SHOP	PLUG	PLUGGED	8/1/93	7/20/93	WX-12
16	370	16-370-OPN-4	N/A	1STD1	STEAM CONDENSATE	STEAM PIT	PERMIT		7/1/99		WX-12
16	478	16-478-OPN-1	04A134	1FD1	STEAM CONDENSATE	LAB	PIPE TO S.S		8/1/99		WX-12
16	478	16-478-OPN-2	N/A	N/A	STEAM CONDENSATE	LAB	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	478	16-478-OPN-3	N/A	N/A	STEAM CONDENSATE	LAB	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	478	16-478-OPN-4	N/A	N/A	FLOOR SPILLAGE	LAB	ALARM		8/1/95		WX-12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 10 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
40	1	40-1-OPN-1	01S	1FD3	STEAM CONDENSATE	EQUIPMENT ROOM	MODIFY				M DO
40	1	40-1-OPN-2	N/A	RD1	RAIN	STORM WATER	VERIFY				M DO
40	1	40-1-OPN-2	N/A	RD2	RAIN	STORM WATER	VERIFY				M DO
40	1	40-1-OPN-2	N/A	RD3	RAIN	STORM WATER	VERIFY				M DO
40	1	40-1-OPN-2	N/A	RD4	RAIN	STORM WATER	VERIFY				M DO
40	4	40-4-OPN-1	06A079	1LC1	NON-CONTACT COOLING WATER	FIRING SITE	RECIRCULATE				M DO
40	4	40-4-OPN-1	06A079	1SD1	PHOTO PROCESSING SINK	FIRING SITE	MODIFY				M DO
40	4	40-4-OPN-1	06A079	1SD1	PHOTO RINSE	FIRING SITE	MODIFY				M DO
40	4	40-4-OPN-2	N/A	1WH1	HOT WATER HEATER RELIEF VAL	FIRING SITE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
40	5	40-5-OPN-1	06A080	1WH1	HOT WATER HEATER RELIEF VAL	FIRNG SITE	MODIFY				M DO
40	8	40-8-OPN-1	06A081	1LC1	NON CONTACT COOLING WATER	FIRING SITE	MODIFY				M DO
40	8	40-8-OPN-1	06A081	1WH1	HOT WATER HEATER RELIEF VAL	FIRING SITE	MODIFY				M DO
40	9	40-9-OPN-1	04A101	1BFP1	BACK FLOW PREVENTER	FIRING SITE	MODIFY				M DO
40	9	40-9-OPN-1	04A101	1DR1	RAIN	FIRING SITE	SEPARATE				M DO
40	9	40-9-OPN-1	04A101	1LC1	NON CONTACT COOLING WATER	FIRING SITE	RECIRCULATE				M DO
40	9	40-9-OPN-1	04A101	1SD1	SANITARY WASTE	FIRING SITE	MODIFY				M DO
40	9	40-9-OPN-1	04A101	1WH1	HOT WATER HEATER RELIEF VAL	FIRING SITE	MODIFY				M DO
40	11	40-11-OPN-3	N/A	N/A	DISCONNECTED PIPE	PREP & UTILITY BUILDING	ELIMINATE				M DO
40	11	40-11-OPN-4	N/A	1FD4	STEAM PRV	PREP & UTILITY BUILDING	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
40	11	40-11-OPN-4	N/A	1FD4	AIR COMPRESSOR DRAIN	PREP & UTILITY BUILDING	CONTAINERIZE				M DO
40	12	40-12-OPN-1	06A082	1WH1	HOT WATER HEATER RELIEF VAL	FIRING SITE	MODIFY				M DO
40	15	40-15-OPN-1	06A100	1WH1	HOT WATER HEATER RELIEF VAL	FIRING SITE	MODIFY				M DO
40	16	40-16-OPN-1	N/A	1FD1	STEAM PRESSURE RELIEF VALV	EQUIPMENT ROOM	MODIFY				M DO
40	16	40-16-OPN-1	N/A	1FD1	BACK FLOW PREVENTER	EQUIPMENT ROOM	MODIFY				M DO
40	16	40-16-OPN-1	N/A	1FD1	HEAT EXCHANGER DRAIN	EQUIPMENT ROOM	MODIFY				M DO
40	17	40-17-OPN-1	N/A	1FD1	BACK FLOW PREVENTER	EQUIPMENT ROOM	MODIFY				M DO
40	17	40-17-OPN-1	N/A	1FD1	STEAM PRESSURE RELIEF VALV	EQUIPMENT ROOM	MODIFY				M DO
40	17	40-17-OPN-1	N/A	1FD1	HEAT EXCHANGER DRAIN	EQUIPMENT ROOM	MODIFY				M DO
40	18	40-18-OPN-1	N/A	1FD1	AIR COMPRESSOR DRAIN	UTILITY BUILDING	CONTAINERIZE				M DO
40	19	40-19-OPN-1	N/A	1LV1	WATER SOURCE IS DISCONNECT	GUARD HOUSE	ELIMINATE				M DO
40	19	40-19-OPN-1	N/A	1TL1	WATER SOURCE IS DISCONNECT	GUARD HOUSE	ELIMINATE				M DO
40	19	40-19-OPN-1	N/A	1WF1	WATER FOUNTAIN WAS REMOVE	GUARD HOUSE	ELIMINATE				M DO
40	23	40-23-OPN-1	N/A	1FD1	STEAM CONDENSATE	EQUIPMENT ROOM	CONTAINERIZE				M DO
40	23	40-23-OPN-1	N/A	1SD4	NON CONTACT COOLING WATER	PHOTO LAB	RECIRCULATE				M DO
40	23	40-23-OPN-2	06A099	RD1	RAIN	WAREHOUSE & CABLE ASSEMB	SEPARATE				M DO
40	23	40-23-OPN-2	06A099	RD2	RAIN	WAREHOUSE & CABLE ASSEMB	SEPARATE				M DO

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 9 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	89	16-89	N/A	N/A	NO DRAINS	PROCESS BUILDING	MODIFY		12/1/98		WX 12
16	90	16-90	N/A	N/A	NO DRAINS	PROCESS BUILDING	MODIFY		12/1/98		WX 12
16	91	16-91	N/A	N/A	NO DRAINS	PROCESS BUILDING	MODIFY		12/1/98		WX 12
16	92	16-92	N/A	N/A	NO DRAINS	PROCESS BUILDING	MODIFY		12/1/98		WX 12
16	93	16-93	N/A	N/A	NO DRAINS	PROCESS BUILDING	MODIFY		12/1/98		WX 12
16	280	16-280-OPN-1	05A061	1SPD1	HE TEST WATER	HE TESTING	PLUG & ALARM		6/1/97		WX 12
16	280	16-280-OPN-1	05A061	RD1	RAIN	ROOF	UNPERMIT				WX 12
16	280	16-280-OPN-1	05A061	RD2	RAIN	ROOF	UNPERMIT				WX 12
16	280	16-280-OPN-3	N/A	BFD1	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD2	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD3	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD4	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD5	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD6	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD7	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD8	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.				WX 12
16	280	16-280-OPN-3	N/A	BFD9	BATTER LEAKAGE	EQUIPMENT ROOM	SEC. CONTAIN.		5/1/95		WX 12
16	280	16-280-OPN-6	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	0/31/91	EM 8
16	280	16-280-OPN-7	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	0/31/91	EM 8
16	281	16-281-OPN-1	N/A	RD1	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	281	16-281-OPN-1	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	281	16-281-OPN-2	N/A	1STD1	STEAM CONDENSATE	VALVE PIT	VERIFY		7/1/94		WX 12
16	281	16-281-OPN-3	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	281	16-281-OPN-4	N/A	N/A	CONDENSATE VENT	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	281	16-281-OPN-5	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	281	16-281-OPN-6	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	283	16-283-OPN-1	N/A	RD1	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	283	16-283-OPN-1	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	283	16-283-OPN-2	N/A	1STD1	STEAM CONDENSATE	VALVE PIT	MODIFY		7/1/94		WX 12
16	283	16-283-OPN-3	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	283	16-283-OPN-4	N/A	N/A	CONDENSATE VENT	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	283	16-283-OPN-5	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	283	16-283-OPN-6	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	285	16-285-OPN-1	N/A	RD1	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	285	16-285-OPN-1	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	285	16-285-OPN-2	N/A	1STD1	STEAM CONDENSATE	VALVE PIT	MODIFY		7/1/94		WX 12
16	285	16-285-OPN-3	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	285	16-285-OPN-4	N/A	N/A	CONDENSATE VENT	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	285	16-285-OPN-5	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	285	16-285-OPN-5	N/A	N/A	STEAM PRESSURE RELIEF VALV	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	400	16-400-OPN-3	N/A	1STD1	STEAM CONDENSATE	VALVE PIT	MODIFY		8/1/94		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 8 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	360	16-360-OPN-1	03S	1FD1	FLOOR WASHINGS	REST ROOM	PLUG	PLUGGED	7/20/93	7/20/93	WX-12
16	360	16-360-OPN-1	03S	1FD2	FLOOR WASHINGS	REST ROOM	PLUG	PLUGGED	7/20/93	7/20/93	WX-12
16	360	16-360-OPN-3	N/A	1WF1	DRINKING WATER	SHIPPING/PACKING	PIPE TO S.S.		6/1/97		WX-12
16	360	16-360-OPN-4	05A159	1TD1	FLOOR WASHINGS	SHIPPING/PACKING	MODIFY		6/1/97		WX-12
16	360	16-360-OPN-5	N/A	1FD3	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	CONTAINERIZE	PLUGGED	7/20/93	7/20/93	WX-12
16	360	16-360-OPN-5	N/A	1FD3	TEMPERED WATER	EQUIPMENT ROOM	PIPE TO S.S.	PLUGGED	7/20/93	7/20/93	WX-12
16	360	16-360-OPN-5	N/A	1FD4	FIRE WATER	SHIPPING/PACKING	PIPE TO S.S.	PIPE TO S.S.	12/1/92	12/1/92	WX-12
16	360	16-360-OPN-5	N/A	1FD5	FLOOR WASHINGS	SHIPPING/PACKING	PIPE TO S.S.	PIPE TO S.S.	12/1/92	12/1/92	WX-12
16	360	16-360-OPN-5	N/A	1FD5	FIRE WATER	SHIPPING/PACKING	PIPE TO S.S.	PIPE TO S.S.	12/1/92	12/1/92	WX-12
16	360	16-360-OPN-6	N/A	1SP1	STEAM CONDENSATE	STEAM PIT	MODIFY	PLUGGED	7/20/93	7/20/93	WX-12
16	360	16-360-OPN-7	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM-8
16	360	16-360-OPN-8	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	360	16-360-OPN-9	N/A	N/A	CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	380	16-380-OPN-1	05A052	1SPD1	FLOOR WASHINGS, DRINKING W	COLLECTING SUMP	ALARM	PLUGGED	12/1/96	7/20/93	WX-12
16	380	16-380-OPN-1	05A052	RD1	RAIN	ROOF	SEPARATE				WX-12
16	380	16-380-OPN-1	05A052	RD2	RAIN	ROOF	SEPARATE				WX-12
16	380	16-380-OPN-2	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	RECIRCULATE		7/1/99		WX-12
16	380	16-380-OPN-3	SEPTIC TANK	1FD1	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	CONTAINERIZE				WX-12
16	380	16-380-OPN-3	SEPTIC TANK	1FD2	TEMPERED WATER	EQUIPMENT ROOM	PLUG	PLUGGED	7/20/93	7/20/93	WX-12
16	380	16-380-OPN-4	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM-8
16	380	16-380-OPN-5	N/A	N/A	FIRE WATER	EQUIPMENT ROOM	MODIFY		8/1/96		WX-12
16	380	16-380-OPN-6	N/A	N/A	DISCONNECTED PIPE	EQUIPMENT ROOM	ELIMINATE				WX-12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 7 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 10-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	224	16-224-OPN-3	N/A	RD3	RAIN	ROOF	VERIFY		8/1/96		WX-12
16	224	16-224-OPN-5	N/A	1SPD1	STEAM CONDENSATE	STEAM PIT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	224	16-224-OPN-6	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	224	16-224-OPN-7	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	224	16-224-OPN-8	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM-8
16	225	16-225-OPN-1	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	225	16-225-OPN-2	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	225	16-225-OPN-3	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG	PLUGGED	7/1/94	7/20/93	WX-12
16	225	16-225-OPN-3	N/A	RD1	RAIN	ROOF	VERIFY		7/1/94		WX-12
16	225	16-225-OPN-3	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX-12
16	225	16-225-OPN-4	N/A	SPD1	STEAM CONDENSATE	STEAM PIT	MODIFY		7/1/94		WX-12
16	226	16-226-OPN-1	N/A	RD1	RAIN	ROOF	VERIFY		7/1/94		WX-12
16	226	16-226-OPN-1	N/A	RD4	RAIN	ROOF	VERIFY		7/1/94		WX-12
16	226	16-226-OPN-2	N/A	1FD1	FLOOR WASHINGS	X-RAY ROOM	PLUG		8/1/95		WX-12
16	226	16-226-OPN-2	N/A	1FD2	FLOOR WASHINGS	X-RAY ROOM	PLUG		8/1/95		WX-12
16	226	16-226-OPN-3	N/A	RD2	RAIN	ROOF	REPIPE				WX-12
16	226	16-226-OPN-3	N/A	RD3	RAIN	ROOF	REPIPE				WX-12
16	226	16-226-OPN-5	N/A	1SPD1	STEAM CONDENSATE	STEAM PIT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	226	16-226-OPN-6	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	226	16-226-OPN-7	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	226	16-226-OPN-8	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM-8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 7 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *10-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	220	16-220-OPN-1	N/A	RD1	RAIN	ROOF	VERIFY				WX-12
16	220	16-220-OPN-2	04A070	1FD1	NON CONTACT COOLING WATER	X-RAY ROOM	RECIRCULATE		12/1/96		WX-12
16	220	16-220-OPN-2	04A070	1FD2	NON CONTACT COOLING WATER	X-RAY ROOM	RECIRCULATE		12/1/96		WX-12
16	220	16-220-OPN-2	04A070	1FD3	NON CONTACT COOLING WATER	X-RAY ROOM	RECIRCULATE		12/1/96		WX-12
16	220	16-220-OPN-2	04A070	1FD5	FLOOR WASHINGS	RESTROOM	PLUG		8/1/96		WX-12
16	220	16-220-OPN-2	04A070	1FD6	FLOOR WASHINGS	RESTROOM	PLUG		8/1/96		WX-12
16	220	16-220-OPN-2	04A070	1FD7	COOLING WATER	HE VACUUM	MODIFY		12/1/96		WX-12
16	220	16-220-OPN-2	04A070	1FD8	COOLING WATER	X-RAY ROOM	RECIRCULATE		12/1/96		WX-12
16	220	16-220-OPN-3	N/A	SPD1	STEAM CONDENSATE	STEAM PIT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	220	16-220-OPN-5	N/A	RD2	RAIN	ROOF	VERIFY				WX-12
16	220	16-220-OPN-6	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM-8
16	220	16-220-OPN-7	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	220	16-220-OPN-8	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	221	16-221-OPN-1	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	221	16-221-OPN-2	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	221	16-221-OPN-3	N/A	RD1	RAIN	ROOF	VERIFY		6/1/94		WX-12
16	221	16-221-OPN-3	N/A	RD2	RAIN	ROOF	VERIFY		6/1/94		WX-12
16	221	16-221-OPN-4	N/A	1SPD1	STEAM CONDENSATE	STEAM PIT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	222	16-222-OPN-01	N/A	RD1	RAIN	ROOF	VERIFY		6/1/95		WX-12
16	222	16-222-OPN-02	N/A	RD2	RAIN	ROOF	VERIFY		6/1/95		WX-12
16	222	16-222-OPN-02	N/A	RD3	RAIN	ROOF	VERIFY		6/1/95		WX-12
16	222	16-222-OPN-03	06A073	1EQD1	EQUIPMENT DRAIN	EQUIPMENT DRAIN	MODIFY				WX-12
16	222	16-222-OPN-03	06A073	1SD2	SINK	OFFICE SINK	PIPE TO S.S.				WX-12
16	222	16-222-OPN-05	N/A	RD4	RAIN	ROOF	VERIFY		6/1/95		WX-12
16	222	16-222-OPN-06	N/A	SPD1	STEAM CONDENSATE	STEAM PIT	MODIFY	N.O.I.	3/24/92	3/24/92	EM-8
16	222	16-222-OPN-07	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	222	16-222-OPN-08	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	222	16-222-OPN-09	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	222	16-222-OPN-10	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	222	16-222-OPN-11	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM-8
16	223	16-223-OPN-1	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	223	16-223-OPN-2	N/A	N/A	STEAM CONDENSATE	CONDENSATE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	223	16-223-OPN-3	N/A	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG	PLUGGED	7/1/94	7/20/93	WX-12
16	223	16-223-OPN-3	N/A	RD1	RAIN	ROOF	VERIFY		7/1/94		WX-12
16	223	16-223-OPN-3	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX-12
16	223	16-223-OPN-4	N/A	1SPD1	STEAM CONDENSATE	STEAM PIT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	224	16-224-OPN-1	N/A	RD1	RAIN	ROOF	VERIFY		8/1/96		WX-12
16	224	16-224-OPN-1	N/A	RD4	RAIN	ROOF	VERIFY		8/1/96		WX-12
16	224	16-224-OPN-2	N/A	1FD1	FLOOR WASHINGS	X-RAY ROOM	PLUG		8/1/96		WX-12
16	224	16-224-OPN-2	N/A	1FD2	FLOOR WASHINGS	X-RAY ROOM	PLUG		8/1/96		WX-12
16	224	16-224-OPN-3	N/A	RD2	RAIN	ROOF	VERIFY		8/1/96		WX-12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 6 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	205	16-205-OPN-2	N/A	N/A	STEAM CONDENSATE	STEAM PRV	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	205	16-205-OPN-3	N/A	N/A	STEAM CONDENSATE	STEAM PRV	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	205	16-205-OPN-4	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	205	16-205-OPN-5	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	450	16-450-OPN-02	N/A	N/A	STEAM CONDENSATER	STEAM PRV	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	450	16-450-OPN-05	N/A	1FD2	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	1FD3	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BEQD1	NONE	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BEQD2	NONE	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BEQD3	CHILLER DRAIN	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BFD1	FLOOR WASHINGS	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BFD2	FLOOR WASHINGS	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BFD6	FLOOR WASHINGS	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-05	N/A	BFD7	FLOOR WASHINGS	TESTING ROOM	PIPE TO S.S.		10/1/96		WX 12
16	450	16-450-OPN-06	N/A	N/A	FIRE WATER	FIRE WATER	N.O.I.	N/A	10/31/91	10/31/91	EM 8
16	450	16-450-OPN-09	04A091	1TD1	FLOOR WASHINGS	PROCESS ROOM	PLUG		6/1/96		WX 12
16	450	16-450-OPN-09	04A091	SUMP	PROCESS SINKS	EXTERNAL SUMP	PLUG & ALARM		6/1/96		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

ASTE STREAM REPORT # 5 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
342	16-342 OPN-07	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
342	16-342 OPN-10	N/A	SPD2	RAIN	VALVE BOX DRAIN	MODIFY		3/1/95		WX 12
343	16-343-OPN-1	N/A	1FD1	FLOOR WASHINGS	REST HOUSE	PLUG	PLUGGED	3/1/95	7/20/93	WX-12
343	16-343-OPN-1	N/A	RD1	RAIN WATER	REST HOUSE	VERIFY		3/1/95		WX 12
343	16-343-OPN-2	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	MODIFY		8/1/94		WX 12
343	16-343-OPN-3	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	MODIFY		8/1/94		WX 12
343	16-343-OPN-4	N/A	N/A	RAIN	VALVE PIT	VERIFY		3/1/95		WX 12
343	16-343-OPN-5	N/A	RD2	RAIN	ROOF	VERIFY		3/1/95		WX 12
344	16-344-OPN-1	N/A	1SPD1	FLOOR WASHINGS	STORAGE ROOM	PLUG		10/1/95		WX 12
344	16-344-OPN-2	N/A	N/A	VENTILATOR DUCT	STORAGE ROOM	MODIFY		10/1/95		WX 12
344	16-344-OPN-3	N/A	N/A	VENTILATOR DUCT	STORAGE ROOM	MODIFY		10/1/95		WX 12
344	16-344-OPN-4	N/A	N/A	VENTILATOR DUCT	STORAGE ROOM	MODIFY		10/1/95		WX 12
345	16-345-OPN-1	N/A	1FD1	FLOOR WASINGS	REST HOUSE	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
345	16-345-OPN-1	N/A	RD1	RAIN WATER	REST HOUSE	VERIFY		7/1/94		WX 12
345	16-345-OPN-2	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
345	16-345-OPN-3	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	MODIFY		8/1/94		WX 12
345	16-345-OPN-4	N/A	N/A	RAIN	VALVE PIT	VERIFY		7/1/94		WX 12
345	16-345-OPN-5	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX 12
345	16-345-OPN-6	N/A	1SPD2	FLOOR WASHINGS	HE SUMP	PLUG		10/1/94		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 5 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	339	16-339	N/A	N/A	CHEMICALS POSSIBLE	CHEMICAL STORAGE	MODIFY		8/1/94		WX 12
16	340	16-340-OPN-02	05A054	1FD01	FLOOR WASHINGS	HALLWAY	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD02	FLOOR WASHINGS	HALLWAY	MODIFY		9/1/93		WX 12
16	340	16-340-OPN-02	05A054	1FD03	FLOOR WASHINGS	HALLWAY	MODIFY		9/1/93		WX 12
16	340	16-340-OPN-02	05A054	1FD06	VACUUM PUMPS - COOLING WA	EQUIPMNET ROOM	MODIFY	MODIFIED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD07	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD07	COOLING WATER	EQUIPMENT ROOM	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD07	COOLING WATER FM AIR COMP	EQUIPMENT ROOM	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD07	STEAM CONDENSATE	EQUIPMENT ROOM	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD08	BACKFLOW PREVENTER	EQUIPMENT ROOM	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD08	DRAIN FROM AIR DRIER	EQUIPMENT ROOM	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	1FD09	BATERY BANK	BATTERY ROOM	MODIFY	PLUGGED	12/1/93	7/20/93	WX 12
16	340	16-340-OPN-02	05A054	2EQD1	AIR COMPRESSOR COOLING WA	EQUIPMENT ROOM	MODIFY	MODIFIED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	2FD1	TEMPERED WATER	HALLWAY	PLUG		12/1/93		WX 12
16	340	16-340-OPN-02	05A054	2FD2	TEMPERED WATER	HALLWAY	PLUG		12/1/93		WX 12
16	340	16-340-OPN-02	05A054	2FD9	TEMPERED WATER	EQUIPMENT ROOM	PLUG		12/1/93		WX 12
16	340	16-340-OPN-02	05A054	RD1	STORM WATER	ROOF	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	RD2	STORM WATER	ROOF	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	RD3	STORM WATER	ROOF	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	RD4	STORM WATER	ROOF	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	RD5	STORM WATER	ROOF	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	RD6	STORM WATER	RAIN	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-02	05A054	RD7	STORM WATER	ROOF	SEPARATE	SEPERATED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-03	N/A	N/A	CONDENSED WATER	CONDENSATE VENT	REPIPE	REPIPED	1/1/93	1/1/93	WX 12
16	340	16-340-OPN-04	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	340	16-340-OPN-05	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	341	16-341-OPN-1	N/A	1FD1	FLOOR WASINGS	REST HOUSE	PLUG	PLUGGED	10/1/92	10/1/92	WX 12
16	341	16-341-OPN-1	N/A	RD1	RAIN WATER	REST HOUSE	VERIFY		7/1/94		WX 12
16	341	16-341-OPN-2	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	MODIFY		8/1/94		WX 12
16	341	16-341-OPN-3	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	MODIFY		8/1/94		WX 12
16	341	16-341-OPN-4	N/A	N/A	RAIN	VALVE PIT	VERIFY		7/1/94		WX 12
16	341	16-341-OPN-5	N/A	RD2	RAIN	ROOF	VERIFY		7/1/94		WX 12
16	342	16-342-OPN-01	N/A	N/A	STEAM CONDENSATE	STEAM RELIEF VALVE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	342	16-342-OPN-02	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	342	16-342-OPN-03	N/A	N/A	STEAM CONDENSATE	STEAM RELIEF VALVE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	342	16-342-OPN-04	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	342	16-342-OPN-05	N/A	2FD1	POTABLE WATER LEAKAGE	EQUIPMENT ROOM	REPIPE		3/1/95		WX 12
16	342	16-342-OPN-05	N/A	2FD1	FLOOR WASHINGS	EQUIPMENT ROOM	REPIPE		3/1/95		WX 12
16	342	16-342-OPN-05	N/A	2FD2	FLOOR WASHINGS	EQUIPMENT ROOM	REPIPE		3/1/95		WX 12
16	342	16-342-OPN-05	N/A	2FD2	POTABLE WATER	EQUIPMENT ROOM	REPIPE		3/1/95		WX 12
16	342	16-342-OPN-06	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8

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WASTE STREAM REPORT # 4 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	460	16-460-OPN-3	05A072	1FD18	FLOOR WASHINGS	TESTING	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1S15	INDUSTRIAL RINSE WATER	TESTING	REPIPE		12/1/94		WX-12
16	460	16-460-OPN-3	05A072	1WF1	DRINKING WATER	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-5	N/A	BFD22	FLOOR WASHINGS	CHEMICAL STORAGE	PLUG		8/1/94		WX 12
16	460	16-460-OPN-9	N/A	1CD1	CHILLER CONDENSATE	ATTIC	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8

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WASTE STREAM REPORT # 4 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	460	16-460-OPN-1	N/A	BAT1	AIR LINE TRAP BLOWDOWN	HALLWAY	MODIFY		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BAT2	AIR LINE TRAP BLOWDOWN	HALLWAY	MODIFY		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BAT3	AIR LINE TRAP BLOWDOWN	HALLWAY	MODIFY		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD10	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD11	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD12	CHILLLED WATER	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD12	CONDENSATE	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD12	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD13	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD14	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD15	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD16	FLOOR WASHING	HALLWAY	SEC. CONTAIN.		8/31/94		WX 12
16	460	16-460-OPN-1	N/A	BFD18	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD19	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD20	FLOOR WASHINGS	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-1	N/A	BFD23	STEAM CONDENSATE	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD01	VAC PUMP COOLING WATER	EQUIPMENT ROOM	MODIFY		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD02	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD03	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD04	AIR COMPRESSOR BLOWDOWN	EQUIPMENT ROOM	MODIFY		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD05	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD06	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD07	CHILLER CONDENSATE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD08	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-2	04A157	BFD09	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	460	16-460-OPN-3	05A072	1DW1	DISH WASHER FOR GLASSWARE	DRYING ROOM	REPIPE		12/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD01	FLOOR WASHINGS	GC ROOM	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD02	FLOOR WASHINGS	WEIGHT ROOM	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD03	FLOOR WASHINGS	TESTING	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD04	FLOOR WASHINGS	WET CHEM LAB	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD05	FLOOR WASHINGS	WET CHEM LAB	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD06	FLOOR WASHINGS	WET CHEM LAB	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD07	FLOOR WASHINGS	WET CHEM LAB	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD08	FLOOR WASHINGS	DRYING ROOM	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD09	FLOOR WASHINGS	GLASS STORAGE	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD12	FLOOR WASHINGS	TESTING	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD13	FLOOR WASHINGS	TESTING	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD14	FLOOR WASHINGS	TESTING	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD15	FLOOR WASHINGS	COFFEE ROOM	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD16	FLOOR WASHINGS	OFFICE	PLUG		8/1/94		WX 12
16	460	16-460-OPN-3	05A072	1FD17	FLOOR WASHINGS	TESTING	PLUG		8/1/94		WX 12

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WASTE STREAM REPORT # 3 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	430	16-430-OPN-14	N/A	1PD1	STEAM CONDENSATE	EQUIPMENT ROOM	REPIPE		12/1/94		WX-12
16	430	16-430-OPN-14	N/A	1PD1	POTABLE & TEMPERED WATER	EQUIPMENT ROOM	REPIPE		12/1/94		WX-12
16	430	16-430-OPN-14	N/A	2FD2	TEMPERED WATER	EQUIPMENT ROOM	REPIPE		12/1/94		WX-12
16	430	16-430-OPN-14	N/A	2FD2	CHILLER WATER BLOWDOWN	EQUIPMENT ROOM	REPIPE		12/1/94		WX-12
16	430	16-430-OPN-14	N/A	2FD2	HOT WATER	EQUIPMENT ROOM	REPIPE		12/1/94		WX-12
16	430	16-430-OPN-15	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	430	16-430-OPN-16	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	430	16-430-OPN-17	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	430	16-430-OPN-18	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	430	16-430-OPN-20	N/A	N/A	NO LIQUID	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX-12
16	430	16-430-OPN-21	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX-12
16	430	16-430-OPN-24	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX-12
16	430	16-430-OPN-26	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX-12
16	430	16-430-OPN-27	N/A	N/A	FIRE WATER	FIRE WATER DRAIN	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	430	16-430-OPN-36	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX-12
16	430	16-430-OPN-37	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX-12

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WASTE STREAM REPORT # 3 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	430	16-430-OPN-01	03A060	1EWD1	EYE WASH DRAIN	HALLWAY	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD1	BATTERY ACID	BATTERY ROOM	MODIFY		12/1/93		WX 12
16	430	16-430-OPN-01	03A060	1FD2	AIR COMPRESSOR DRAIN	UTILITY ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD2	BACK FLOW PREVENTER	UTILITY ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD2	CHILLER DRAIN	UTILITY ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD2	CONDENSATE PUMP SEAL	UTILITY ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD3	AIR COMPRESSOR	UTILITY ROOM	SEC. CONTAIN.		12/1/93		WX 12
16	430	16-430-OPN-01	03A060	1FD3	BACK FLOW PREVENTER	UTILITY ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD3	VACUUM PUMP COOLING WATER	UTILITY ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD4	FLOOR WASHINGS	REST ROOM	PLUG		4/1/94		WX 12
16	430	16-430-OPN-01	03A060	1FD5	FLOOR WASHINGS	REST ROOM	PIPE TO S.S.		12/1/94		WX 12
16	430	16-430-OPN-03	N/A	2FD3	TEMPERED WATER LEAKAGE	EQUIPMENT ROOM	PLUG		4/1/94		WX 12
16	430	16-430-OPN-03	N/A	2FD3	UTILITY WATER LEAKAGE	EQUIPMENT ROOM	PLUG		4/1/94		WX 12
16	430	16-430-OPN-03	N/A	2FD4	TEMPERED WATER LEAKAGE	EQUIPMENT ROOM	PLUG		4/1/94		WX 12
16	430	16-430-OPN-04	N/A	SPD3	HE FLOOR WASHINGS	PROCESS BAY	REPIPE		12/1/94		WX 12
16	430	16-430-OPN-04	N/A	SPD3	HEATER DRAIN	PROCESS BAY	REPIPE		12/1/94		WX 12
16	430	16-430-OPN-04	N/A	SPD3	WET DUST COLLECTOR	PROCESS BAY	REPIPE		12/1/94		WX 12
16	430	16-430-OPN-05	05A071	SPD2	HE FLOOR WASHING	PROCESS BAY	SEC. CONTAIN.		6/1/94		WX 12
16	430	16-430-OPN-05	05A071	SPD2	HEATER DRAIN	PROCESS BAY	SEC. CONTAIN.		6/1/94		WX 12
16	430	16-430-OPN-05	05A071	SPD2	WET DUST COLLECTOR	PROCESS BAY	SEC. CONTAIN.		6/1/94		WX 12
16	430	16-430-OPN-06	N/A	1PD2	POTABLE & TEMPERED WATER	PIPE ALLEY	PLUG		4/1/94		WX 12
16	430	16-430-OPN-06	N/A	1PD3	POTABLE & TEMPERED WATER	PIPE ALLEY	PLUG		4/1/94		WX 12
16	430	16-430-OPN-06	N/A	1PD4	POTABLE & TEMPERED WATER	PIPE ALLEY	PLUG		4/1/94		WX 12
16	430	16-430-OPN-06	N/A	1PD5	POTABLE & TEMPERED WATER	HE PRESS AREA	PLUG		4/1/94		WX 12
16	430	16-430-OPN-06	N/A	1PD6	POTABLE & TEMPERED WATER	HE PRESS AREA	PLUG		4/1/94		WX 12
16	430	16-430-OPN-06	N/A	1PD7	POTABLE & TEMPERED WATER	HE PRESS AREA	PLUG		4/1/94		WX 12
16	430	16-430-OPN-07	N/A	1FD6	FLOOR WASHINGS	STORAGE	PLUG		4/1/94		WX 12
16	430	16-430-OPN-07	N/A	1FD7	FLOOR WASHINGS	HALLWAY	PLUG		4/1/94		WX 12
16	430	16-430-OPN-07	N/A	1FD8	FLOOR WASHINGS	HALLWAY	PLUG		4/1/94		WX 12
16	430	16-430-OPN-07	N/A	1FD9	FLOOR WASHINGS	HALLWAY	PLUG		4/1/94		WX 12
16	430	16-430-OPN-08	N/A	N/A	RAIN	FRENCH DRAIN	SAMPLE				WX 12
16	430	16-430-OPN-09	N/A	1PD8	POTABLE & TEMPERED WATER	PROCESS BAY	PLUG & ALARM		6/1/94		WX 12
16	430	16-430-OPN-09	N/A	1PD8	STEAM CONDENSATE	HE PRESS AREA	PLUG & ALARM		6/1/94		WX 12
16	430	16-430-OPN-10	N/A	N/A	NONE	DISCONNECTED PIPE	ELIMINATE		4/1/94		WX 12
16	430	16-430-OPN-11	N/A	SPD1	WET DUST COLLECTOR	PROCESS BAY	REPIPE		12/1/94		WX 12
16	430	16-430-OPN-11	N/A	SPD1	HE FLOOR WASHINGS	PROCESS BAY	REPIPE		12/1/94		WX 12
16	430	16-430-OPN-11	N/A	SPD1	HEATER DRAIN	PROCESS BAY	REPIPE		12/1/94		WX 12
16	430	16-430-OPN-12	N/A	N/A	STEAM CONDENSATE	STEAM TRAP	NOI	NOI	3/24/92	3/24/92	EM 8
16	430	16-430-OPN-13	N/A	2FD5	POTABLE & TEMPERED WATER	EQUIPMENT ROOM	PLUG		4/1/94		WX 12
16	430	16-430-OPN-13	N/A	2FD6	POTABLE & TEMPERED WATER	EQUIPMENT ROOM	PLUG		4/1/94		WX 12
16	430	16-430-OPN-13	N/A	2FD6	TEMPERED WATER	EQUIPMENT ROOM	PLUG		4/1/94		WX 12

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WASTE STREAM REPORT # 2 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	306	16-306-OPN-1	05A058	BFD7	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BFD8	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BFD9	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-3	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	306	16-306-OPN-4	N/A	N/A	DISCONNECTED PIPE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-1	N/A	SPD1	WASHDOWN	PROCESS BAY	ALARM	PLUGGED	6/1/94	7/20/93	WX 12
16	307	16-307-OPN-1	N/A	SPD2	WASHDOWN	PROCESS BAY	ALARM	PLUGGED	6/1/94	7/20/93	WX 12
16	307	16-307-OPN-2	N/A	1STD1	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/91	3/24/91	EM 8
16	307	16-307-OPN-3	03S	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD2	FLOOR WASHINGS	REST ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD3	FLOOR WASHINGS	REST ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD4	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD5	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD6	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD7	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	307	16-307-OPN-3	03S	1FD8	VACUUM PUMP	EQUIPMENT ROOM	MODIFY		5/1/95		WX 12
16	307	16-307-OPN-5	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	308	16-308-OPN-1	N/A	BFD1	CONDENSATE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	308	16-308-OPN-1	N/A	BFD1	FIRE WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	308	16-308-OPN-1	N/A	BFD1	POTABLE WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	308	16-308-OPN-1	N/A	BFD2	AIR COMPRESS KO POT	EQUIPMENT ROOM	MODIFY		3/1/95		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 2 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	304	16-304-OPN-1	05A058	SUMP2	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.	PLUGGED	12/1/94	7/20/93	WX 12
16	304	16-304-OPN-1	05A058	TD1	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	TD2	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-3	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	305	16-305-OPN-1	N/A	1EW1	EYE WASH	PROCESS BAY	PLUG		6/1/94		WX 12
16	305	16-305-OPN-1	N/A	SPD1	WASHDOWN	PROCESS BAY	ALARM	PLUGGED	6/1/94	7/20/93	WX 12
16	305	16-305-OPN-1	N/A	SPD2	WASHDOWN	PROCESS BAY	ALARM	PLUGGED	6/1/94	7/20/93	WX 12
16	305	16-305-OPN-2	N/A	1STD1	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	305	16-305-OPN-3	03S	1EQD1	NONE	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	305	16-305-OPN-3	03S	1EQD2	NONE	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	305	16-305-OPN-3	03S	1EQD3	NONE	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	305	16-305-OPN-3	03S	1FD1	FLOOR WASHINGS	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	305	16-305-OPN-3	03S	1FD4	NON CONTACT COOLING WATER	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	305	16-305-OPN-3	03S	1FD5	VACUUM PUMP	EQUIPMENT ROOM	MODIFY		12/1/94		WX 12
16	305	16-305-OPN-5	N/A	N/A	STEAM VENT	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	305	16-305-OPN-7	N/A	N/A	FIRE WATER DRAIN	EQUIPMENT ROOM	N.O.I.	N.O.I.	10/31/91	10/31/91	EM 8
16	306	16-306-OPN-1	05A058	1FD10	FLOOR WASHINGS	OFFICE	PLUG	PLUGGED	2/1/95	7/20/93	WX 12
16	306	16-306-OPN-1	05A058	1FD11	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	1FD12	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	1FD13	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	1FD14	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	1FD15	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	1FD16	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	1FD17	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD1	HYDRAULIC PUMP	EQUIPMENT ROOM	MODIFY		3/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD2	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD3	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD4	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD5	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD6	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD7	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BEQD8	AIR LINE BLOWDOWN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BEQD8	STEAM CONDENSATE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BEQD8	TEMPERED WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BEQD9	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BFD1	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BFD2	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BFD3	NON CONTACT COOLING WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BFD4	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	306	16-306-OPN-1	05A058	BFD5	FIRE WATER	FIRE WATER BLOWDOWN	PIPE TO S.S.		12/1/94		WX 12
16	306	16-306-OPN-1	05A058	BFD6	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	PLUG		2/1/95		WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 2 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	303	16 303 OPN 1	N/A	SPD2	WASHDOWN	PROCESS BAY	ALARM	PLUGGED	6/1/94	7/20/93	WX 12
16	303	16-303-OPN-2	N/A	1STD1	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	303	16-303-OPN-3	03S	1EQD1	VACUUM PUMP	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	303	16-303-OPN-3	03S	1EQD2	VACUUM ROOM	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	303	16-303-OPN-3	03S	1FD1	CHILLER DRAIN	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	303	16-303-OPN-3	03S	1FD4	NON CONTACT COOLING WATER	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	303	16-303-OPN-3	03S	1FD5	CONDENSATE	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	303	16-303-OPN-3	03S	1FD5	VACUUM PUMP	EQUIPMENT ROOM	SEC. CONTAIN.		12/1/94		WX 12
16	303	16-303-OPN-5	N/A	N/A	STEAM CONDENSATE	STEAM VENT	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	304	16-304-OPN-1	05A058	1FD10	FLOOR WASHINGS	CHEMICAL LABORATORY	PLUG	PLUGGED	2/1/95	7/20/93	WX 12
16	304	16-304-OPN-1	05A058	1FD11	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1FD12	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1FD13	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1FD14	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1FD15	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1FD16	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1FD17	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	1S3	HAND WASHING SINK	CHEMICAL LABORATORY	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BEQD1	HYDRAULIC PUMP	EQUIPMENT ROOM	MODIFY		3/1/95		WX 12
16	304	16-304-OPN-1	05A058	BEQD2	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	BEQD3	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	BEQD4	NONE	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	BEQD5	AIR LINE BLOWDOWN	EQUIPMENT ROOM	MODIFY		3/1/95		WX 12
16	304	16-304-OPN-1	05A058	BEQD5	STEAM CONDENSATE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BEQD5	TEMPERED WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BEQD6	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD1	CHILLER DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD2	BACK FLOW PREVENTER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD2	CHILLER DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD3	NON CONTACT COOLING WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD4	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	304	16-304-OPN-1	05A058	BFD5	FIRE WATER	FIRE WATER BLOWDOWN	PIPE TO S.S.		12/1/94		WX 12
16	304	16 304-OPN-1	05A058	BFD6	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	MODIFY		3/1/95		WX 12
16	304	16-304-OPN-1	05A058	BFD7	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD8	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BFD9	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16-304-OPN-1	05A058	BS1	HAND WASHING SINK	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	304	16 304-OPN-1	05A058	RD1	RAIN	ROOF DRAIN	NEW		12/1/94		WX 12
16	304	16 304-OPN-1	05A058	RD2	RAIN	ROOF DRAIN	NEW		12/1/94		WX 12
16	304	16 304-OPN-1	05A058	RD3	RAIN	ROOF DRAIN	NEW		12/1/94		WX 12
16	304	16 304-OPN-1	05A058	SUMP1	NON CONTACT COOLING WATER	PROCESS BAY	PIPE TO S.S.	PLUGGED	12/1/94	7/20/93	WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 2 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI 92-1306 REPORT DATE: 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	301	16-301-OPN-5	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	302	16-302-OPN-1	05A058	1FD10	FLOOR WASHINGS	OFFICE	PIPE TO S.S.	PLUGGED	12/1/94	7/20/93	WX 12
16	302	16-302-OPN-1	05A058	1FD11	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	1FD12	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	1FD13	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	1FD14	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	1FD15	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	1FD16	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	1FD17	FLOOR WASHINGS	PROCESS BAY	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	BEQD1	HYDRAULIC PUMP	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD2	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD3	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD4	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD5	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD6	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD7	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD8	STEAM CONDENSATE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD8	TEMPERED WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD8	AIR LINE BLOWDOWN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD8	VACUUM PUMP	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BEQD9	NONE	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD1	CHILLER DRAIN	EQUIPMENT DRAIN	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD2	BACK FLOW PREVENTER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD2	CHILLER DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD3	NON CONTACT COOLING WATER	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD4	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	BFD5	FIRE WATER	FIRE WATER BLOWDOWN	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD6	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	BFD7	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	BFD8	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	BFD9	FLOOR WASHINGS	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	BS1	HAND WASHING SINK	EQUIPMENT ROOM	PLUG		2/1/95		WX 12
16	302	16-302-OPN-1	05A058	RD1	RAIN	ROOF DRAIN	NEW		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	RD2	RAIN	ROOF DRAIN	NEW		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	RD3	RAIN	ROOF DRAIN	NEW		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	SUMP1	HE WASTE WATER	PROCESS BAY	NEW	PLUGGED	12/1/94	7/20/93	WX 12
16	302	16-302-OPN-1	05A058	SUMP2	HE WASTE WATER	PROCESS BAY	NEW	PLUGGED	12/1/94	7/20/93	WX 12
16	302	16-302-OPN-1	05A058	TD1	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-1	05A058	TD2	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX 12
16	302	16-302-OPN-3	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	303	16-303-OPN-1	N/A	SPD1	WASHDOWN	PROCESS BAY	ALARM	PLUGGED	6/1/94	7/20/93	WX 12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
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WASTE STREAM REPORT # 2 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	300	16-300-OPN-1	05A058	1FD10	FLOOR WASHINGS	OFFICE	PIPE TO S.S.	PLUGGED	10/1/94	7/20/93	WX-12
16	300	16-300-OPN-1	05A058	1FD11	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	1FD12	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	1FD13	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	1FD14	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	1FD15	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	1FD16	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	1FD17	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD1	HYDRAULIC PUMP	EQUIPMENT ROOM	MODIFY		9/1/93		WX-12
16	300	16-300-OPN-1	05A058	BEQD2	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD3	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD4	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD5	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD6	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD7	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD8	AIR LINE BLOWDOWN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD8	STEAM CONDENSATE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD8	TEMPERED WATER	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD8	VACUUM PUMP	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX-12
16	300	16-300-OPN-1	05A058	BEQD9	NONE	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD1	CHILLER DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD2	BACK FLOW PREVENTER	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD2	CHILLER DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD3	NON CONTACT COOLING WATER	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD4	FLOOR WASHINGS	PROCESS BAY	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD5	FIRE WATER	FIRE WATER BLOWDOWN	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD6	AIR COMPRESSOR DRAIN	EQUIPMENT ROOM	PIPE TO S.S.		12/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD7	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD8	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	BFD9	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	RD1	RAIN	ROOF DRAIN	NEW		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	RD2	RAIN	ROOF DRAIN	NEW		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	RD3	RAIN	ROOF DRAIN	NEW		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	SUMP1	HE WASTE WATER	PROCESS BAY	PIPE TO S.S.		12/1/93		WX-12
16	300	16-300-OPN-1	05A058	SUMP2	HE WASTE WATER	PROCESS BAY	PIPE TO S.S.		12/1/93		WX-12
16	300	16-300-OPN-1	05A058	TD1	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-1	05A058	TD2	FLOOR WASHINGS	EQUIPMENT ROOM	PIPE TO S.S.		10/1/94		WX-12
16	300	16-300-OPN-3	N/A	N/A	STEAM CONDENSATE	EQUIPMENT ROOM	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8
16	301	16-301-OPN-1	N/A	SPD1	WASHDOWN	PROCESS BAY	ALARM		12/1/93		WX-12
16	301	16-301-OPN-1	N/A	SPD2	WASHDOWN	PROCESS BAY	ALARM		12/1/93		WX-12
16	301	16-301-OPN-2	N/A	1STD1	STEAM CONDENSATE	EQUIPMENT ROOM	PLUG OR N.O.I.		12/1/93		WX-12

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 1 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
16	540	16-540-OPN-5	DAYLIGHT	N/A	STEAM CONDENSATE	BOILER HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM 8
16	540	16-540-OPN-6	DAYLIGHT	N/A	AIR COMPRESSOR BLOWDOWN	BOILER HOUSE	CONTAINERIZE		11/1/94		WX 12
21	357	21-357-OPN-1	05S	1FD1	FLOOR WASHINGS	REST ROOM	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD10	STEAM CONDENSATE	BOILER HOUSE	CONTAINERIZE				N/A
21	357	21-357-OPN-1	05S	1FD11	FLOOR WASHINGS	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD12	STEAM CONDENSATE	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD13	TREATED WATER	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD14	TREATED WATER	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD15	TREATED WATER	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD16	FLOOR WASHINGS	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD17	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
21	357	21-357-OPN-1	05S	1FD18	WATER TREATING	BOILER HOUSE	REPIPE				BLDG MGR
21	357	21-357-OPN-1	05S	1FD19	EYE WASH	BOILER HOUSE	REPIPE				BLDG MGR
21	357	21-357-OPN-1	05S	1FD2	FLOOR WASHINGS	REST ROOM	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD20	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
21	357	21-357-OPN-1	05S	1FD21	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
21	357	21-357-OPN-1	05S	1FD22	FLOOR WASHINGS	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD23	COMPRESSOR DRAIN	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD3	MOP WATER	JANITOR'S CLOSET	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD4	FLOOR WASHINGS	REST ROOM	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD5	FLOOR WASHINGS	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD6	FLOOR WASHINGS	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD7	FLOOR WASHINGS	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD8	STEAM CONDENSATE	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1FD9	STEAM CONDENSATE	BOILER HOUSE	PLUG				BLDG MGR
21	357	21-357-OPN-1	05S	1SD1	WATER TESTING	TESTING LAB	REPIPE				BLDG MGR

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 1 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: *09-Aug-93*

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
3	22	3-22-OPN-3	04A151	BFD39	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD40	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD41	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	HFD1	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	HFD2	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	HFD3	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	HFD4	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	HFD5	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	HFD6	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD1	STEAM CONDENSATE	BOILER HOUSE	SEC. CONTAIN.				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD2	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD2	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD3	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD4	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD5	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	MFD6	FLOOR WASHINGS	PIPE STORAGE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	PFD1	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	PFD2	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	PFD3	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-6	01S	1SD6	WATER TESTING	TEST LAB	MODIFY				M DIV
3	24	3-24-OPN-1	01A001	1CD1	NONE	CHLORINE BUILDING	PLUG				BLDG MGR
3	24	3-24-OPN-1	01A001	1EW1	EMERGENCY EYE WASH	CHLORINE BUILDING	ELIMINATE				BLDG MGR
3	24	3-24-OPN-1	01A001	1FD1	NONE	CHLORINE BUILDING	PLUG				BLDG MGR
3	24	3-24-OPN-1	01A001	1FD2	NONE	CHLORINE BUILDING	PLUG				BLDG MGR
3	24	3-24-OPN-1	01A001	1FD3	NONE	CHLORINE BUILDING	PLUG				BLDG MGR
3	24	3-24-OPN-1	01A001	1FD4	NONE	CHLORINE BUILDING	PLUG				BLDG MGR
3	24	3-24-OPN-1	01A001	1SD1	HAND WASHING	CHLORINE BUILDING	ELIMINATE				BLDG MGR
3	24	3-24-OPN-2	N/A	N/A	NONE	CHLORINE BUILDING	ELIMINATE				BLDG MGR
3	25	3-25-OPN-1	01A001	1AD1	TREATED COOLING WATER	COOLING TOWER BASIN	MODIFY				BLDG MGR
3	25	3-25-OPN-1	01A001	1AD2	STORM WATER	COOLING TOWER BASIN	MODIFY				BLDG MGR
3	25	3-25-OPN-1	01A001	1AD3	STORMWATER	COOLING TOWER BASIN	MODIFY				BLDG MGR
3	58	3-58-OPN-1	01A001	1OD1	TREATED COOLING WATER OVE	COOLING TOWER	MODIFY				BLDG MGR
16	540	16-540-OPN-1	02A007	1FD01	FLOOR WASHINGS	BOILER HOUSE	CONTAINERIZE		11/10/94		WX-12
16	540	16-540-OPN-1	02A007	RD1	STORM WATER	ROOF	SEPARATE		12/1/95		WX-12
16	540	16-540-OPN-1	02A007	RD2	STORM WATER	ROOF	SEPARATE		12/1/95		WX-12
16	540	16-540-OPN-1	02A007	RD3	STORM WATER	ROOF	SEPARATE		12/1/95		WX-12
16	540	16-540-OPN-1	02A007	RD4	STORM WATER	ROOF	SEPARATE		12/1/95		WX-12
16	540	16-540-OPN-1	02A007	RD5	STORM WATER	ROOF	SEPARATE		12/1/95		WX-12
16	540	16-540-OPN-1	02A007	RD6	STORM WATER	ROOF	SEPARATE		12/1/95		WX-12
16	540	16-540-OPN-2	03S	2SD2	CHEMICAL TESTING	TESTING LAB	MODIFY				WX-12
16	540	16-540-OPN-4	DAYLIGHT	N/A	STEAM CONDENSATE	BOILER HOUSE	N.O.I.	N.O.I.	3/24/92	3/24/92	EM-8

WASTE STREAM CHARACTERIZATION CORRECTIVE ACTION TRACKING DATABASE
LOS ALAMOS NATIONAL LABORATORY

WASTE STREAM REPORT # 1 NPDES PERMIT # NM0028355 ADMINISTRATIVE ORDER DOCKET # VI-92-1306 REPORT DATE: 09-Aug-93

TA	BLDG.	OUTLET PIPING NUMBER	EPA OUTFALL NUMBER	DRAIN NUMBER	SOURCES	ROOM DESCRIPTION	RECOMMENDED ACTION	CORRECTIVE ACTION TAKEN	TARGET DATE	DATE COMPLETED	RESPONSIBLE PARTY
3	22	3-22-OPN-1	01S	N/A	SEDIMENT FM BOILER	BFW FILTER SUMP	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	1FD1	FLOOR WASHINGS	OFFICE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	1FD2	FLOOR WASHINGS	LAB	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD01	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD02	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD03	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD04	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD05	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD06	PUMP SEAL DRAIN	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD07	PUMP SEAL DRAIN	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD08	PUMP SEAL DRAIN	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD09	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD10	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD11	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD12	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD13	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD14	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD15	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD16	PUMP SEAL DRAIN	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD17	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD18	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD19	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD20	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD21	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD22	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD23	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD24	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD25	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD26	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD27	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD28	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD29	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD30	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD31	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD32	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD33	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD34	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD35	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD36	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD37	STEAM CONDENSATE	BOILER HOUSE	REPIPE				BLDG MGR
3	22	3-22-OPN-3	04A151	BFD38	FLOOR WASHINGS	BOILER HOUSE	REPIPE				BLDG MGR

CLEAN WATER ACT (CWA)
SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

Brian McKeown, Environmental Engineer
NEIC

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MEDIA REPORT

INTRODUCTION

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) located in Los Alamos, New Mexico. This report discusses Spill Prevention, Control, and Countermeasures (SPCC) issues and compliance with the applicable regulatory requirements at LANL.

REGULATORY SUMMARY

LANL has greater than 1,320 gallons of aboveground and 42,000 gallons of underground oil storage capacity and, because of their location, could reasonably be expected to discharge oil into waters of the United States. Therefore, this facility is required to develop and certify an SPCC Plan.

LANL developed an SPCC Plan in 1986. This Plan was revised in March 1987, March 1990, and September 1993. In accordance with 40 CFR § 112.3(d), the September 1993 Plan was certified by a registered professional engineer [Appendix A]. In accordance with 40 CFR § 112.5(a), implementation of the September 1993 SPCC Plan is not required until March 1994, 6 months after completion of the revisions.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a discussion of facility operations, including oil storage and handling, a plant tour was conducted. Due to time constraints, the SPCC investigation was limited to conducting an overview of their program and inspecting the

large fuel storage areas. Photographs referenced in this section are contained in Appendix B.

The DOE Tiger Team conducted an environmental audit of the LANL facility in November 1991. The Tiger Team identified the following deficiencies in their SPCC Plan:

- The spill history section did not include a discussion of corrective actions taken and plans for preventing recurrence.
- The Plan did not discuss rainwater discharges from diked or bermed areas.
- The Plan did not address fail-safe engineering (high-level alarms, pump cutoff devices, etc.).
- The Plan did not address specifications for underground transfer pipelines, or procedures for transferring, pumping and tank truck loading and unloading operations.
- The Plan did not address the security of bulk storage areas.

In addition, the audit found that there was inadequate training, Spill Coordinators were not aware of their responsibilities, and inspections required under the Plan were not always conducted or documented.

A consultant was hired to conduct a complete review of the SPCC Plan. This triennial review was completed in March 1993, and numerous recommendations were made for improving the SPCC Plan. In accordance with 40 CFR § 112.5(b), the Plan must be amended within 6 months after completion of the recommendations. A new SPCC Plan was certified on September 30, 1993.

The 1993 SPCC Plan is a comprehensive document that, in addition to oil pollution prevention, addresses Best Management Practices [40 CFR Part 125], chemical and hazardous waste storage and handling, and spill reporting [40 CFR 117 and 302]. Major revisions were made in order to address the Tiger Team findings. Due to the diverse and changing operations at LANL, the Plan is designed as a master plan (including facility-wide policies and guidance, inspection checklists, spill reporting procedures, etc.), and requires individual operating groups to develop site-specific plans (source inventory, maps, inspection schedules, spill containment, etc.). The Plan was developed this way, so the master plan would not require frequent updates, but would allow user groups to revise their individual plans as frequently as necessary to keep them current. The master plan identifies major SPCC locations [Appendix C], and would require the individual plans to address all oil and chemical storage areas.

The site-specific plans have not yet been developed by the user groups; therefore, the current SPCC Plan is not complete and does not satisfy the requirements of 40 CFR § 112.7. Completion of Individual User Group Plans in accordance with the Master Plan guidelines, would meet the requirements of 40 CFR § 112.7. Because site-specific plans were not completed and the September 1993 Plan is not required to be implemented until 6 months after adoption, the NEIC investigation was limited to a general overview of the SPCC program and inspection of the major fuel (not dielectric) oil storage tanks. A comprehensive SPCC inspection should be conducted after the March 1994 implementation deadline and the site-specific plans have been completed.

The largest oil storage tanks are located adjacent to the TA-3-22 steam plant. There are two 150,000 gallon tanks which store No. 2 fuel oil. These tanks were located within an earthen berm, and no drainage valves were observed. There is one No. 2 fuel oil tank located at the TA-16 steam plant.

Plant personnel indicated that this tank (no. 445) holds 150,000 gallons; however, it does not appear on the major SPCC list. This tank was located in an earthen berm and no drainage valves were observed. Accumulated rainwater infiltrates into the ground. The JCI refueling station contains five tanks ranging in size from 10,000 to 25,000 gallons, and are partially underground [photograph 1]. Spills would be captured by an earthen berm downgradient of the tanks, which has a drainage valve. During the NEIC inspection, the drainage valve was closed. Stormwater that collects along the earthen berm floods an area where the refueling station is located [photograph 2]. LANL personnel stated that this water is visually inspected for sheens before it is discharged to Sandia Canyon. The location of the refueling station is poorly designed; ponded stormwater floods the refueling station and minor spills will contaminate stormwater. The refueling station should be relocated or more controls instituted (rerouting stormwater, or additional inspection documentation and routine sampling of stormwater).

During the NEIC inspection, seven drums labeled as containing "oily water" were being stored next to Sandia Canyon (adjacent to the TA-3 steam plant) without secondary containment [photograph 3]. Facility personnel stated that this material was removed from an oil water separator, which is located just prior to Outfall 04A-151 (now sealed). Section 8 of the 1990 SPCC Plan requires that all drums be stored within secondary containment structures. Therefore, LANL was not fully implementing its 1990 SPCC Plan.

During the past 3 years, there have been seven reported oil spill events (a 200-gallon spill of diesel fuel at the TA-3 power plant and six oil sheen events from outfall discharges). The spill occurred during a switchover from natural gas to diesel at the power plant, when a corroded transfer line failed. The fuel line was replaced and cathodically protected. The oil sheen events resulted from unknown sources discharging oil into storm drains, and oil being

discharged through floor drains. Corrective actions (such as sealing floor drains) are being recommended as part of the Wastestream Characterization Study, as discussed in the CWA-NPDES report.

Currently, LANL has no tank integrity inspection program. The SPCC plan requires that bulk storage tanks be visually inspected on a routine basis and nondestructive metal thickness testing should be conducted periodically. The new SPCC Plan includes a tank integrity inspection program and inspection checklists have been developed; however, the frequency of these inspections is not specified. These inspections were required in the last SPCC Plan, but they were either not completed or are undocumented. No nondestructive metal thickness testing was conducted. Therefore, LANL was not fully implementing their 1990 SPCC Plan.

The success of the SPCC program at LANL is dependent on the individual user groups, who must develop site-specific plans and are responsible for SPCC implementation. Based on observations during the inspection, there is inconsistent facility-wide implementation of LANL policies. It is LANL policy that there shall be no discharge of stormwater from less-than-90-day secondary containment structures. However, at TA-22-91, facility personnel stated that rainwater accumulated in the less-than-90-day secondary containment structure outside the printed circuit board facility [photograph 4] is pumped directly to the environment. In order to ensure consistent implementation of SPCC policies, LANL should periodically conduct internal inspections and audits of the user groups.

The Oil Pollution Act of 1990 required facilities that could reasonably be expected to cause substantial harm to the environment by discharging oil to waters of the United States to develop Facility Response Plans by February 18, 1993. LANL personnel stated that they concluded they were not

subject to these requirements, because they had below 1 million gallons of total oil storage capacity. However, EPA has not yet promulgated final regulations which specifically identify the facilities required to develop these plans.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

Based on inspection observations, discussions with LANL personnel, and a review of pertinent documentation, the following areas of noncompliance with the SPCC requirements were identified:

40 CFR § 112.7	LANL's September 27, 1993 SPCC Plan is not complete; individual user groups have not completed the site-specific spill plans.
40 CFR § 112.3	LANL has not fully implemented its SPCC plan. Section 8 of the Plan requires secondary containment for storage of drums; however, during the NEIC inspection seven drums of oily water were stored adjacent to Sandia Canyon without secondary containment.
40 CFR § 112.3	LANL has not fully implemented its SPCC plan. There is no tank integrity inspection program in place, as required by the plan.

AREAS OF CONCERN

Based on inspection observations, discussions with LANL personnel, and review of documentation, the following areas of concern were identified:

- The location of the JCI refueling station is poorly designed; ponded stormwater floods the refueling station and minor spills will contaminate stormwater. The refueling station should be relocated or more controls instituted (additional inspection documentation and occasional sampling of stormwater).

- The success of the SPCC program at LANL is dependent on the individual user groups, who must develop site-specific plans and are responsible for SPCC implementation. Based on observations during the inspection, there is inconsistent facility-wide implementation of LANL policies. It is LANL policy that there shall be no discharge of stormwater from less-than-90-day secondary containment structures. However, at TA-22-91, facility personnel stated that rainwater accumulated in the less-than-90-day secondary containment structure outside the printed circuit board facility is pumped directly to the environment. In order to ensure consistent implementation of SPCC policies, LANL should periodically conduct internal inspections and audits of the user groups.

- The Oil Pollution Act of 1990 required facilities that could reasonably be expected to cause substantial harm to the environment by discharging oil to waters of the United States to develop Facility Response Plans by February 18, 1993. LANL personnel stated that they concluded they were not subject to these requirements, because they had below 1 million gallons of total oil storage capacity. However, EPA has not yet promulgated final regulations which specify the facilities required to develop these plans.

LIST OF APPENDICES

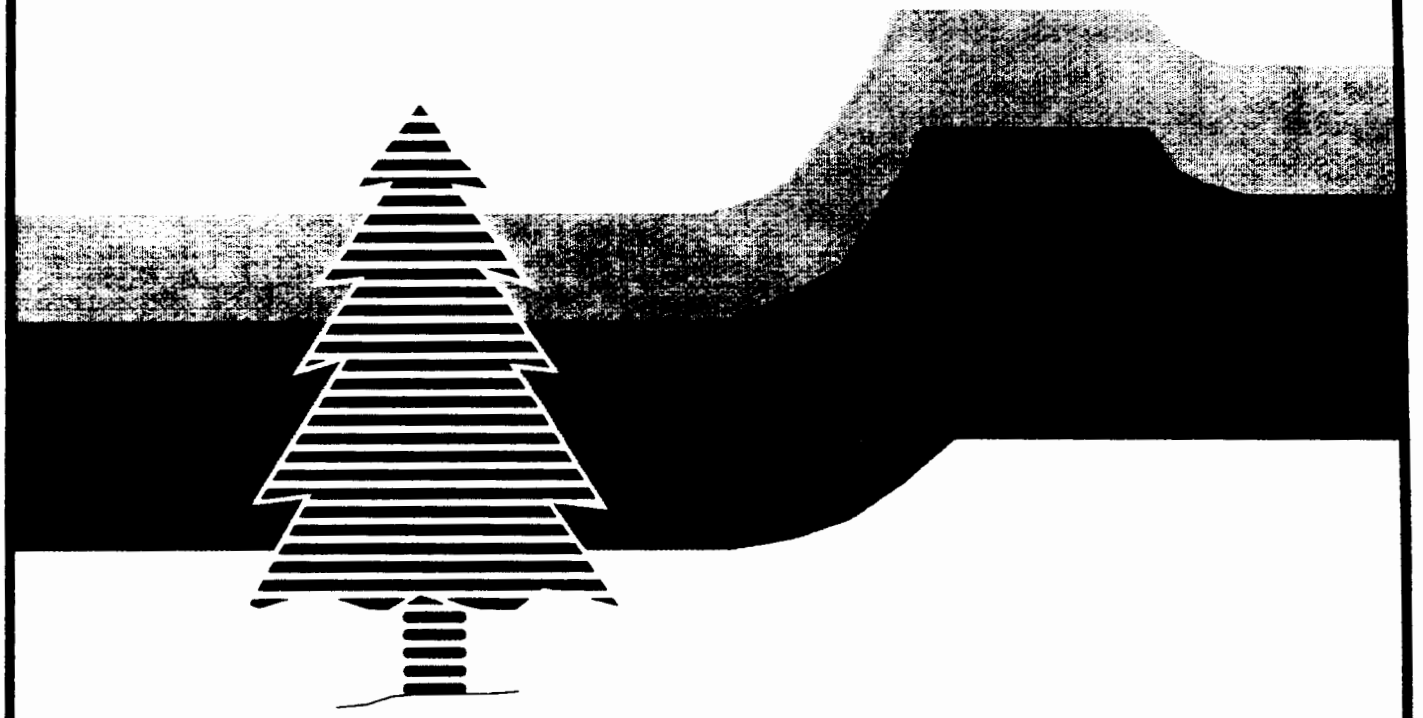
A SPCC Plan Title Sheet and Certification
B Photographs
C List of Major SPCC Locations

APPENDIX A

SPCC PLAN TITLE SHEET AND CERTIFICATION

SPILL PREVENTION CONTROL
AND
COUNTERMEASURE PLAN

REVISION 3



Quality, Environment,
Safety and Health Assurance Division

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Los Alamos National Laboratory is operated by the University of California for the United States Department of Energy

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

FOR

LOS ALAMOS NATIONAL LABORATORY

LOS ALAMOS, NEW MEXICO

Owner:	U.S. Department of Energy
Operator:	University of California
Location:	Los Alamos, New Mexico

Prepared For:	Los Alamos National Laboratory Quality, Environment, Safety and Health Assurance Division Environmental Protection Group Los Alamos, New Mexico 87545

By: Revision 0:	Delta H Engineering, Ltd. Santa Fe, New Mexico 87504 September, 1986
Revisions: 1, 2 & 3	Santa Fe Engineering, Ltd. 1429 Second Street Santa Fe, New Mexico 87501

Revision 3 Prepared Under: Subcontract 9-XG8-2874P-1
September, 1993

Notice: Any use of product trade names in this document is not to be construed as an endorsement of the product either by Santa Fe Engineering, Ltd. or Los Alamos National Laboratory.

APPROVAL AND CERTIFICATION

This plan was developed pursuant to provisions of Federal Regulations for Oil Pollution Prevention - 40 CFR 112, and Criteria and Standards for Best Management Practices - 40 CFR 125 Subpart K. As a comprehensive plan designed to meet regulatory requirements for spill prevention, spill response, spill cleanup, and spill reporting for oil and hazardous chemicals, the plan recognized the reporting requirements of 40 CFR 117, 40 CFR 302, and the hazardous chemical spill cleanup and handling requirements of the Resource Conservation and Recovery Act regulations - 40 CFR 260 through 271.

This plan has been reviewed and certified by a Registered Professional Engineer (PE). By means of this certification, the engineer, having examined the facility and being familiar with the requirements of the regulations, signifies that this plan has been prepared in accordance with good engineering practice.

Certified by: Lauren B. Ames 9/30/93

Registered Professional Engineer

LAUREN B. AMES
NEW MEXICO
10254
REGISTERED PROFESSIONAL ENGINEER

Future amendment to this plan will be individually certified by a Registered Professional Engineer

APPENDIX B

PHOTOGRAPHS

Photograph 1
JCI Refueling Tank Farm

Photograph 2
Ponded Stormwater at JCI Refueling Station

Photograph 3
Seven Drums Labelled "Oily Water" Adjacent to Sandia Canyon

Photograph 4
Less Than 90 Day Storage Area Outside Printed Circuit Board Facility (TA-22-91)

APPENDIX C

LIST OF MAJOR SPCC LOCATIONS

- Identification of pollution sources which will potentially affect the quality of any storm water discharge, and
- Implementation of practices to minimize and control pollutants in storm water discharges to ensure compliance with the permit.

The Laboratory, under the direction of Environmental Protection Group EM-8, has developed site-specific SWPPPs for all Treatment, Storage and Disposal Facilities (TSDF's) and created an overall plan to cover all other portions of the Laboratory. The SWPPPs contained a detailed description of the following:

- Development of Pollution Prevention Teams,
- Site Evaluation showing:
  - ✓ Site Drainage Maps,
  - ✓ Inventory of Exposed Materials,
  - ✓ Non-Storm Water Discharges,
  - ✓ Spills and Leaks,
- Existing Monitoring Data,
- Development and Implementation of Best Management Practices,
- Evaluation and Review Process, and
- Signature Requirements.

These plans are intended to be used hand-in-hand with the SPCC plan to facilitate a comprehensive pollution prevention program. Many aspects of the SWPPP overlap with portions of the SPCC plan. Many of the BMPs that are described in the SPCC plan are appropriate for SWPPP also. This will allow for consistency in employee training, record keeping, inspections and plan implementation.

4.4. MAJOR AND MINOR SPCC LOCATIONS

Although a wide diversity of chemicals is used, most are handled and stored in small quantities. There are, however, a limited number of oil and chemical storage tanks and accumulations of significant volumes of drummed chemicals. These locations are significant in that failure of containment would release a large enough volume not to be easily controlled onsite without secondary containment. Because of relatively large volumes stored, spill control must include some sort of secondary containment, such as dikes, curbs, and trenches with catchment basins. TABLE 4-1 lists the major SPCC locations identified at the Laboratory. Several hundred minor SPCC locations have small volumes stored either in drums, as laboratory chemical inventory, or as inventory in equipment. These minor locations are easily controlled using standard Baseline BMP practices consistent with good housekeeping and safety requirements.

TABLE 4-1 Listing of Major SPCC Locations

Tech Area	Structure	Location	Description	Capacity, gallons	Contents	Secondary Containment	Drainage From Potential Spill
3	22	Outside, Above Ground	Sulfuric Acid Storage	4,000	Sulfuric Acid	Concrete Dike	Sandia Canyon
3	22	Outside, Above Ground, TA-3-26,27	Diesel Storage for Steam Plant	2 x 150,000	#2 Fuel Oil	Earthen Dikes	Sandia Canyon
3	31	Chemical Warehouse	Small Containers and 55 gallon Drums	1-5, 55	Various Chemicals	Curbing	Two Mile Canyon
3	66	Outside Sigma Building, Above Ground	Container Storage Area	330 DOT Containers	Plating Waste	400 gallon Sump	Mortandad Canyon
3	73	Outside, North of Asphalt Batch Plant, Above Ground,	Reclaimant Storage	7400 gallon	Reclaimant	Asphalt Curb Draining to Holding Area	Sandia Canyon
3	271	Outside, Covered, Above Ground	Waste Oil Drum and Battery Storage	Drums	Waste Oils	Asphalt Pad with Berms, 1400 and 2000 gallon	Sandia Canyon

Listing of Major SPCC Locations (cont)

Tech Area	Structure	Location	Description	Capacity, gallons	Contents	Secondary Containment	Drainage From Potential Spill
3	316	Outside, Above Ground	Marx Generator	9,700	Dielectric Oil	Berm around Building	Two Mile Canyon
3	550	Inside, Above Ground	TA-3-316 Marx Generator Tankage	2 x 24,000	Dielectric Oil	24,000 gallon Sump with Dike	Two Mile Canyon
15	203	Inside, Above Ground	Marx Generator	8,700	Dielectric Oil	Steel Form Berms	Canon de Valle
15	261	Outside, Above Ground	TA-15-203 Marx Generator Tankage	12,000	Dielectric Oil	Asphalt Diking	Canon de Valle
15	321	Outside, North of Control Building TA-15-280, Above Ground	Marx Generator and Blumlein Tankage	2 x 20,000	Dielectric Oil	180,000 gal Earthen Depression and Diking	Pajarito Canyon
15	321	Outside, Above Ground	Marx Generator and Blumlein	23,000 Total	Dielectric Oil	Asphalt Diking to Direct Spill to Secondary Containment	Pajarito Canyon
21	57	Outside, Above Ground	Steam Plant, Fuel Tank	50,000 gallons	Fuel Oil	Lined Containment Pit	Los Alamos Canyon
21	357	Outside, Above Ground	JCI Steam Plant	5,000	#2 Fuel Oil	Diking	Los Alamos Canyon
35	29	Outside and Inside, Above Ground	Marx Oil Tankage	8,800	Dielectric Oil	Modutank	Mortandad Canyon
35	85	Inside, Above Ground	High-Voltage Equipment, Marx Generators	6,000	Dielectric Oil	None	Mortandad Canyon
35	85	Outside, East, Above Ground	Marx Generators Tankage	5,000; 30,000	Dielectric Oil	Curbing and Modutank	Mortandad Canyon
35	86	Outside, Above Ground	Dielectric Oil Tank		Dielectric Oil	Modutank	Two Mile Canyon
35	125	Inside, Above Ground	Marx Generator	800; 9,000; 10,000	Dielectric Oil	8,000 gal Troughs	Two Mile Canyon
35	125	Outside, South, Below Ground	Dielectric Oil Tank	1,000	Dielectric Oil	4,200 gal Diked Area, 1,000 gal Reclaim Trailer, 8,000 gal UST	Two Mile Canyon
36	12	Outside; North of Marx Generator	Marx Oil Tankage	2 x 22,000 gallon	Dielectric Oil	Lined Dirt Pit	Potrillo Canyon
36	86	Outside; South of Marx Generator	Marx Oil Tankage	2 x 500 gallon	Dielectric Oil	Bermed Containment Pit	Fence Canyon
50	5	Outside, Above Ground	Waste Water Treatment Chemical Tankage	5,000	Nitric Acid	Concrete Diking	Two Mile Canyon
53	Lagoons	Outside	Scintillation Oil Tanks	26,000	Scintillation Oil	Lined, Modular Containment	Los Alamos Canyon
53	Lagoons	Outside	Scintillation Oil Tanks	2 x 20,000, 12,000	Scintillation Oil	Lined, Modular Containment of +20,000 gal	Los Alamos Canyon
53	14	Outside, Above Ground	Marx Generator and Blumlein Tankage	7,500	Dielectric Oil	Concrete Dike	Sandia Canyon
54	Area L	Outside, Above Ground	Chemical Waste Treatment Process Tanks	4 x 1665	Misc. Chemical Waste	Concrete Dike and Pad.	Canada del Buey
54	32	Outside, Above Ground	Chemical Waste Drum Storage		Misc. Chemical Waste	Drainage Towards Sumps	Canada del Buey

Listing of Major SPCC Locations (cont)							
Tech Area	Structure	Location	Description	Capacity, gallons	Contents	Secondary Containment	Drainage From Potential Spill
55	127	Outside, South of TA-55-4, Above Ground	Nitric Acid Storage	6,100	Nitric Acid	Curbed Area with 7,500 gal	Mortandad Canyon
57	26	Inside, Above Ground	Misc. Oils and Fuels in Drums and Tanks	2 x 500 and Drums	Oils, Fuels, Solvents and Dirty Oil	+500 gal Concrete Curbs	Unknown
60	1	Outside,Above Ground, North of Motor Pool	JCI Fuel Yard Storage	5 x(10,000 - 25,000)	Gasoline, Diesel and Kerosene	Earthen Dike with Volume Greater than Tanks	Sandia Canyon

4.5. LABORATORY - MATERIALS OF CONCERN

Hazardous chemicals and oils used at the Laboratory are handled in various size containers ranging from reagent bottles to large tanks. Although the variety of chemicals is unlimited, most are handled in very small quantities and represent a minimal risk to the environment. Petroleum fuels and dielectric oil (electrical insulating oil) are handled in quantities requiring tank storage. Acids and bases are the only hazardous chemicals stored in tanks, nitric acid, sulfuric acid, and sodium hydroxide being prevalent. The handling of regulated substances throughout the Laboratory, including the SSS-operated facilities, is described by a few categories, those being bulk fuels, dielectric oil, bottled and drummed chemicals, hydraulic equipment, battery racks, transformers, bulk hazardous chemicals and underground tanks.

4.5.1. Bulk Fuels

Petroleum fuels stored in bulk include gasoline, kerosene, and diesel. These fuels are delivered by vendors to the SSS-operated Fuel Storage Facility at TA-60 or to the vehicle service stations at TA-3, TA-16 and TA-60. The fuel is transferred by SSS-operated trucks to the various users. The users include numerous underground diesel tanks and vaulted tanks that feed various emergency generators and motor-driven equipment throughout the Laboratory.

Most of the fuel handling is done by the SSS. Fuel oil storage facilities operated by the Laboratory are limited to underground tanks, diesel fuel tanks at TA-3-22 and small aboveground tanks used to hold fuel for emergency generators and motor-driven equipment.

4.5.2. Dielectric Oil (Non-PCB)

Dielectric oil is used in high voltage equipment, mostly associated with laser research at TA-35 and X-ray equipment at TA-3 and TA-15. Dielectric oil generally does not contain Polychlorinated Biphenyls (PCB). EM-8 is conducting a Laboratory-wide survey of all oil containing equipment to determine PCB content. This section deals with the indoor and outdoor non-PCB oil systems before discussing PCB related concerns.

4.5.2.1. OUTDOOR SYSTEMS

A typical outdoor dielectric oil system consists of an oil storage tank, a pump, and interconnecting piping to the high voltage equipment that is part of the experiment. The tank holds an inventory to make up for losses from spillage and is sized to accept the oil volume from the experimental equipment when it is emptied for maintenance or modifications.

For larger systems, such as those at TA-3, TA-15, TA-16, TA-35, TA-36 and TA-53, original fill and make-up oil are delivered by truck and off-loaded into the tank. The smaller systems receive oil in drums, which is transferred with drum pumps to the tank.

APPENDIX A

PHOTOGRAPHS

CLEAN WATER ACT (CWA)
WETLANDS

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

Craig Kubik, Environmental Scientist
NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of Los Alamos National Laboratory (LANL), Los Alamos, New Mexico. This report, one of a series that addresses investigation findings, discusses the Clean Water Act (CWA), Section 404, Wetlands issues and compliance at LANL.

REGULATORY SUMMARY

The Clean Water Act (CWA) and the Rivers and Harbors Act regulate activities affecting wetlands. Section 404 of the CWA provides authority to the U.S. Army Corps of Engineers (Corps) to regulate the placement of dredged or fill material into waters of the United States (which includes wetlands), and the Rivers and Harbors Act gives the Corps authority to regulate activities in navigable waters. Section 404 of the CWA prohibits the discharge of dredged or fill materials into wetlands (waters of the U.S.) without a permit (33 CFR Parts 320-330 and 40 CFR parts 230-233). The Corps is responsible for issuing permits for discharge of dredged or fill materials; issuance of permits is decentralized with the Albuquerque District office responsible for issuing permits in New Mexico.

LANL made two nationwide wetland permit notifications to the Corps, Albuquerque District in 1987 because two construction projects in Sandia Canyon impacted waters of the United States. One project was a 2.5-acre expansion of the existing 24-acre Los Alamos County sanitary landfill. The other was construction of a sewer extension from Technical Area (TA) 41 to TA-3. These projects required notification to the Corps of planned activities covered under nationwide permits (NWP). The landfill expansion was covered by NWP number 26, Headwaters and Isolated Waters Discharges, and the

sewer extension was conducted under NWP number 12, Utility Line Backfill and Bedding (33 CFR Part 330).

LANL notified the Corps that the two projects were covered under NWPs for discharge of dredged or fill material into certain waters of the United States. The Corps, Albuquerque District, received the notifications and determined that the wetlands affected were less than one acre. The Corps did not require wetland delineations or mitigation because of the size of the area affected.

BACKGROUND

LANL land is used for building sites, experimental areas, waste disposal locations, roads, and utility rights-of-way. Most of this development is confined to mesa tops and accounts for only a small part of the land use.

LANL has a semiarid, temperate mountain climate. Average annual precipitation is 19 inches per year (36% normally occurs during July and August from thundershowers). Winter precipitation falls primarily as snow, with annual accumulations of 59 inches.

Area surface water exists primarily as intermittent streams. Runoff and spring seepage along the eastern side of the Jemez Mountains supply flow into upper reaches of some of the LANL canyons. The amount of flow is not always sufficient to maintain surface flows across the site because of depletion by evaporation, transpiration, and infiltration. Effluent from sanitary sewage, industrial waste treatment plants, and cooling-tower blowdown are released into some canyons at rates sufficient to maintain surface flows for varying distances. Runoff reaches the Rio Grande several times a year in some drainages.

Numerous wetlands are located in canyon bottoms within LANL. Most of the wetlands are small, usually less than one acre. LANL wetlands are either riverine or palustrine systems established in or near intermittent streams. Water flows that maintain wetlands in many of LANL canyons are augmented by industrial water discharge. Most of the wetlands have existed long enough to develop hydric soils.

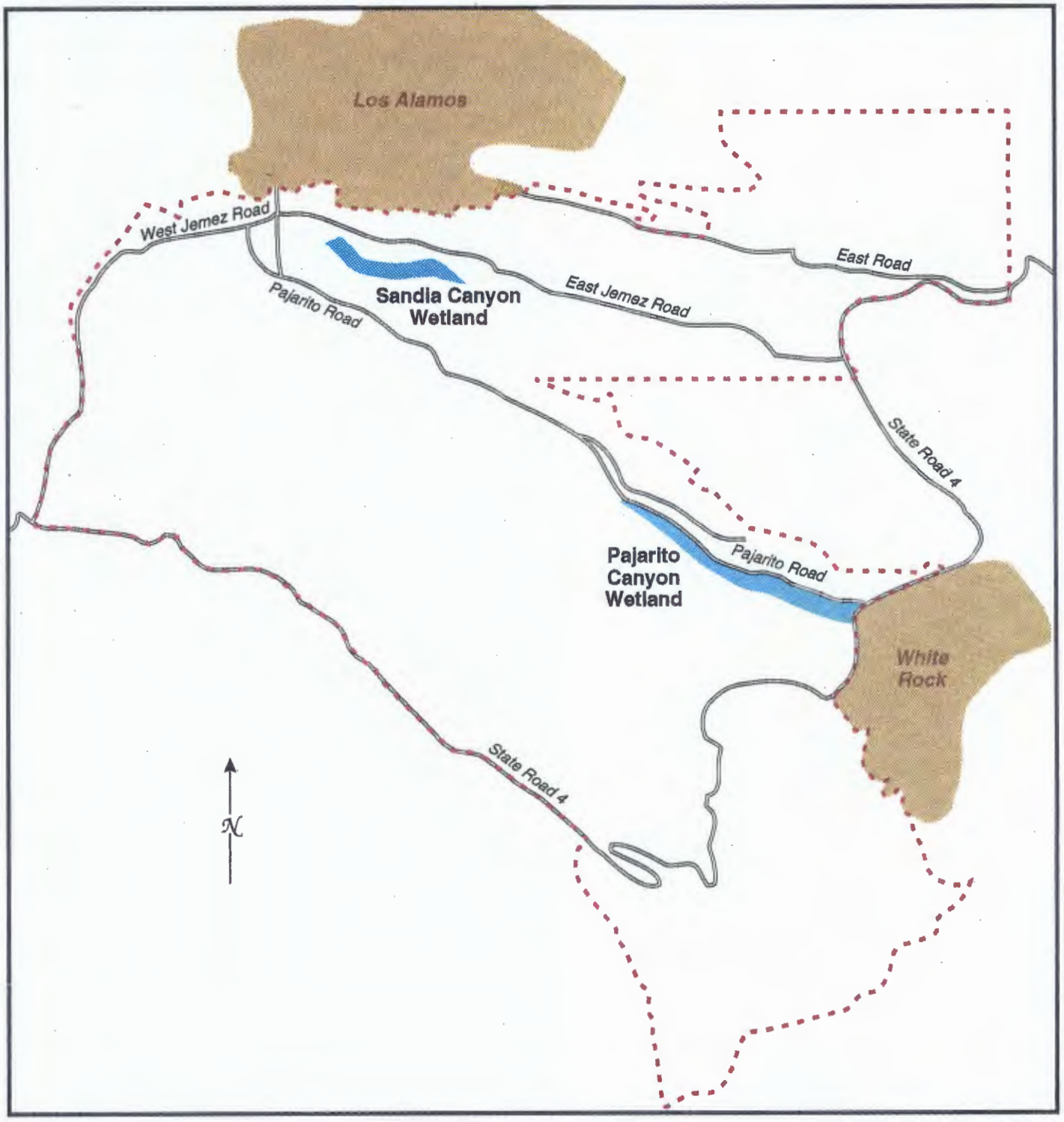
ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL environmental issues, the facility inspection ensued. An inspection of selected wetlands was conducted and records/documents associated with section 404 fill activities were reviewed. A summary of on-site activities and inspection observations is provided below.

Two wetlands within Los Alamos are larger than 10 acres. These two wetlands are located in the lower reaches of Pajarito Canyon and upper Sandia Canyon [Figure 1]. NEIC inspected these two wetlands as well as wetlands associated with TA-16 and TA-22. Photographs referenced in this section are contained in Appendix A.

An arroyo, upstream of TA-18, was inspected to determine if human activity impacted the arroyo. No impact of the arroyo was observed.

The wetland area of Pajarito Canyon starts below TA-18 and extends as riparian habitat to the town of White Rock, New Mexico. The palustrine wetland is dominated by broad-leaf cattail *(Typha latifolia)*, willow (*Salix sp),* sedges *(Carex sp)*, bulrushes *(Scurpis sp)*, and spikerush *(Eliochoris sp)*. No construction activity was taking place adjacent to the wetland within the canyon bottom, and no human activity impacting the wetland was observed.



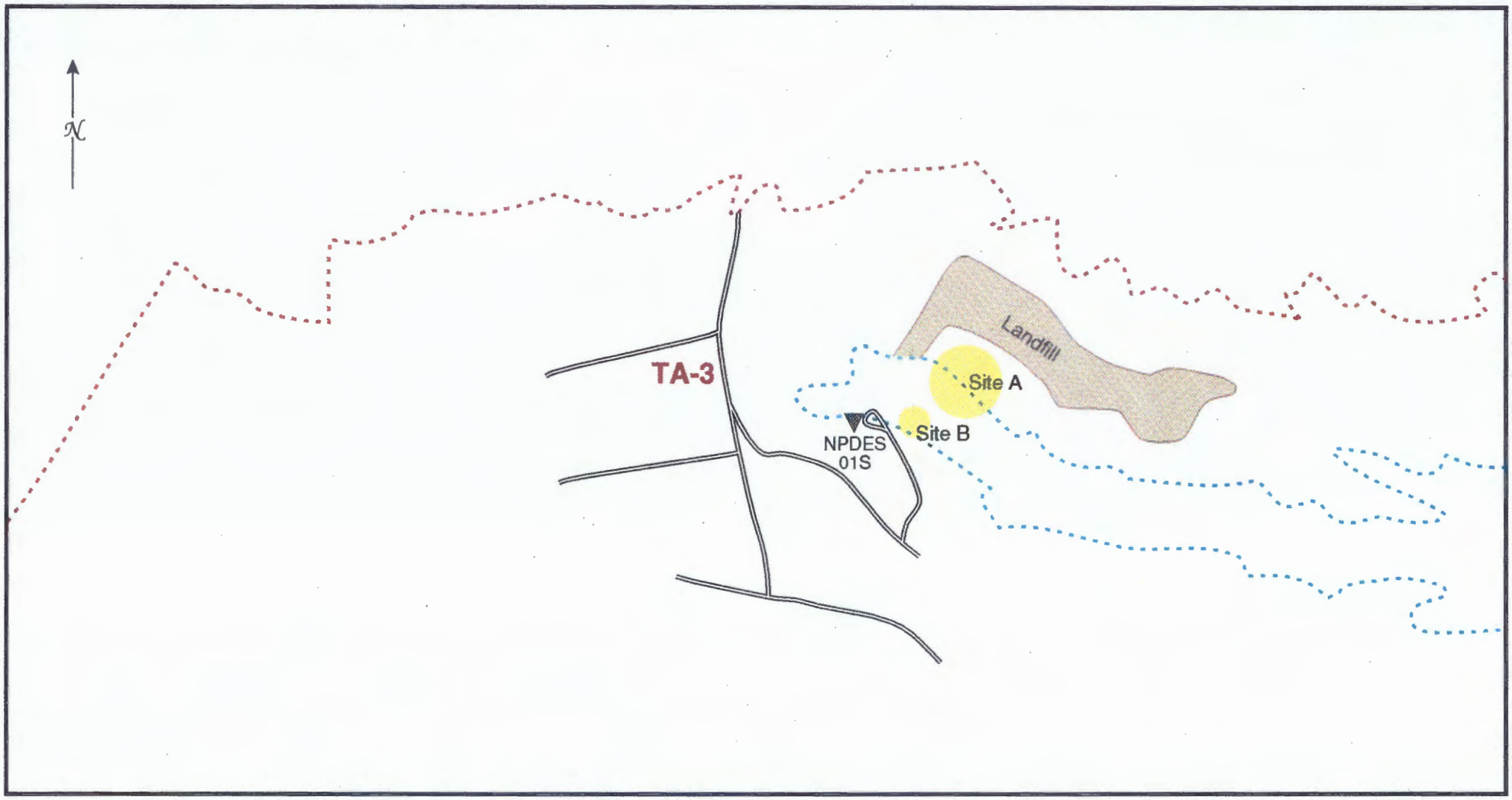
NOT TO SCALE

Figure 1
WETLANDS GREATER THAN 10 ACRES
Los Alamos National Laboratory
Los Alamos, New Mexico

The Sandia Canyon wetland is established at the head of the canyon, below the mesas housing TA-3. The wetland starts just below the culvert of the rubble landfill extension of the sanitary landfill, extending about seven tenths of a mile down the canyon until the stream cuts deep erosional plunge pools. The palustrine wetland is dominated by broad-leaf cattail *(Typha latifolia)*.

This wetland was impacted by two effluent discharges that were not permitted under NPDES, one in 1990 and one in 1992. On May 19 and 20, 1990, an estimated 1,700 gallons of sulfuric acid were released from the electric power plant through NPDES outfall 01A into Sandia Canyon. A New Mexico Health and Environment Department inspection of this release reported the stream was impacted for approximately 2.5 miles, with instream pH readings ranging from 3.05 to 3.26. Cattails along the full length of the marsh died within 10 days wherever they came in contact with the acid. On June 12, 1992, 2,000 gallons of hyperchlorinated water (>300 ppm chlorine) used in pipeline disinfection was discharged into the Sandia Canyon wetland. The vegetation in the head of this wetland is comprised almost exclusively of broad-leaf cattail; low species diversity (as compared with wetlands in Pajarito Canyon) is characteristic of disturbed habitats.

Sediment, eroded from the mesa top and northern canyon walls, was observed to have inundated portions of the cattail marsh [Photograph A]. Filled wetland areas were observed on the north side of the canyon floor from below the culvert for the landfill extension, to a location where the northern canyon walls became rock outcroppings. The largest of the filled wetland areas was about 5,200 square feet [Figure 2, Site A] [Photograph B]. The sediment came from unvegetated soils exposed by excavation work in the sanitary landfill. The sediment particle size ranged from fine sands to large cobbles [Photograph C]. Cattail stalks and roots were buried under 4 to 6 inches of the sediment [Photograph D].



NOT TO SCALE

Figure 2
SANDIA CANYON WETLANDS DISTURBANCE SITES
Los Alamos National Laboratory
Los Alamos, New Mexico

The sedimented wetland areas were not normal circumstances. Wetland delineation criteria were examined in adjacent cattail marsh upstream from the largest impacted area. All three wetland criteria - vegetation, hydrology and hydric soils - were present in the unimpacted cattail marsh [Appendix B].

The wetland area disturbed in 1987 under the NWP for the sewer (utility) line was directly south, across the canyon floor from the largest impacted wetland area [Figure 2, Site B] [Photograph E]. This wetland appeared impacted from sedimentation [Photograph F]. The slope has not been stabilized, allowing eroded soils to deposit in the wetland directly below [Photograph G]. Several mounds of excavated soil were located at the edge of the existing wetland [Photograph H]. The final grade at the base of the canyon was not reconstructed to original contours. NWP Number 12, Utility Line Backfill and Bedding, requires any exposed slopes to be stabilized immediately upon completion of the utility line and that no change in preconstruction contours occur.

A palustrine wetland within TA-16, below the NPDES outfall 05A-054 for Building 340, was inspected. The wetland was a thin band, several yards wide, of riparian vegetation for an intermittent stream that flows into Cañon de Valle. The wetland is below the mesa and there were no observed impacts from human activity.

A palustrine wetland located within TA-22, below NPDES outfall 128-128, was inspected. This wetland was larger than 1 acre and the water discharged from this wetland flows into the head of Parjarito Canyon. The water flow from the wetland appeared greater than the amount of water flowing into the wetland from NPDES outfall 128-128; groundwater probably discharges into this wetland.

The wetland in TA-22 had been partially filled with large pieces of concrete and asphalt [Photograph I]. According to facility personnel, the construction debris came from the building of the new TA-22 buildings, circa 1984/1985. At that time, NWP Number 26, Headwaters and Isolated Waters Discharges, did not require a permit application or notification for filling wetlands with such debris. Though the filling of this wetland was not a violation of the Clean Water Act, this action did not comply with Executive Order 11990, Protection of Wetlands, dated May 24, 1977. Specifically, the Department of Energy did not comply with Section 1.(a)(2) providing federally undertaken, financed, or assisted construction and improvements in a manner to minimize the destruction, loss, or degradation of wetlands.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

Based on inspection observations, discussions with LANL personnel, and review of documentation, the following areas of noncompliance of wetland regulations were identified:

33 CFR § 323.3(a)	The wetland in Sandia Canyon below the sanitary landfill was filled without a permit.
33 CFR § 330.4(a)	Conditions of Nationwide Permit No. 12 were not met for both stabilizing exposed slopes and finishing final grade to pre-construction contours.

AREAS OF CONCERN

Based on inspection observations, discussions with LANL personnel, and a review of documentation, the following areas of concern were identified:

- LANL filled a wetland area in TA-22 with old building debris during construction of new facilities in 1984/1985. Although this activity was exempted by a Nationwide Permit at that time, this degradation of a wetland did not comply with Executive Order 11990.

- The wetland at the head of Sandia Canyon has been, and continues to be, adversely impacted by chemical releases and other LANL activities associated with TA-3. Efforts should be made to prevent further disturbance of this wetland.

APPENDICES

A Photographs
B Routine Wetland Determination

Photograph A

Inundated wetland from sedimentation of north canyon wall in Sandia Canyon

Photograph B

Filled wetland below north canyon wall in Sandia Canyon

Photograph C

Deposited sediments that filled wetland in Sandia Canyon

Photograph D

Depth of sedimentation in filled wetland, Sandia Canyon

Photograph E

Looking south to north, across Sandia Canyon

Photograph F

Filled wetland below sewer line construction in Sandia Canyon

Photograph G

Unstabilized slope leading to filled wetland in Sandia Canyon

Photograph H

Mounds of soil that remained in wetland after final grading of sewer line

Photograph I

Construction debris in wetland in TA-22, below NPDES outfall 128-128

APPENDIX B

ROUTINE WETLAND DETERMINATION

DATA FORM
(1987 COE Manual)

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Los Alamos National Laboratory Applicant/Owner: Department of Energy Investigator: Craig Kulik	Date: 5 AUG 93 County: Los Alamos State: New Mexico
Do Normal Circumstances exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Typha latifolia L.	Herb.	OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). >90%

Remarks:

HYDROLOGY

X Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- X Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: LANL Report on Sandia Canyon

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____
Field Observations
Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Surface	A	7.5YR 4/2			

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No (Circle)	
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	
Is this Sampling Point Within a Wetland?	Yes No (Circle)	

Remarks: wetland determination adjacent to Filled Area - Just upstream of covered wetland area. Site A - Sandia Canyon, Los Alamos Co., NM.

Approved by HQUSACE 2/92

SAFE DRINKING WATER ACT (SDWA)
PUBLIC DRINKING WATER SUPPLY REGULATIONS

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

John Ellison, Environmental Investigations Specialist
NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. This report, one of a series that addresses investigation findings, discusses Safe Drinking Water Act (SDWA) public water supply issues and compliance at LANL.

REGULATORY SUMMARY

LANL has a public water system, presently supplied by 12 groundwater wells and no surface water sources, serving about 26,000 daytime users in the Los Alamos area. The area served includes the towns of Los Alamos and White Rock, Bandelier National Monument, and LANL. The system is regulated by the SDWA, which establishes primary drinking water regulations applicable to public water supply systems. EPA sets standards, known as Maximum Contaminant Levels (MCLs), for the quality of water that can be served by public water systems. The SDWA also establishes secondary drinking water regulations which apply to contaminants that may adversely affect the aesthetics (odor or appearance) of water delivered to the users of a public water system. The state of New Mexico has been given primacy to implement and enforce the SDWA by EPA. The state adopted Drinking Water Regulations (New Mexico Water Supply Regulations) which were last updated April 16, 1991.

Public water supply systems must sample their water periodically and report findings to the state. They must notify consumers and regulatory agencies if the water supply does not meet the standards or they have failed to monitor or report. EPA is on a statutory schedule for promulgating a large number of new MCLs. In 1989, a surface water treatment rule (SWTR) was adopted which requires filtration and disinfection of all surface water used as

a public drinking water source. Additionally, in 1991, EPA passed lead and copper regulations which require monitoring and set action levels, which, if exceeded, require corrective action to be implemented.

LANL personnel indicated the water system has been in compliance with drinking water standards. The state conducted a sanitary survey at LANL in 1988 [Appendix A]. Findings included the need to check for cross-connections on hose bibs at booster station number 1, and on the Los Alamos well field; and the recommendation that compliance samples of heavy metals, nitrates, fluoride, and radiochemicals be conducted to obtain water which is representative of each well field. The Department of Energy Tiger Team inspection in 1991 found that LANL did not have a formal backflow prevention and cross-connection control program or a formal written drinking water program with implementing procedures. LANL addressed both state and Tiger Team concerns.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL environmental issues, the facility inspection ensued. A detailed inspection of drinking water activities was conducted and records/documents associated with drinking water activities were reviewed. A summary of on-site activities, inspection observations, and records review is provided below.

Water Treatment Facilities

LANL does not have a water treatment plant; it provides drinking water from wells to about 26,000 daytime users in the Los Alamos area. The system's 12 groundwater wells are used to fill 42 storage tanks, and the system

has 4 points where water enters the distribution system before the first customer is served. The water is chlorinated at each entry point. The Los Alamos wellfield was abandoned in late 1991 or early 1992 during highway construction for widening the main road into Los Alamos. The wells were old, production had decreased, and only a small population was directly served by these wells. The wells were given to a local Indian group to provide water to the small population directly served by these wells. The two remaining well fields are the Guaje and the Pajarito. The Otowi is a new wellfield under development with one groundwater well currently producing and another under development. All wells tap the main aquifer, but water quality varies and additional wells in the Guaje wellfield may be abandoned, if the MCL for arsenic is lowered.

Maximum Contaminant Levels

The 1992 SDWA MCL analyses for metals/inorganic chemicals, pesticides/organic chemicals, and radioactivity were conducted by the state [Appendix B]. Microbiological test results conducted by LANL are also included. No MCLs were exceeded. Concerns included the presence of noncoliform bacteria each month samples were collected and the presence of strontium-90 throughout the water distribution system. The presence of noncoliform bacteria in the distribution system indicates a flushing program should be initiated. Although there is no strontium-90 MCL for groundwater, strontium-90 ranged from 2.5 to 5.2 picocuries per liter (pCi/L). LANL personnel stated that their monitoring results indicate that the strontium-90 levels are not caused by LANL activity.

During the NEIC on-site inspection, LANL exceeded the total coliform MCL and was required to make a public notification which is discussed later in this report. Positive fecal coliform samples were confirmed at TA-39. The

microbiological and residual chlorine sampling results in June indicated there was a problem at TA-33 with nondetectable chlorine residual (< 0.1 mg/L). A flushing program may have prevented the coliform exceedences in August.

Monitoring and Analytical Requirements

The coliform rule requires a written sampling site plan be developed and implemented. The Los Alamos Total Coliform Sample Siting Plan, revised in March 1993 [Appendix C], includes fixed and rotating sampling sites. The rotating sites are sampled based on ease of obtaining the samples while collecting the fixed samples. Chlorine residual is analyzed and reported with the microbiological samples [Appendix D]. Based on population served, the New Mexico regulations require a minimum of 30 microbiological samples per month for the Los Alamos system. LANL has chosen to collect more than 40 microbiological samples per month. Therefore, they can have two positive total coliform samples per month and still be in compliance with the MCL for total coliforms. The microbiological and residual chlorine samples are collected and analyzed each month by Johnson Controls, Inc. (JCI), a LANL subcontractor. JCI also collects other compliance samples which are analyzed by the Scientific Laboratory Division of the New Mexico Department of Health.

Reporting, Public Notification, and Recordkeeping

Copies of records with information reported to the state were reviewed at the Environmental Protection Group Office at LANL. The information was reported to the state in a timely manner based on letter/memorandum dates. Public notification was required for positive fecal coliform samples at TA-39 during the on-site inspection. An internal memo was prepared on August 11, 1993 outlining events leading up to the public notice [Appendix E]. LANL personnel indicated they have a chronic problem with stagnation in various

parts of the facility. Water storage tanks are often sized to provide adequate fire protection and not based on drinking water use requirements. A formal flushing program is being considered.

The state has required water supply systems to fill out a sanitary survey form with detailed system information [Appendix F]. LANL provided this information in July 1993, but the state has not yet verified this information.

Special Regulations, Including Monitoring Regulations and Prohibition on Lead Use

The state has addressed these special regulations as regular monitoring requirements and no areas of noncompliance were noted for LANL with these regulations. LANL personnel indicated that the facility has been following the prohibition on the use of lead pipe, solder, or flux.

Filtration and Disinfection

The surface water treatment rule does not apply to LANL because all drinking water comes from groundwater. Although not required, LANL chlorinates at the four entry points to the distribution system prior to the first customer and at selected other locations, as necessary, to maintain chlorine residual. Previous surface water supplies included Guaje Reservoir, Los Alamos Reservoir, and Water Canyon Gallery. These water supplies are now used for nonpotable water uses such as grass watering and boiler makeup water.

Control of Lead and Copper

Tap water was monitored for copper and lead in samples collected by LANL from October 1992 through February 1993 [Appendix G]. Sampling and analyses have been completed and the results will be transmitted to the state. None of the results exceeded the action level for copper. The action level for lead was exceeded at 3 out of 78 sampling locations. All three locations exceeding the action level were resampled and two out of the three locations were beneath the action level on resample. The one positive resample was for an unused bathroom. These results met the requirements (less than 10% positive samples and a 90th percentile lead limit of less than 15 mg/L) of the lead and copper rule. In addition to SDWA requirements, LANL is conducting an internal lead survey with the goal of sampling every potable water tap.

Cross-Connection Control Program

The state requires water systems, such as LANL to control all cross-connections to the public water supply. LANL has a maintenance group with certified backflow prevention device installers that routinely check the devices. LANL is in the process of writing a backflow prevention plan to include devices, testing, and monitoring. Additionally, LANL has spent over $200,000 per year for the last 2 years to inspect pipe systems in buildings. During these inspections pipes, contents, direction of flow, cross-connections, and potential for backflow are identified. Problems are fixed immediately, if serious. Less serious problems are placed on a list. Pipe runs are labeled or existing labels are verified and/or corrected.

SUMMARY OF FINDINGS

AREA OF NONCOMPLIANCE

Based on inspection observations, discussions with LANL personnel, and review of documents, the following area of noncompliance of SDWA requirements was identified:

New Mexico Water Supply Regulations, Part II Water Supply Control, §205 Maximum Microbiological Contaminant Levels	LANL exceeded the MCL for total coliforms during August 1993 and was required to meet public notification requirements.

AREAS OF CONCERN

The following areas of concern were identified during the NEIC investigation. Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements.

- Areas of water stagnation exist in the LANL distribution system. A formal flushing program needs to be initiated where stagnation problems are known to occur. Noncoliform bacteria identify areas of the facility where stagnation is a problem. The microbiological and residual chlorine sampling results in June indicated there was a problem at TA-33 with nondetectable chlorine residual (<0.1 mg/L). The water storage tanks are often sized to meet fire protection needs and not drinking water use. Addition of chlorination facilities at outlying areas may be warranted.

- Strontium-90 is present in the water system at 2.5 to 5.2 pCi/L. There is no strontium-90 MCL for groundwater. LANL personnel

stated that their monitoring results indicate the strontium-90 levels are not caused by LANL activity.

APPENDICES

A 1988 SANITARY SURVEY
B 1992 SDWA SAMPLING RESULTS
C TOTAL COLIFORM SAMPLE SITING PLAN
D MICROBIOLOGICAL AND RESIDUAL CHLORINE ANALYSES FOR JUNE 1993
E AUGUST 11, 1993 DRINKING WATER UPDATE
F JULY 1993 SANITARY SURVEY FORM
G LEAD AND COPPER SAMPLING RESULTS

APPENDIX A

1988 SANITARY SURVEY

NMED

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

July 25, 1988

Mr. Harold Valencia, Manager
U.S. Department of Energy
528 35th Street
Los Alamos, New Mexico 87544

RE: **Los Alamos County Water System, W.S.S. Code 001-15**

Dear Mr. Valencia:

On July 7,1988 and July 19,1988 a sanitary survey was conducted on the Los Alamos County Water System.

As we discussed with you at the closing conference on July 19, 1988 the only deficiencies that needed immediate attention were the potential cross-connections on hose bibs at booster station number 1, and number 2 on the Los Alamos well field.

In addition this office recommends that compliance samples of heavy metals, nitrates, fluoride, and radiochemicals be conducted to obtain water which is representative of each well field.

We wish to thank you for your time and assistance in making this inspection possible.

If you have any questions regarding this survey and any question about our state regulations, please feel free to call on me at 474-3473.

Sincerely,

Ralph Manchego
Environmentalist

cc: Steve Rae, LANL, Mail Stop K-490
Tom Halm-Haiser, LANL, Mail Stop A-199
Alex Georgieff, Los Alamos County
Stan Nalley, Pan-Am Utility
Michael Brown, District II Manager
Courte Voorhees, HPM, Santa Fe Field Office
Stuart Castle, Drinking Water Section, EID
File

N/A - Not Applicable
N-Av - Not Available
Est. - Estimated

NM Health and Environment Department
Environmental Improvement Division

Community Water Supply System

Inspection Form

Section A - GENERAL INFORMATION

Inspection Date: July 7, 1983

WSS CODE: 001-15	WATER SUPPLY SYSTEM NAME: Los Alamos County Water System	COUNTY: Los Alamos

System Address/LOCATION: U.S. Department of Energy Los Alamos N.M. 87544

OWNER:	OWNER ADDRESS (if different than above)	PHONE
D.O.E.	SAME	667-4661

Population Served	# Connections	# Meters	Max. System Production	Average System Production
20.000	N-Av.	All wells metered All resi. met.	7. mil. GPD Poten. ☐ Actual ☒	13.6 GPD

System Source (check Approp. Boxes): Distribution Only ☐ Well(s) ☒ # of Wells 19
Spring(s) ☐ Infiltration Gallery ☒ Surface ☐

Additional or Qualifying Information:

This system serves approximately 4.000 daily commuters
This system has three well fields :
A) Guaje well field 7 wells, 3 boosters, 9 miles of transportation pipeline.
B) Los Alamos canyon well field 7 wells, 4 boosters, 12 miles tran., pipeline.
C) Pajarito mesa well field 5 wells, 3 boost. 14 miles trans., pipeline.
In addition:
1) one infiltration gallery treated by microstrainer and chlorination
2) The distribution system in managed by the Los Alamos County

System Personnel - Name/Classification	Level of Certification Required	Level of Certification Obtained
Glen Bryant-Sup, of operation Pam Am.,	11 Operators	
Steve Rae LNNL		
Mark Talley Env. Engineer Pam Am.,		

Information furnished by:	Business Phone:
Steve Rae and Glen Bryant	665-1859
Survey Performed by:	Business Phone:
Ralph A. Manchego	473-3473

Section A (Continued)

SIMPLIFIED FLOW DIAGRAM OR SCHEMATIC OF THE SYSTEM (INDICATE NORTH IF APPROPRIATE)

SEE SCHEMATIC DIAGRAMS AND ANNUAL REPORT (ENCLOSED)

(1)

Section B - Source Information

WELL Identification	Well Depth	Pump Depth	Pump Capacity GPM	Well Drawdown feet	Pump Type	Static Water Level	Age of Pump	Date Well Drill
SEE ATTACHED SCHEDULE								

Remarks, Deficiencies, and Recommendations

Source	Number (each)	Total Capacity	Remarks, Deficiencies, and Recommendations
Artesian Wells			
Springs			
Infiltration Galleries	1	100.000	water treated by microstrainer/chlorina

Section C - Gravity Storage and Pressure Tank Reservoirs

Gravity Storage Reservoir Indent.	Storage Capacity (gallons)	Date Built	Exterior Condition	Tank Material	Cathodic Protection	Tank Openings Secured	Overflow Screened	Vent Screen
SEE ATTACHED SCHEDULE AND ANNUAL REPORT				(2)				

Pressure Tank I.D.	Volume (gallons)	Age	Exterior Condition	Additional Information

Remarks, Deficiencies or Recommendations

Section D - WATER DISTRIBUTION

Booster Pump Stations	Total Number of Stations 10	Remarks, Deficiencies or Recommendations 5 transfer stations
Type of Disinfection Facilities	chlorination	Remarks, etc. all facilities have leak detectors/safety features
System Pressure	Max. 90 psi Min. 30 psi	Remarks, etc.
Pipe Materials in system	PVC [X] STEEL [X] C.I. [X] Other [X]	Deficiencies (including cross-connections observed)
Type of Distribution System	Gravity [ ]	Pressure [ ] Both [ ]

Contaminant	Next Sample Date	Sample Frequency	Remarks
Micro-biological		35	
Turbidity		Daily	infiltration gallery
Organics	1989	annual	
Inorganic	1989	annual	
Radiological	1989	annual	
Secondary	1989	annual	

Section E - GENERAL OPERATION AND MAINTENANCE (O & M)

Does the system keep up-to-date O&M records? Yes [X] No [ ]

Are preventative maintenance activities routinely practiced? Yes [X] No [ ]

The importance of Cross Connection Control was discussed with the Operator Yes [X]
Indicate observed cross connections above (Pipe Materials in System)

Section F - SURFACE WATER SUPPLY INFORMATION

Source (check one)	Remarks or Deficiencies
Lake ☐	N.A.
Stream ☐	

Section G - WATER TREATMENT PLANT INFORMATION

Unit Operations	Remarks or Deficiencies
Plant Intake Structure	N.A.
Plant Location (Siting)	
Pretreatment, Raw Water Storage or Presettling Reservoirs	
Coagulation - Sedimentation	
Chemical Addition	
Filtration	
Other Treatment (Ion Exchange, Softening, Reverse Osmosis, etc.)	

Additional Comments or Remarks

APPENDIX B

1992 SDWA SAMPLING RESULTS

DRAFT

Table III-9 Total Trihalomethanes

Sampling Location	1992 Quarters (ppb) First	Second	Third	Forth	1993 Quarters First
LA Airport	0.00	*	4.80	1.40	1.90
WR Fire Station	0.00	0.00	0.60	0.60	0.00
North Community Fire Station	0.00	1.70	1.60	0.10	0.00
S-Site Fire Station	0.00	0.90	1.80	0.00	0.00
Barranca School	0.00	1.60	0.00	2.30	0.00
TA-33, Bldg. 114	2.70	7.80	10.90	13.60	5.20

The maximum contaminat level is 100ug/L.

* Insufficient sample for analysis due to lab accident.

Table III-10 Inorganic Constituents...

Sampling Location	As	Ba	Cd	Cr	F	Pb	Hg	NO3 (as N)	Se	Ag
LA Airport	<0.005	<0.100	<0.001	<0.005	0.63	<0.005	<0.0005	0.47	<0.005	<0.001
North Community Fire Station	0.01	<0.100	<0.001	0.01	0.55	<0.005	<0.0005	0.53	<0.005	<0.001
Barranca School	0.01	<0.100	<0.001	0.01	0.55	<0.005	<0.0005	0.54	<0.005	<0.001
S-Site Fire Station	0.01	<0.100	<0.001	<0.005	0.25	<0.005	<0.0005	0.32	<0.005	<0.001
White Rock Fire Station	0.01	<0.100	<0.001	<0.005	0.29	<0.005	<0.0005	0.51	<0.005	<0.001
TA-33 Bldg. 4	<0.005	<0.1000	<0.001	0.01	0.25	<0.005	<0.0005	0.37	<0.005	<0.001
MCL*	0.05	1.00	0.01	0.05	4	0.05	0.002	10	0.01	0.05

*The maximum contminant level.

Table III-11. Radioactivity in the Water Distribution System

DRAFT

Analysis	Standard for Calibration	Radioacitivity in Sample September 22, 1992 (pCi/L)	
		Value	Uncertainty
North Community Fire Station			
Gross alpha*	Am-241	0.4	0.3
	Natural uranium	0.5	0.4
Gross beta **	Cs-137	3.4	0.7
	Sr-90, Y-90	3.6	0.7
Los Alamos Airport			
Gross alpha*	Am-241	1.2	0.5
	Natural uranium	1.5	0.7
Gross beta**	Cs-137	5.1	1.2
	Sr-90, Y-90	5.2	1.2
S-Site Fire Station			
Gross alpha*	Am-241	0.3	0.4
	Natural uranium	0.4	0.5
Gross beta**	Cs-137	2.4	0.8
	Sr-90, Y-90	2.5	0.8
Barranca Mesa School			
Gross alpha*	Am-241	0.5	0.4
	Natural uranium	0.7	0.5
Gross beta**	Cs-137	2.6	0.8
	Sr-90, Y-90	2.7	0.8
White Rock Fire Station			
Gross alpha*	Am-241	0.7	0.9
	Natural uranium	0.9	1.2
Gross beta**	Cs-137	4.7	1.5
	Sr-90, Y-90	4.7	1.5

*The gross alpha maximum contaminant level is 15 pCi/l.
** The gross beta screening level is 50 pCi/l.

Table III-12. Microbiolgical Testing of the Water Distribution System

DRAFT

Month	No. of Tests Conducted	No. of Tests with Bacteria Present	
		Coliform*	Noncoliform
January, 1992	49.00	1.00	3
February, 1992	47.00	0.00	3
March, 1992	47.00	0.00	6
April, 1992	46.00	0.00	8
May, 1992	45.00	0.00	7
June, 1992	59.00	2.00	7
July, 1992	47.00	0.00	4
August, 1992	45.00	0.00	4
September, 1992	46.00	0.00	3
October, 1992	46.00	0.00	2
November, 1992	44.00	0.00	6
December, 1992	42.00	0.00	3
Total 1992	563.00	3.00	53
January, 1993	49.00	0.00	2
February, 1993	45.00	0.00	1
March, 1993	48.00	0.00	6
Total 1993 (First Quarter)		0.00	9

Table III-8. Volatile Organic Constituents in the Water Distribution System in 1992 (ug/L)

Contaminant	Composite Samples A	B	C
VOC Group I			
63 Compounds	00.0 N	0.00 N	0.00 N
VOC Group II			
1,2-Dibromoehtane (EDB)	0.00 N	0.00 N	0.00 N
1,2-Dibromo-3-chloropropane (DBCP)	0.00 N	0.00 N	0.00 N

MDL=(Minimal detection limit) 1.00 ug/L for VOC Group I.
MDL= 0.04 ug/L for VOC Group II
N = None detected abouve detection limit
Composite Samples: A= Pajarito Mesa wells # 1, 2, 3, 5
B= Guaje wells #1, 1A, 2
C= Guaje wells #4, 5, 6

DRAFT

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
LANL Technical Area Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
TA-41, Bldg 30	<0.1	06/15/93	10:50am	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	P(1)
TA-48, Bldg 1	0.2	06/15/93	10:33am	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A
TA-03, Bldg 66	0.2	06/15/93	10:20am	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A
TA-46, Bldg 1	0.3	06/15/93	10:08am	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A
TA-59, Bldg 1	0.3	06/15/93	09:58am	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	P(7)

Laboratory Supervisor: Marke Talley Date June 22, 1993

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER

SAMPLES INVALIDATED

JOHNSON CONTROLS WORLD SERVICES INC.
ENVIRONMENTAL LABORATORY
667-0104

Please note: The samples listed below have been invalidated as compliance samples for the Safe Drinking Water Act for the following reason as noted on the form below:

1. Membrane filter contained TNTC (over 200) noncoliform colonies per 100 ml.
2. Quality Control indicates possible contamination of media, funnel, or rinse water.
3. Incubation time exceeded 26 hours.

Sample Location	Date Sampled	Date Repeated	Reason for Invalidation	Analyst	Comments
TA-33 Bldg 19	06/01/93	06/03/93	#1	MWT	Repeat sample showed presence of total and fecal coliforms, retests are in progress.

Laboratory Supervisor John Deyloff for Marke Talley Date 6/8/93

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
LANL Technical Area Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
TA-33 Bldg 19	0.1	06/07/93	09:32am	JLD	MF/ RETEST	06/07/93	06/07/93	JJA/MWT	A	A	A
TA-33 Bldg 19	<0.1	06/07/93	09:27am	JLD	MF/ RETEST	06/07/93	06/07/93	JJA/MWT	A	A	A
TA-33 Bldg 19	0.1	06/07/93	09:18am	JLD	MF/ RETEST	06/07/93	06/07/93	JJA/MWT	A	A	A

Laboratory Supervisor: John Deyloff for Marke Talley Date 6/8/93

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
LANL Technical Area Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
TA-33 Bldg 19	<0.1	06/08/93	10:42am	JJA	MF/ RETEST	06/08/93	06/08/93	MWT/JLD	A	A	A
TA-33 Bldg 19	<0.1	06/08/93	10:37am	JJA	MF/ RETEST	06/08/93	06/08/93	MWT/JLD	A	A	A
TA-33 Bldg 19	<0.1	06/08/93	10:29am	JJA	MF/ RETEST	06/08/93	06/08/93	MWT/JLD	A	A	A
TA-33 Bldg 19	<0.1	06/09/93	01:29pm	JLD	MF/ RETEST	06/09/93	06/09/93	JJA/JLD	A	A	A
TA-33 Bldg 19	<0.1	06/09/93	01:22pm	JLD	MF/ RETEST	06/09/93	06/09/93	JJA/JLD	A	A	A
TA-33 Bldg 19	<0.1	06/09/93	01:18pm	JLD	MF/ RETEST	06/09/93	06/09/93	JJA/JLD	A	A	A

Laboratory Supervisor: John Deyloff for Mike Talley Date 6/15/93

MICROE OGICAL ANALYSIS OF POTABLE WATER - LC AMOS SKI CLUB - System # 901-15

Los Alamos Ski Club
P.O. Box 155
Los Alamos, NM 87544

District II

Johnson Controls World Services Inc.
Environmental Laboratory
Los Alamos, New Mexico
Phone: (505) 667-0104

Abbreviations: A = Absense TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

LOCATION	Cl_2 mg/L	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Time Rec'd	Analyst Run/Read	Colonies/100ml TC	FC	NC
Kitchen	3.0	06/09/93	12:10pm	VL	MF/Routine	06/09/93	12:30pm	JJA/JLD	A	A	A
Rental Shop	3.0	06/09/93	12:05pm	VL	MF/Routine	06/09/93	12:30pm	JJA/JLD	A	A	P(1)

Laboratory Supervisor: John Deyloff for Marlie Tulley Date : 6/15/93

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
LANL Technical Area Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
TA-03 Bldg 16	0.3	06/01/93	11:18am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-35 Bldg 2	<0.1	06/01/93	11:05am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-53 Bldg 4	0.3	06/01/93	10:48am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-21 Bldg 210	0.2	06/01/93	10:28am	JJA	MF/ DUPLIC.	06/01/93	06/01/93	MWT/LSC	A	A	P64
TA-21 Bldg 210	0.2	06/01/93	10:28am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	P40
TA-39 Bldg 2	<0.1	06/01/93	09:53am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	P1
TA-36 Bldg 1	0.3	06/01/93	02:38pm	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-16 Bldg 193	0.2	06/01/93	02:12pm	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-09 Bldg 21	0.2	06/01/93	02:03pm	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-09 Bldg 21	0.2	06/01/93	02:03pm	JJA	MF/ DUPLIC.	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-15 Bldg 40	0.3	06/01/93	01:53pm	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-08 Bldg 22	<0.1	06/01/93	01:38pm	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-22 Bldg 90	0.2	06/01/93	01:28pm	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A
TA-33 Bldg 19	<0.1	06/03/93	02:16pm	JJA	MF/ RETEST	06/03/93	06/03/93	JJA/LSC	P	P	P63

Laboratory Supervisor: John Dayloff for Maria Talley Date 6/8/93

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
Bandelier National Monument

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
Visitor Center	0.3	06/01/93	09:16am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	P1
Picnic Area	0.3	06/01/93	09:10am	JJA	MF/ ROUTINE	06/01/93	06/01/93	MWT/LSC	A	A	A

Laboratory Supervisor: John Dayhoff for Marlee Talley Date 6/8/93

MICRO. LOGICAL ANALYSIS OF POTABLE WATER - S :a Los Pinos - System Code #654-23

Ara Stevens
Sierra Los Pinos Owners Association
Mt. Route Box 74
Jemez Springs, NM 87025
District I

Johnson Controls World Services Inc.
Environmental Laboratory
Los Alamos, New Mexico
Phone: (505) 667-0104

Abbreviations: A = Absense TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

LOCATION	Cl_2 mg/L	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Time Rec'd	Analyst Run/Read	Colonies/100ml TC	FC	NC
Unit 4, Lot 13	0.8	06/28/93	06:30am	Stevens	MF/Routine	06/28/93	01:45pm	LSC/JJA	A	A	A
Unit 2, Lot 6	0.7	06/28/93	06:45am	Stevens	MF/Routine	06/28/93	01:45pm	LSC/JJA	A	A	A

Laboratory Supervisor: John L. Dayhoff for Marke Talley Date : 7/2/93

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
Los Alamos Municipal Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
304 Rover	<0.1	06/10/93	02:18pm	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
304 Rover	<0.1	06/10/93	02:18pm	LSC	MF/ DUPLIC.	06/10/93	06/10/93	JLD/MWT	A	A	A
115 Longview	<0.1	06/10/93	02:08pm	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
5 Mariposa Ct.	0.2	06/10/93	01:54pm	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
223 Rio Bravo	<0.1	06/10/93	01:41pm	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A

Laboratory Supervisor: John L. Degroff for Mike Talley Date 6/15/93

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
Los Alamos Municipal Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
Sports Complex	0.1	06/15/93	02:04pm	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A
Chamisa School	<0.1	06/15/93	01:53pm	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	P(2)
Pinon School	0.1	06/15/93	01:37pm	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A
WR Library	0.2	06/15/93	01:24pm	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A
Firestation #3	0.2	06/15/93	01:13pm	JJA	MF/ ROUTINE	06/15/93	06/15/93	LSC/JLD	A	A	A

Laboratory Supervisor: Marke Talley Date June 21, 1993

Los Alamos NM 87544-0251

JOHNSON CONTROLS

DATA DELIVERABLE TRANSMITTAL

July 7, 1993
JENV.93-375

Los Alamos National Laboratory
Los Alamos, NM 87545

ATTN: DISTRIBUTION

Dear Sir:

We are submitting herewith the following Data Deliverable(s) as required by Subcontract #Y-X86-Y7575-1:

D.D. IDENTIFIER	TITLE	REMARKS
1.5-DD-013	Potable Water Analysis Report	JHSE Report Originator, due monthly

Very truly yours,

John L. Deyloff
for

Joe J. Lopez
Manager, JHSE

DISTRIBUTION:

Steve Rae, EM-8, K490
Neil Williams, EM-8, K490
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Tim Glasco, UWWS
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Jeanne Lord, ACOM
Dick Richards, UMEC
Robert Greuter, UMDO
file
reading file

U3D 004323

MICROBIOLOGICAL ANALYSIS OF POTABLE WATER SYSTEM #001-15
Los Alamos Municipal Water System

Johnson Controls World Services
Environmental Laboratory
Los Alamos, New Mexico
Phone: 505-667-0104

Abbreviations: A = Absence TC = total coliform NC = noncoliform
P = Presence FC = fecal coliform NA = not applicable

Location	Cl2 mg/l	Date Sampled	Time Sampled	Analyst Sampled	Sample Type	Date Rec'd	Date Analyzed	Analyst Run/Read	Colonies/100ml TC	FC	NC
LA High School	0.3	06/10/93	11:12am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Royal Crest	0.3	06/10/93	10:59am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Medical Center	0.2	06/10/93	10:46am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
County Bldg.	0.3	06/10/93	10:20am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Fire Station #6	0.3	06/10/93	10:08am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Airport	0.1	06/10/93	09:54am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
4552 Fairway	0.3	06/10/93	09:35am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
4473 Ridgeway	0.3	06/10/93	09:25am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Mountain School	0.2	06/10/93	09:12am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Aspen School	0.3	06/10/93	08:56am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
KRSN	0.4	06/10/93	08:37am	LSC	MF/ DUPLIC.	06/10/93	06/10/93	JLD/MWT	A	A	A
KRSN	0.4	06/10/93	08:37am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
LA Middle School	0.3	06/10/93	08:26am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A
Barranca School	0.2	06/10/93	08:09am	LSC	MF/ ROUTINE	06/10/93	06/10/93	JLD/MWT	A	A	A

Laboratory Supervisor: John Deyl for Marlie Talley Date 6/15/93

APPENDIX D

MICROBIOLOGICAL AND RESIDUAL CHLORINE ANALYSES FOR JUNE 1993

TABLE 2

COLIFORM SAMPLING LOCATIONS

NO.	TYPE	ADDRESS	TAP LOCATION
69	Fixed	TA-15, Bldg. 40	Restroom Sink
70	Fixed	TA-21, Bldg. 210	Room 121 Sink
71	Fixed	TA-22, Bldg. 52	Coffee Room Sink
72	Fixed	TA-36, Bldg. 1	Restroom Sink
73	Fixed	TA-33, Bldg. 19	Coffee Room/Lounge Area
74	Fixed	TA-39, Bldg. 2	Coffee Room Sink
75	Fixed	TA-41, Bldg. 31	Coffee Room Sink, Rm 214
76	Fixed	TA-48, Bldg. 1	Custodian Sink
77	Fixed	TA-46, Bldg. 31	Hallway Sink
78	Fixed	TA-53, Bldg. 4	Hallway Sink, Basement

TABLE 2

COLIFORM SAMPLING LOCATIONS

NO.	TYPE	ADDRESS	TAP LOCATION
34	Rotating	5 Mariposa Court (resid.) (Mantz)	Hosebib, By Back Door
35	Rotating	3 Piedra Court (residence)	Hosebib, Front Yard
36	Rotating	421 Estante (residence)	Hosebib, Front Yard
37	Rotating	3802 Gold St. Apt. 3 (resid.)	Kitchen Sink
38	Rotating	58 La Paloma (residence)	Hosebib, Front Yard
39	Rotating	260 Canada Way (residence)	Hosebib, Front Yard
40	Rotating	17 Grand Canyon (residence)	Hosebib, Front Yard
41	Rotating	450 Bryce (residence)	Hosebib, Front Yard
42	Rotating	209 Rover Blvd. (residence)	Hosebib, Front Yard
43	Rotating	114 El Viento (residence)	Hosebib, Front Yard
44	Rotating	Residence Number 3 Bandelier	Hosebib, Front Yard
45	Rotating	Juniper Loop A Bandelier	Hosebib
46	Rotating	Juniper Loop C Bandelier	Hosebib
47	Rotating	Backcountry Picnic Area Bandelier	Backcounty Tr. Hosebib
48	Rotating	Curio Store Bandelier	Kitchen Sink
49	Rotating	Ponderosa Campground Bandelier	Hosebib
50	Rotating	Tsankawi Bandelier	Hosebib 20 Feet S. of Visitor Center

TABLE 2

COLIFORM SAMPLING LOCATIONS

NO.	TYPE	ADDRESS	TAP LOCATION
51	Rotating	Fire Tower Bandelier	Hosebib
52	Rotating	Picnic Area Bandelier	Hosebib 300 Yards N. of Backcountry Tr. Hosebib
53	Rotating	Stables Bandelier	Hosebib Above Horse Trough
54	Rotating	Maintenance Building Bandelier	Food Preparation Sink
55	Rotating	Headquarters Bandelier	Food Preparation Sink
56	Rotating	163 Laguna (residence)	Hosebib, Front Yard
57	Rotating	1165 Los Pueblos Rd.(res.)	Hosebib, Front Yard
58	Rotating	1610 South Sage (residence)	Hosebib, Front Yard
59	Rotating	645 Totavi (residence)	Hosebib, Front Yard
60	Rotating	1010 Sioux (residence)	Hosebib Front Yard E. of carport
61	Rotating	80 La Cueva (residence) (Site Discontinued 1988)	Hosebib 50 yards N. of North Mesa road
62	Fixed	TA-59, Bldg. 3 Pajarito Road	Coffee Sink on 2nd Floor
63	Fixed	TA-35 Bldg. 2	Coffee Sink by S. Exit
64	Fixed	TA-16, Bldg. 193	Men's, Women's Restroom
65	Fixed	TA-08, Bldg. 22	Hallway Sink
66	Fixed	TA-09, Bldg. 21	Coffee Room Sink S. End
67	Fixed	TA-03, Bldg. 66 (Sigma)	Custodian Sink
68	Fixed	TA-03, Bldg. 16	Coffee Room Sink

TABLE 2

COLIFORM SAMPLING LOCATIONS

NO.	TYPE	ADDRESS	TAP LOCATION
1	Fixed	Los Alamos Community Bldg. 475 20th Street	Coffee Room, 1st floor
2	Fixed	Aspen school 2182 33rd Street	Teachers Lounge Sink
3	Fixed	Barranca Mesa Elem. School 57 Loma del Escolar	Teachers Lounge Sink
4	Fixed	Chamisa Elementary School 301 Meadow Lane	Teachers Lounge Sink
5	Fixed	Mountain Elementary School 2280 North Road	Teachers Lounge Sink
6	Fixed	Pinon Elementary School 90 Grand Canyon Drive	Teachers Lounge Sink
7	Fixed	Los Alamos Middle School 2101 Cumbres Drive	Teachers Lounge Sink
8	Fixed	Los Alamos High School 1300 Diamond Drive	Teachers Lounge Sink
9	Fixed	Mesa Library, White Rock 133 Longview Drive	Lounge Area Sink
10	Fixed	Fire Station Number 6 TA73 Bldg. 4, East Road	Food Preparation Sink
11	Fixed	Firestation Number 3 50 Rover Blvd.	Food Preparation Sink
12	Fixed	Med. Center, Public Health 3917 West Road	Private Restroom Sink
13	Fixed	Los Alamos Airport 1040 Airport Road	Custodian Sink
14	Fixed	KRSN Radio Station 400 North Mesa Road	Upstairs Restroom Sink

TABLE 2

COLIFORM SAMPLING LOCATIONS

NO.	TYPE	ADDRESS	TAP LOCATION
15	Fixed	Royal Crest Tr. Ct. Hdqtrs. 106 Royal Crest Tr. Ct.	Hosebib S. of Trailer
16	Fixed	White Rock Wastewater Plant Overlook Blvd. (no number)	Hosebib N. of Front Door
17	Fixed	304 Rover (Sage Montessori)	Teaching Area Sink
18	Rotating	339 Joya Loop (residence)	Hosebib, Front Yard
19	Rotating	240 Kimberly (residence)	Hosebib, Front Yard
20	Rotating	333 Potrillo (residence)	Hosebib, Front Yard
21	Rotating	8031 Royal Crest (resid.)	Hosebib, Front Yard
22	Rotating	391A Arizona (residence)	Hosebib, Front Yard
23	Rotating	3252 Woodland (residence)	Hosebib, Front Yard
24	Rotating	550 Todd Loop (residence)	Hosebib, Front Yard
25	Rotating	3448-B Orange St. (resid.)	Hosebib, Front Yard
26	Rotating	116 La Senda (residence)	Hosebib, Front Yard
27	Rotating	69 Joya Loop (residence) (Pinkston)	Hosebib, Front Yard
28	Rotating	700 Jeffrey (residence)	Hosebib, Front Yard
29	Rotating	2425A 36th Street (resid.)	Hosebib, Front Yard
30	Rotating	744 44th Street (residence) (Bailey)	Hosebib, Front Yard
31	Fixed	969 Capulin (Richardson)	Hosebib Front Yard
32	Rotating	110 Fort Union (residence)	Hosebib, Front Yard
33	Rotating	968 Nambe (residence)	Hosebib, Front Yard

quality assurance program but has not sought State certification for drinking water compliance testing. Results of this testing program are published in the annual Environmental Surveillance report which is made available to the public. A number of copies are sent directly to interested bureaus of the New Mexico Environment Department (NMED) each year.

A second drinking water sampling program is run to collect samples for demonstration of Safe Drinking Water Act (SDWA) compliance. Chemical compliance samples are collected by LANL Environmental Protection Group (EM-8) personnel certified under the New Mexico Water Supply Regulations Section 301.E. Analysis for chemicals is done by the NM Department of Health Scientific Laboratory Division (SLD) which is certified by the EPA for this work. SLD reports chemical results directly to the NMED. Microbiological sampling and analysis is done by JCI Environmental Laboratory (JENV) personnel. The JENV lab is certified for microbiological analysis and reports results directly to NMED. All compliance results are also published annually in the Environmental Surveillance report.

DISTRIBUTION SYSTEM COLIFORM SAMPLING

As shown on the map, microbiological sampling locations are located throughout the distribution system. JENV collects a minimum of 41 distribution samples monthly. The sample location types are summarized in **Table 1**, below. In addition to the distribution sites, each wellhead is sampled monthly for coliforms, non-coliforms and heterotrophic plate count. The wellhead samples are used to document the quality of the undisinfected well water and are not reported for SDWA compliance purposes.

TABLE 1

SAMPLING SITE SUMMARY

LOCATION TYPE	SAMPLES PER MONTH
Los Alamos National Laboratory	17
Los Alamos Townsite	13
White Rock	9
Bandelier Nat. Mon.	2
TOTAL	41

A complete listing of the individual sampling locations is given in **Table 2.**

The JENV laboratory supervisor schedules microbiological sampling for the 41 sampling sites so that routine sampling is generally completed by the twentieth of each month. This allows time within the month for the collection and analysis of repeat samples, if necessary. Repeat samples are required, for example, where excessive non-coliforms caused an invalid sample or to confirm positive coliform results. Sampling is scheduled on any day, Monday through Friday, so that no location is consistently sampled on the same day of the week. Samples are collected on Saturday or Sunday only in the event of an emergency request.

When compliance or repeat samples are positive for total coliforms, a repeat series of at least 3 samples is collected within 24 hours of obtaining the first positive result. One of the repeats is taken at the original sampling location. The other two repeats are drawn from locations within 5 service connections upstream and downstream of the original location. All total coliform positive samples are tested also for fecal coliforms.

TOTAL COLIFORM

SAMPLE SITING PLAN

LOS ALAMOS WATER SYSTEM

March, 1993

This plan has been prepared by Los Alamos National Laboratory to describe the drinking water microbiological testing program for the Los Alamos public water supply system. This plan is required under Section 302.A of the New Mexico Water Supply Regulations (WSR) to address the procedures used to select sites for the required total coliform sampling.

The Los Alamos water supply system serves the communities of Los Alamos, White Rock, Los Alamos National Laboratory (LANL) and Bandelier National Monument. Please refer to the attached Map for the system layout. The service population is estimated to be approximately 20,000 persons in residence with another 6,000 persons (commuters) served during working hours.

The supply wells, booster stations, chlorinators, transmission mains and LANL distribution system are owned by the US Department of Energy. LANL administers operation of the DOE owned facilities, including compliance with the Safe Drinking Water Act. Physical operation and maintenance of the facilities is by Johnson Controls, Inc. (JCI) under contract to LANL. JCI employs operators certified under the New Mexico Utility Operator Certification program.

Los Alamos County also owns and operates a distribution network in the Los Alamos townsite and White Rock. The County buys water from the DOE system at a number of metered delivery points in the townsite and White Rock. The US Department of the Interior owns and operates the Bandelier distribution system. This plan addresses microbiological testing for the overall system, including the townsite, White Rock and Bandelier as well as the DOE-owned core of the system.

SYSTEM INFORMATION

PWS CODE # 001-15

OWNER US Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, NM 87544

Attn: Joseph Vozella
Phone: 665-5027

OPERATOR Johnson Controls World Services, Inc.

MS A199
Los Alamos, NM 87544

Attn: Dick Richards
Phone: 667-6191

SDWA COMPLIANCE

Los Alamos National Laboratory
Environmental Protection Group, EM-8
MS K490
Los Alamos, NM 87544

Attn Neil Williams
Phone: 665-0454

SYSTEM DESCRIPTION

The source of supply for the system consists of 3 deep well fields. The Guaje well field has 7 wells, with 6 in operation. The Pajarito well field consists of 5 wells, all in operation. The newest well field, called Otowi, has one well in service and one well that is drilled but not developed.

A forth well field, the Los Alamos well field, once had 6 producing wells. The Los Alamos wells were shut down in the fall of 1991. Two wells, LA-5 and LA-2 were transferred to San Ildefonso Pueblo for its use and the others have been abandoned. The Los Alamos well field is no longer connected the Los Alamos system.

Flows from the well fields are lifted to the distribution system via a system of 17 booster pump stations. There are 41 storage tanks with a combined capacity of approximately 42 million gallons. The wells and booster stations are operated via an electronic supervisory control system. The control room is located at the Utilities Control Center at LANL, TA-3. All controls are also manually operable.

All water is disinfected with chlorine gas prior to entry into the distribution system. There are 9 chlorinators located at booster stations. The County operates fluoridation stations serving the townsite and White Rock. The remainder of the system is not fluoridated. No other types of treatment are provided or needed.

SAMPLING PROGRAMS

LANL conducts two separate drinking water sampling programs to document Environmental Surveillance and Regulatory Compliance. As a part of the Environmental Surveillance Program, environmental monitoring is performed to document the impact of Laboratory operations on the environment. Under this program, each water supply well is sampled annually by the Environmental Protection Group, EM-8, for many parameters, including primary drinking water standards. Sample analysis is done by LANL's EM-9 analytical chemistry laboratory. The EM-9 laboratory adheres to a strict

APPENDIX C

TOTAL COLIFORM SAMPLE SITING PLAN

APPENDIX E

AUGUST 11, 1993 DRINKING WATER UPDATE
AUGUST 12, 1993 NEWS RELEASE
AUGUST 13, 1993 NEWSPAPER ARTICLE

MEMO

To: Distribution
Date: 8/11/93
From: Neil Williams, EM-8 5-0454

Subject: Drinking Water Update

The LANL drinking water supply system is experiencing microbiological stagnation problems at several remote areas which are served by dead-end water mains. This condition is probably due to a number of factors including reduced demand for water, the presence of large storage tanks for fire protection, warm summer temperatures in the mains and the fact that the mains are long dead ends. The problems areas so far have been limited to LANL technical areas only, and do not affect the townsite, White Rock or Bandelier.

Samples from several technical areas, TA-2, TA-41 and TA-15, have had elevated heterotrophic plate count bacteria this summer. These bacteria are not regulated and are considered to be indicators of stagnation problems but not necessarily a serious health risk.

However, several water samples taken at TA-39 during this week have shown the presence of coliform bacteria. Coliforms are considered to be indicator organisms for pathogens. According to the Safe Drinking Water Act regulations, for a system of our size, the maximum contaminant limit for coliforms is two positive samples per month. According to Marke Talley of the JCI Environmental Laboratory, samples to be read this afternoon will confirm that we have over three positive samples. We thus have incurred a violation of the SDWA.

It also appears that the samples to be read this afternoon will exhibit the characteristics of fecal coliforms. Fecal coliforms are considered an indicator of acute risk and regulations require public notification via newspaper, radio and television within 72 hours of the violation.

Signs have been posted at TA-39 advising people not to drink the water. The tank and lines serving TA-39 has been disinfected with chlorine and flushed and resampled. Preliminary results indicated the disinfection was effective. Signs will remain posted and flushing and disinfection will continue until good microbiological quality has been confirmed and is consistent. In the mean time bottled water has been provided.

A press release will to be prepared today with certain mandatory language required by the regulations. If you have any questions plese call me at 5-0454.

030 004484

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

public information group
news release

CONTACT: John R. Gustafson, (505) 667-7000 93-202

COLIFORM BACTERIA FOUND IN LABORATORY WATER SYSTEM

LOS ALAMOS, N.M., Aug. 12, 1993 — The water supply in one of the technical areas at Los Alamos National Laboratory tested positive for fecal coliform bacteria in samples taken earlier this week.

The fecal coliform contamination appears isolated to the one technical area, TA-39, which is supplied by a long, dead-end line of the water system.

In addition, non-fecal strains of coliform bacteria were detected in samples from Technical Area 33, which abuts TA-39 and is also at the end of long stretch of water supply piping.

The Laboratory has taken steps to disinfect both affected lines. Samples from the areas taken following disinfection showed no evidence of coliform, indicating that the steps were effective. Nonetheless, employees have been told not to drink the water in the affected areas until repeated sampling confirms no evidence of contamination; bottled water is being provided in the meantime.

No evidence for coliform has been found in other technical areas or in other parts of Los Alamos County. In addition, Bandelier National Monument, which also receives its water from the water distribution system, shows no evidence of contamination.

"Bacteria are troublesome in the summertime, when warmer temperatures encourage their growth, but this is the first time our water supply system has violated the standards for bacteria of the Safe Drinking Water Act," said Neil Williams of the Laboratory's Environmental Protection Group.

"The problem seems isolated to these long, dead-end lines where the water can sit for hours and stagnate before coming out the tap. Parts of the system where the lines are flushed more frequently don't suffer from stagnation and don't show the bacterial growth," Williams said.

-more-

An Equal Opportunity Employer/Operated by University of California

The Laboratory has notified the New Mexico Environment Department and the U.S. Environmental Protection Agency.

The EPA sets drinking water standards and has determined that the presence of fecal coliforms is a serious health concern. Fecal coliforms are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes that distribute the water, and indicates that the water may be contaminated with organisms that can cause disease.

Disease symptoms may include diarrhea, cramps, nausea and possibly jaundice with associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than drinking water. EPA has set an enforceable drinking water standard for fecal coliforms to reduce the risk of these adverse health effects. Under this standard all drinking water samples must be free of these bacteria. Drinking water that meets this standard is associated with little or none of the risk and should be considered safe.

The Laboratory and Johnson Controls Inc. have developed a plan to monitor levels of chlorine, used to prevent the growth of bacteria, in the affected areas of the water supply on a daily basis for an indefinite time to prevent recurrent stagnation. If the chlorine drops below a minimal level, Los Alamos and JCI personnel will flush the system and increase chlorine dosages, if necessary.

Routine sampling of the water supply system includes some 40 samples each month.

The water supply system is owned by the Department of Energy and operated by the Laboratory and JCI. Los Alamos County and Bandelier purchase their water from the DOE.

Los Alamos National Laboratory is a multidisciplinary research organization that applies science and technology to problems of national security ranging from defense to energy research. It is operated by the University of California for the U.S. Department of Energy.

8/13/93

Bacteria found in lab water

The New Mexican

Fecal coliform bacteria has been detected in the water supply of one of the technical areas at Los Alamos National Laboratory.

The contaminations appears isolated to one technical area, TA-39, lab officials said.

Employees working at TA-39 and the adjoining TA-33 site have been advised not to drink water in the affected areas until repeated sampling confirms there is no evidence of contamination.

No evidence of coliform contamination has been found in other technical areas, in other parts of Los Alamos County or at Bandelier National Monument, which receives its water from the lab's water distribution system, officials said.

Fecal coliforms are associated with sewage and animal wastes and can indicate that water may be contaminated with other organisms that cause disease.

The laboratory and Johnson Controls, Inc., the lab's maintenance contractor, have taken steps to disinfect water lines to the affected areas and will continue to test water for coliform and monitor chlorine levels in the affected areas.

APPENDIX F

JULY 1993 SANITARY SURVEY FORM

SANITARY SURVEY FORM for Public Water Supply Systems

New Mexico Environment Department
Drinking Water Section

[X] Community Water Supply System
[ ] Nontransient Noncommunity System
[ ] Noncommunity System

Season Begin Date (MM/DD): | Season End Date (MM/DD):

SECTION A - GENERAL INFORMATION

WSS Code #:	Water Supply System Name:	Service Area Type: (See Appendix B, Table 1)	County:
001-15	Los Alamos	R1	Los Alamos

System Location: Los Alamos, New Mexico
System Phone #: (505) 667-6191

System Mailing Address: Street / P.O. Box: EM-8, K490, P.O. Box 1663; City: Los Alamos; State: New Mexico; Zip Code: 87545

Name of System Owner:	Type of Owner: (See Appendix B, Table 2)	Owner Phone #
U.S. Department of Energy	1	(505) 667-5288

Owner's Mailing Address: Street / P.O. Box: Los Alamos Area Office; City: Los Alamos; State: New Mexico; Zip Code: 87544

Population Served	# of Connections	# of Meters	Avg. System Production (Circle one) MGD or GPD	Cost/mo. for 4,500 gal. or Flat Rate/mo. if used: (Circle which is used)
Approx. 25,000	N. Av.	N. Av.	3.93	$ 21.77

System Source Information (Enter All Applicable Information)

- [X] - Well(s) - # 12
- [ ] - Spring(s) - #
- [ ] - Infilt. Galleries(s) - #
- [ ] - Surface Intake(s)
  - Lake - #
  - Stream - #

% Ground 100 % | % Surface 0 %
% Purchased Ground 0 % | % Purchased Surface 0 %
(If any water is purchased, please provide information on seller below)

Seller's Code #:	Seller's Name:
N/A	N/A

SECTION B - SYSTEM PERSONNEL INFORMATION

(Please include information on Water System Officials, Board Members, Operator(s), etc.)

Name / Title	Phone #	Certification Level Required	Certification Level Obtained
Chief Operator / Contact	( )		
Glenn Bryant/Water Supervisor - JCI	(505) 667-6191	4	4
Andy Gonzales/Water Operator Foreman, JCI	(505) 667-6191	4	4
Neil Williams, SDWA Compliance Testing, LANL	(505) 665-0454	Sampling Cert	Sampling Ce
Tim Glasco/Engineer, JCI	(505) 667-6191	N/A	N/A
Keith Schwertfeger, Los Alamos County	(505) 662-8147	N/A	N/A
	( )		
	( )		

Information Furnished By: Neil Williams, EM-8; Tim Glasco, JCI
Business Phone: (505) 665-0454

Survey Conducted By:
Survey Date:
Business Phone: (505) 667-6191

SECTION C - WATER DISTRIBUTION SYSTEM

Source of Distribution System Pressure:	___ - Gravity	___ - Pump(s)	X - Both

Booster Pump Stations	Total Number of Stations: 15	Remarks or Recommendations:

Pipe Materials in System	XX - PVC XX - DI/CI XX - Galvanized XX - Other Concrete, Steel, Polyethylene, Copper XX - AC 15 % Year Last Installed	Remarks or Recommendations:

SECTION D - SIMPLIFIED FLOW DIAGRAM OR SCHEMATIC OF THE SYSTEM (Indicate North if Appropriate)

See Figure 1 for booster pump network.

See map in attached pocket for piping layout, tank and sampling locations.

Remarks or Recommendations:

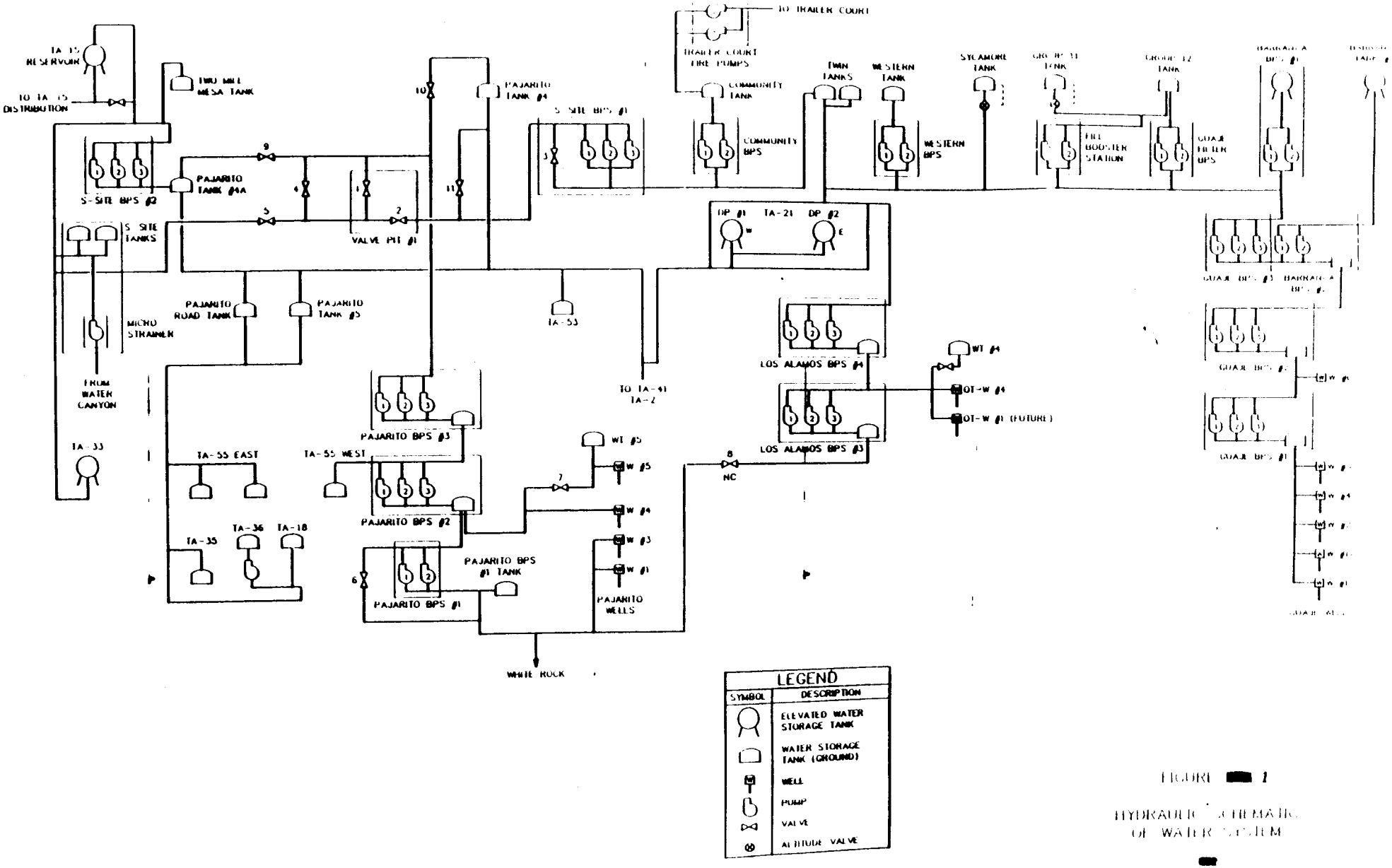


FIGURE [redacted] 1

HYDRAULIC SCHEMATIC OF WATER SYSTEM

[redacted]

SECTION E - WATER STORAGE FACILITIES

1 - Raw Surface Water Impoundment(s)

Reservoir Name or Identification	Capacity (Gallons)	Date Built	Overall Condition	Access Control (How is area protected against unauthorized entry by vandals & livestock?)
N/A				

Remarks or Recommendations:

2 - Finished Water Storage Tank(s)

Reservoir Name or Identification	Capacity (Gallons)	Date Built	Tank Material	Exterior Condition	Cathodic Protection@	Openings Secured@	Overflow Screen@	Vent Screen@
See Attachment 2								

Remarks or Recommendations:

3 - Pressure Tank(s)
(If an air compressor is used on any pressure tanks, please describe type of lubricant under additional information)

Tank Name or Identification	Volume (Gallons)	Age	Exterior Condition	Air Compressor Used@ (Yes or No)	Additional Information
N/A					

Remarks or Recommendations:

ATTACHMENT TWO

RESERVOIR NAME	CAPACITY (Gal)	DATE BUILT	TANK MATERIAL	EXTERIOR CONDITION	CATHODIC PROTECTION	OPENINGS SECURED	OVERFLOW SCREEN	VENT SCREEN
LOS ALAMOS #4	60 K	1947	STEEL	GOOD	YES	YES	YES	YES
GUAJE # 3	60 K	1950	STEEL	GOOD	YES	YES	YES	YES
GUAJE #3A	1,000 K	1964	STEEL	GOOD	YES	YES	YES	YES
PAJARITO #1	1,500 K	1966	STEEL	GOOD	YES	YES	YES	YES
PAJARITO #2	1,500 K	1966	STEEL	GOOD	YES	YES	YES	YES
PAJARITO #3	1,000 K	1966	STEEL	GOOD	YES	YES	YES	YES
PAJARITO #4	1,500 K	1966	STEEL	GOOD	YES	YES	YES	YES
PAJARITO #4A	4,000 K	1982	STEEL	GOOD	YES	YES	YES	YES
PAJARITO WELL #5	100 K	1984	STEEL	GOOD	YES	YES	YES	YES
GROUP 11	250 K	1949	STEEL	GOOD	YES	YES	YES	YES
GROUP 12	500 K	1950	STEEL	GOOD	YES	YES	YES	YES
SYCAMORE	7,750 K	1950	STEEL	POOR	YES	YES	YES	YES
WESTERN	250 K	1947	STEEL	GOOD	YES	YES	YES	YES
TWIN TANK #1	7,750 K	1949	STEEL	FAIR	YES	YES	YES	YES
TWIN TANK #2	7,750 K	1949	STEEL	FAIR	YES	YES	YES	YES
COMMUNITY CENTER	1,000 K	1947	STEEL	GOOD	YES	YES	YES	YES
TWO-MILE MESA	100 K	1949	STEEL	GOOD	YES	YES	YES	YES
BARRANCA #1	100 K	1958	STEEL	FAIR	YES	YES	YES	YES
BARRANCA #2	200 K	1962	STEEL	GOOD	YES	YES	YES	YES
TA-15	25 K	1950	STEEL	FAIR	YES	YES	YES	YES
TA-16	1,000 K	1950	STEEL	GOOD	YES	YES	YES	YES
TA-16-171	1,000 K	1950	STEEL	FAIR	YES	YES	YES	YES
DP EAST	100 K	1975	STEEL	GOOD	YES	YES	YES	YES
DP WEST	100 K	1949	STEEL	GOOD	YES	YES	YES	YES
TA-33	50 K	1949	STEEL	GOOD	YES	YES	YES	YES
TA-18	20 K		STEEL	NA	NO	YES	YES	YES
TA-55	25 K	1975	STEEL	GOOD	YES	YES	YES	YES
PAJARITO ROAD	100 K	1949	STEEL	GOOD	YES	YES	YES	YES
TA-53	1,000 K	1969	STEEL	GOOD	YES	YES	YES	YES
PAJARITO RD #5	500 K	1982	STEEL	FAIR	YES	YES	YES	YES

SECTION F - SAMPLING AND REPORTING

CONTAMINANT	LAST SAMPLE DATE	NEXT SAMPLE DATE	REQUIRED SAMPLE FREQUENCY	LAST NMED MONITORING	REMARKS OR RECOMMENDATIONS
Microbiological			30/mo		
Chlorine Residual			30/mo		
Turbidity			N/A		
Inorganics	9/23/92	1993	3 yr		
Radiologicals	9/23/92	1993	4 yr		
SDWA VOC's	8/18/92	1993	3 yr		
Total THM's	11/30/92	2/93	¼ yr		
SDWA Pesticides	N/A	N/A	not required		
Secondary	8/18/92				

SECTION G - RECORDKEEPING AND GENERAL OPERATION AND MAINTENANCE

(Please check Yes or No)

YES NO

X ___ 1. Does the system maintain records in accordance with Section 403 of the regulations?

X ___ 2. Does the system have a formal, written cross connection control program?

X ___ 3. Are known cross-connections eliminated or properly controlled by approved backflow prevention devices?

___ N/A 4. If seasonal, is the system disinfected, flushed, and sampled following periods of non-use?

X ___ 5. Does the system properly flush and disinfect mains and appurtances after repairs or installing new extensions?

X ___ 6. Does the system have a regular maintenance and/or a regular flushing program?

X ___ 7. Does the system maintain a minimum pressure of 20 psi. throughout the distribution system?

X ___ 8. If disinfection is used, does the system maintain and test for residuals in the distribution system on a regular bas

Remarks or Recommendations (Violations need to be listed on Violation Summary Form):

SECTION H - ATTACHMENTS INCLUDED WITH SURVEY

#		#	
___	042a - Violation Summary Form(s)	___	- Chlorine gas safety checklist(s)
X	042b - Well and Source Information Form(s)	___	- Photograph(s) of Water Supply System
X	042c - Entry Point Information Form(s)	___	- Other _____
___	042d - Treatment Plant Information Form(s)		

ENTRY POINT INFORMATION FORM
for Public Water Supply Systems
(Complete one page for each entry point)

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Entry Point Name:
001-15	Los Alamos	Pajarito Well No. 1

Directions to Site:
Intersection of East Jamez Rd. and State Rd. 502 (W. of Tsankawi) TA-72

Location Code (Township-Range-Section-Tracts, e.g. 19N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 51' 34"	106° 13' 29"

SECTION B - ENTRY POINT TREATMENT OBJECTIVES AND METHODS
(See instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

☐ - No Treatment at this point ☐ -Treated at Plant ☐ -Treated at source(s)	☐ - Iron Removal (F) Method(s) used:	☐ - Particulate Removal (P) Method(s) used:
☐ - Disinfection By-Products Control (B) Method(s) used:	☐ - Inorganics Removal (I) Method(s) used:	☐ - Radionuclides Removal (R) Method(s) used:
☐ - Corrosion Control (C) Method(s) used:	☐ - Manganese Removal (M) Method(s) used:	☐ - Softening (Hardness Removal) (S) Method(s) used:
☒ - Disinfection (D) Method(s) used: Gas Chlorination	☐ - Organics Removal (O) Method(s) used:	☐ - Taste / Odor Control (T) Method(s) used:

☒ - Other (Z) (including Fluoridation)
Los Alamos County Operated Fluoridation

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF PIPING / TREATMENT / APPURTENANCES

Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

ENTRY POINT INFORMATION FORM
for Public Water Supply Systems
(Complete one page for each entry point)

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Entry Point Name:
001-15	Los Alamos	Pajarito Booster No. 2

Directions to Site:

On Pajarito Rd., TA-54

Location Code (Township-Range-Section-Tracts, i.e. 10N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 50' 44"	106° 15' 0"

SECTION B - ENTRY POINT TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

☐ - No Treatment at this point ☐ -Treated at Plant ☐ -Treated at source(s)	☐ - Iron Removal (F) Method(s) used:	☐ - Particulate Removal (P) Method(s) used:
☐ - Disinfection By-Products Control (B) Method(s) used:	☐ - Inorganics Removal (I) Method(s) used:	☐ - Radionuclides Removal (R) Method(s) used:
☐ - Corrosion Control (C) Method(s) used:	☐ - Manganese Removal (M) Method(s) used:	☐ - Softening (Hardness Removal) (S) Method(s) used:
☒ - Disinfection (D) Method(s) used: Gas Chlorination	☐ - Organics Removal (O) Method(s) used:	☐ - Taste / Odor Control (T) Method(s) used:
☐ - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF PIPING / TREATMENT / APPURTENANCES

Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

ENTRY POINT INFORMATION FORM
for Public Water Supply Systems
(Complete one page for each entry point)

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Entry Point Name:
001-15	Los Alamos	Guaje Booster No. 2

Directions to Site:

In Rendija Canyon at Intersection with Guaje Canyon TA-0

Location Code (Township-Range-Section-Tracts, ie. 10N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 38"	106° 15' 08"

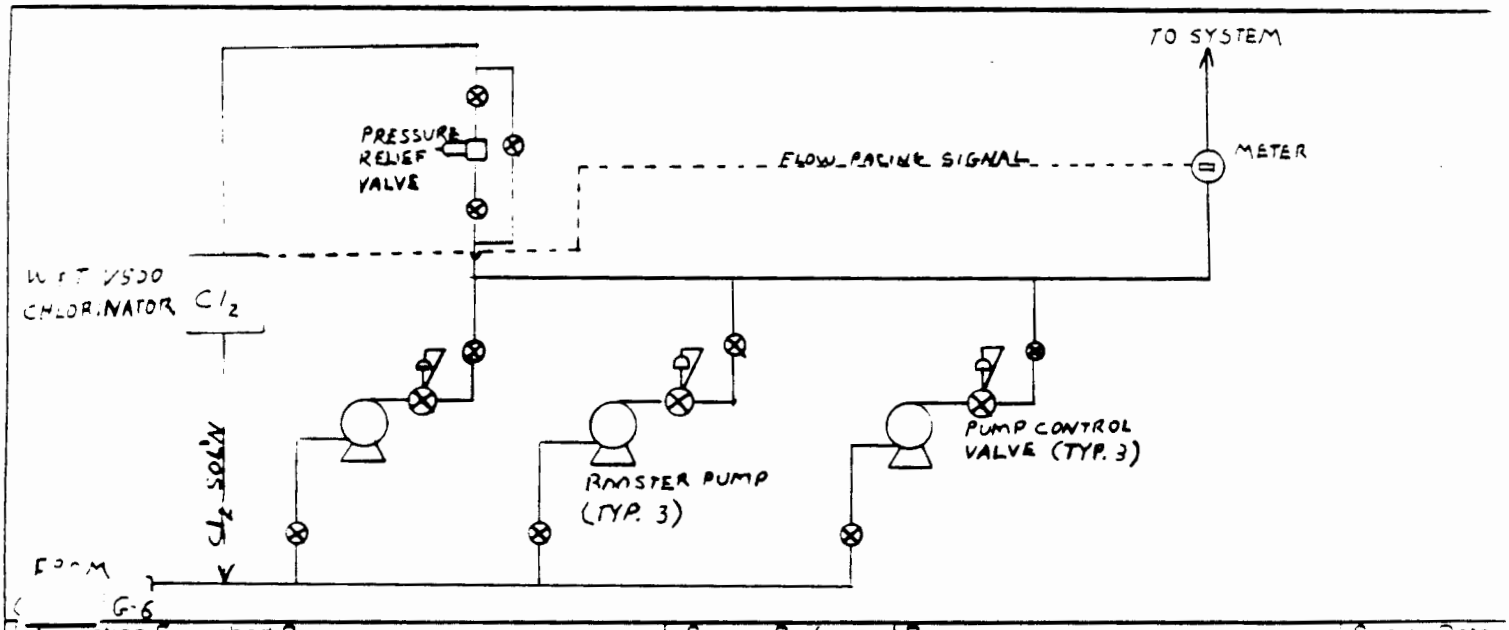
SECTION B - ENTRY POINT TREATMENT OBJECTIVES AND METHODS

(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

☐ - No Treatment at this point ☐ -Treated at Plant ☐ -Treated at source(s)	☐ - Iron Removal (F) Method(s) used:	☐ - Particulate Removal (P) Method(s) used:
☐ - Disinfection By-Products Control (B) Method(s) used:	☐ - Inorganics Removal (I) Method(s) used:	☐ - Radionuclides Removal (R) Method(s) used:
☐ - Corrosion Control (C) Method(s) used:	☐ - Manganese Removal (M) Method(s) used:	☐ - Softening (Hardness Removal) (S) Method(s) used:
☒ - Disinfection (D) Method(s) used: Gas Chlorination	☐ - Organics Removal (O) Method(s) used:	☐ - Taste / Odor Control (T) Method(s) used:
☐ - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

ENTRY POINT INFORMATION FORM
for Public Water Supply Systems
(Complete one page for each entry point)

SECTION A - GENERAL / LOCATION INFORMATION

NSS Code #:	Water Supply System Name:	Entry Point Name:
001-15	Los Alamos	Los Alamos Booster No. 4

Directions to Site:

State Road 501 at Los Alamos/Santa Fe County Line (S. of EG&G) TA-73

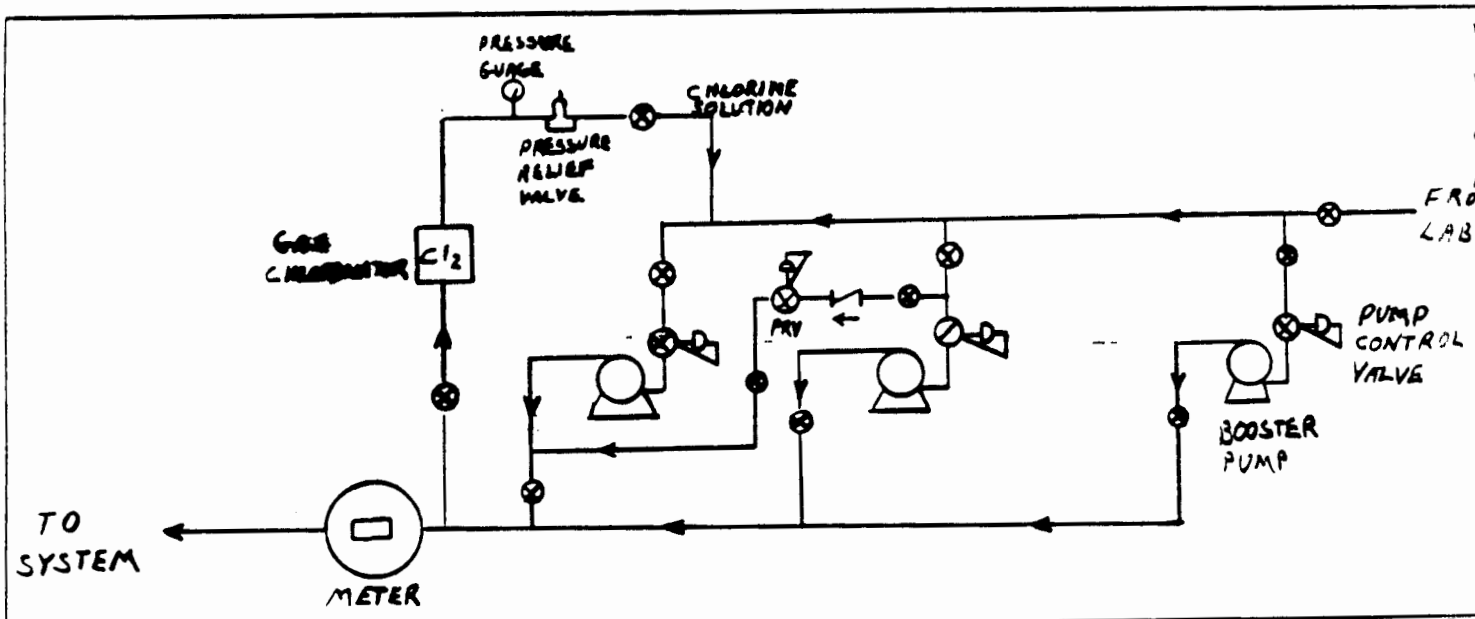
Location Code (Township-Range-Section-Tracts, e.g. 19N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 52' 29"	106° 14' 55"

SECTION B - ENTRY POINT TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

☐ - No Treatment at this point ☐ -Treated at Plant ☐ -Treated at source(s)	☐ - Iron Removal (F) Method(s) used:	☐ - Particulate Removal (P) Method(s) used:
☐ - Disinfection By-Products Control (B) Method(s) used:	☐ - Inorganics Removal (I) Method(s) used:	☐ - Radionuclides Removal (R) Method(s) used:
☐ - Corrosion Control (C) Method(s) used:	☐ - Manganese Removal (M) Method(s) used:	☐ - Softening (Hardness Removal) (S) Method(s) used:
☒ - Disinfection (D) Method(s) used: Gas Chlorination	☐ - Organics Removal (O) Method(s) used:	☐ - Taste / Odor Control (T) Method(s) used:
☐ - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Pajarito Mesa Well #1

Directions to Site:
NW of Intersection of S.R. 502 and S.R.4. TA-72

Location Code (Township-Range-Section-Tracts, e. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 51' 34"	106° 13' 29"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2501 Ft.	901 Ft.	753 Ft.	617 GPM	28 Ft.	1965	6496 Ft

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	6-65	[X] - Electric [ ] - Gas [ ] - Diesel [ ] - Propane [ ] - Other	250	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

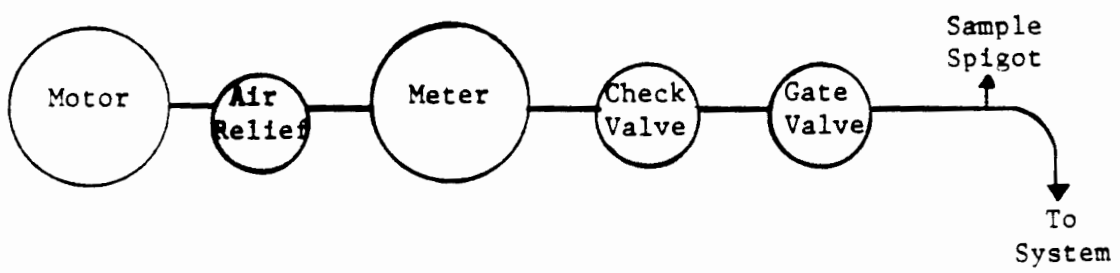
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[X] - Particulate Removal (P) Method(s) used: Sand Trap
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:

[X] - Other (Z) (including Fluoridation) L.A. County operates fluoridation system for this well.

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

UTILITY LINE FONT LEGEND

Ethernet, LAN, and Data Distribution lines	——C——C——C——C	(Red)
Telephone, and other Communication lines	——T——T——T——T	(Red)
Water lines	——W——W——W——W	(Blue)
Natural Gas lines	——G——G——G——G	(Red)
Radioactive Liquid Waste lines	——RW——RW——RW——	(Red)
Sanitary Sewer lines	——SS——SS——SS——	(Green)
Storm Drian lines	——SD——SD——SD——	(Blue)
Steam lines	——ST——ST——ST——	(Blue)
Electrical lines, Above or below grade	——UE——UE——UE——	(Red)
Cooling Water lines, To and from Cooling Towers	——CTW——CTW——CTW	(Blue)

CAUTION!!!
NOTE THAT ALL EXISTING UTILITIES MAY NOT BE SHOWN HEREON AND THAT ANY EXISTING UTILITIES THAT ARE SHOWN ARE IN "APPROXIMATE LOCATION ONLY".

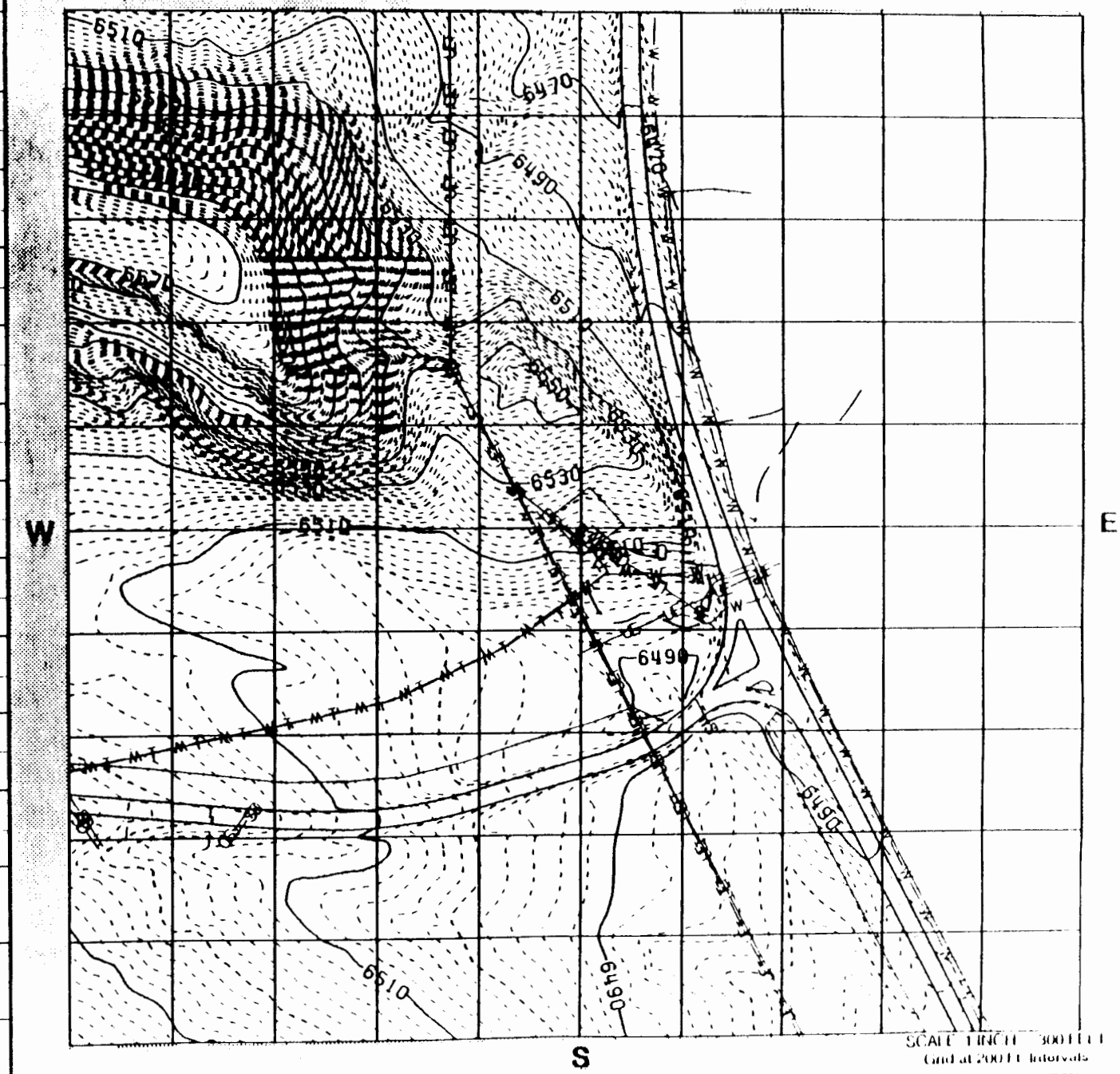
WELL AND SOURCE INFORMATION FORM (NMED 042b Side 2)

SECTION D - SOURCE AREA INFORMATION

PAJARITO WELL #1

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location
	See attached list



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	WELL PM-1	**TA-72**	
10	ACTIVE FIRING RANGE	TA-72	1
10	OPEN DETONATION AREA	TA-72	2
21	SEPTIC SYSTEM	TA-72	3

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Pajarito Mesa Well #2

Directions to Site: Pajarito Road at TA-18

Location Code (Township-Range-Section-Tracts, e. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 50' 17"	106° 15' 43"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or Installed)	Ground Elevation (at well site)
2600 Ft.	950 Ft.	856 Ft.	1325 GPM	74 Ft.	1965	6720 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	12-66	[X] - Electric [ ] - Propane [ ] - Gas [ ] - Other [ ] - Diesel	600	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

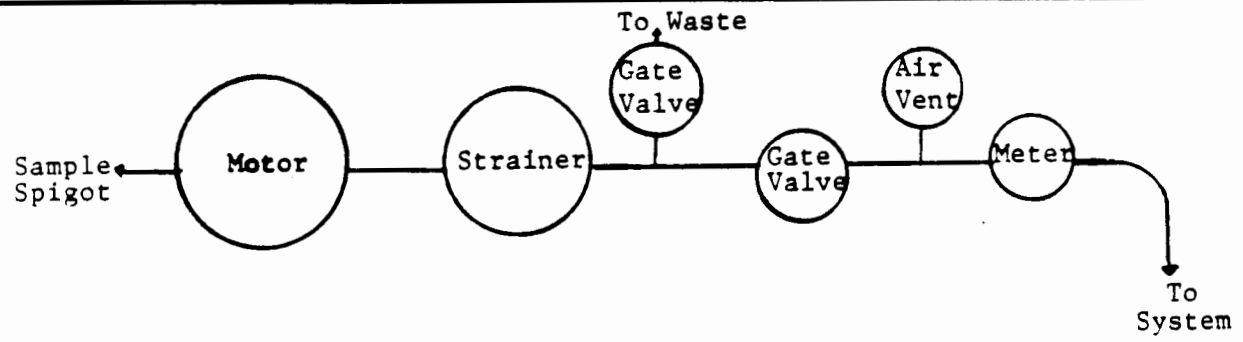
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [ ] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:

[ ] - Other (Z) (including Fluoridation)

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date:
Tim Galsco		

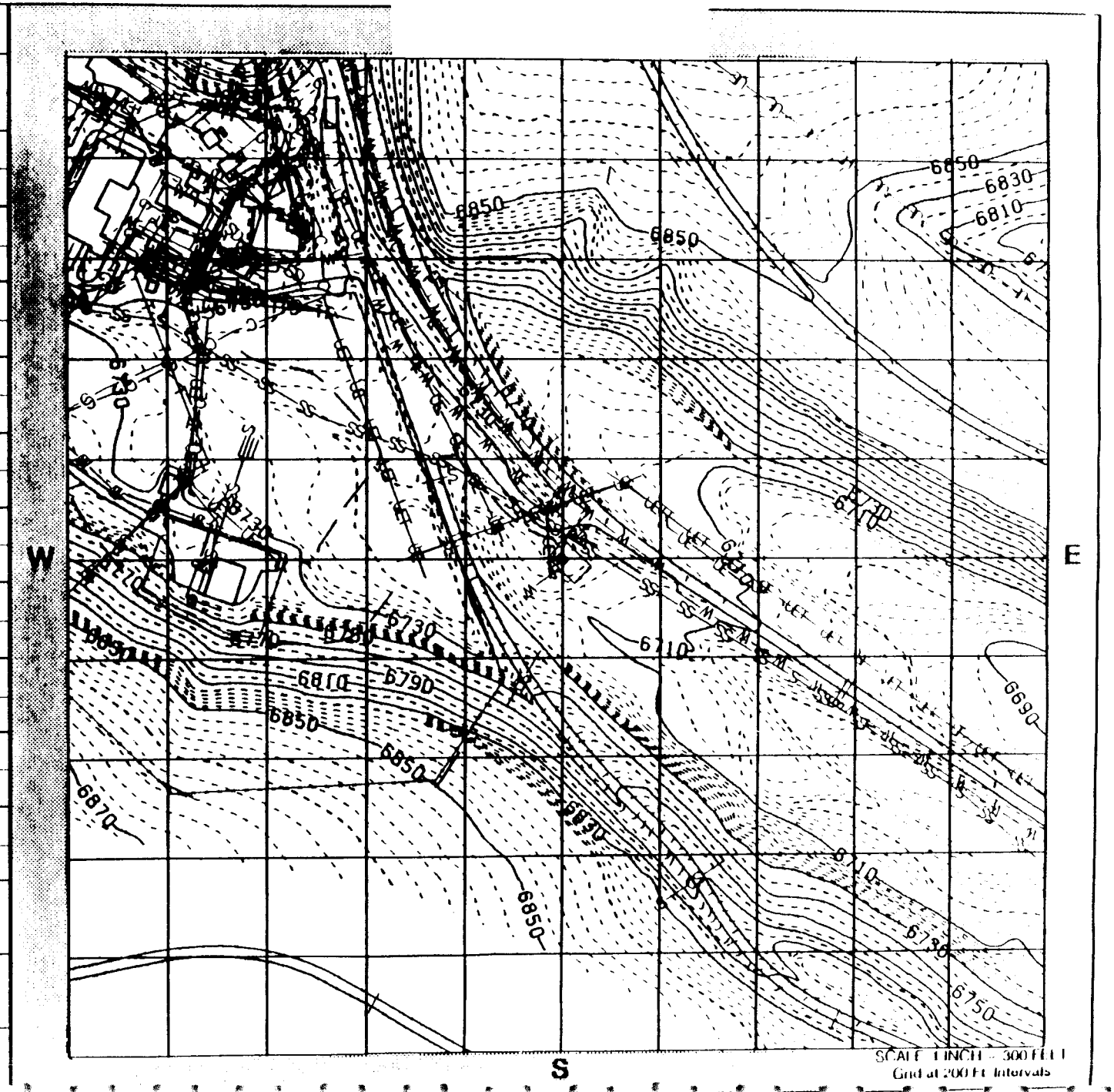
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

PAJARITO WELL #2

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location
	See attached list



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	WELL PM-2	**TA-18**	
21	LAGOONS AND DRAINLINES	TA-18	1
10	FIRING SITES/DROP TOWER	TA-18	2
21	SEPTIC SYSTEMS	TA-18	3
21	TANKS/LINES	TA-18	4
33	SOIL CONTAMINATION AT FORMER MAGAZINE SITES	TA-18	5
10	URANIUM SOLUTION PIPE	TA-18	6
21	SUSPECTED BURIAL SITE	TA-18	7
1	UNDERGROUND STORAGE TANK	TA-18	8
33	LEAKAGE FROM PCB TRANSFORMERS	TA-18	9
34	STORM SEWER OUTFALLS	TA-18	10
33	POTENTIAL CONTAMINATION BENEATH FORMER STRUCTURE	TA-18	11
21	SUMPS, ACID DRAINLINES, OUTFALLS	TA-18	12

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Pajarito Mesa Well #3

Directions to Site: N. of East Jemez Rd, 1/2 mi. West of Intersection of West Jemez Rd. & S.R. 4 TA-72

Location Code (Township-Range-Section-Tracts, i.e. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 51' 47"	106° 14' 3"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2552 Ft.	830 Ft.	771 Ft.	1412 GPM	23 Ft.	1966	6612 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	1-68	[X] - Electric [ ] - Gas [ ] - Diesel [ ] - Propane [ ] - Other	500	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

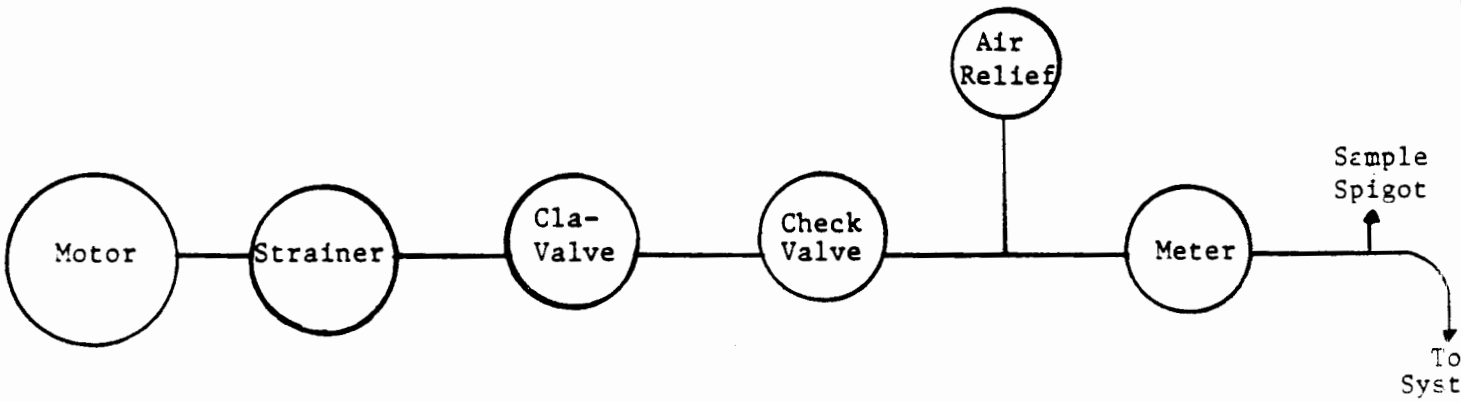
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [ ] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:

[ ] - Other (Z) (including Fluoridation)

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

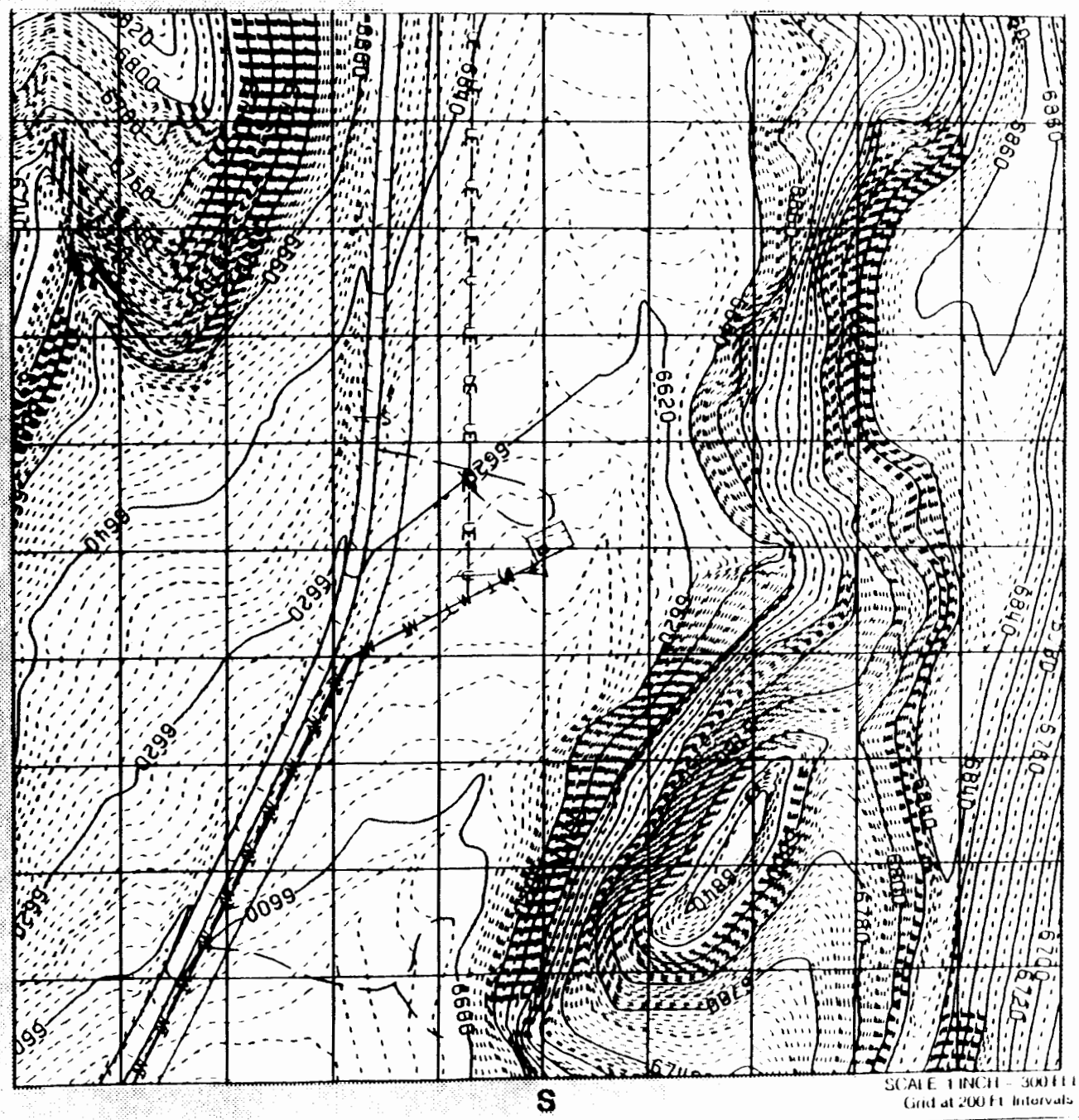
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

PAJARITO WELL #3

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) If Necessary)

Item # / Source Type #	Description / Location
	See attached list



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	WELLS PM-1 & PM-3	**TA-72**	
10	ACTIVE FIRING RANGE	TA-72	1
10	OPEN DETONATION AREA	TA-72	2
21	SEPTIC SYSTEM	TA-72	3

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Pajarito Mesa Well No. 4

Directions to Site:
North of Pajarito Booster No. 2 on Pajarito Rd. TA-54

Location Code (Township-Range-Section-Tracts, e.g. 19N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 51' 01"	106° 15' 56"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation at well site
2920 Ft.	1150 Ft.	1086 Ft.	1334 GPM	44 Ft.	1981	6919 Ft

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	7-82	[ ] - Electric [ ] - Propane [X] - Gas [ ] - Other [ ] - Diesel	600	Texaco Regal Oil R & O 150

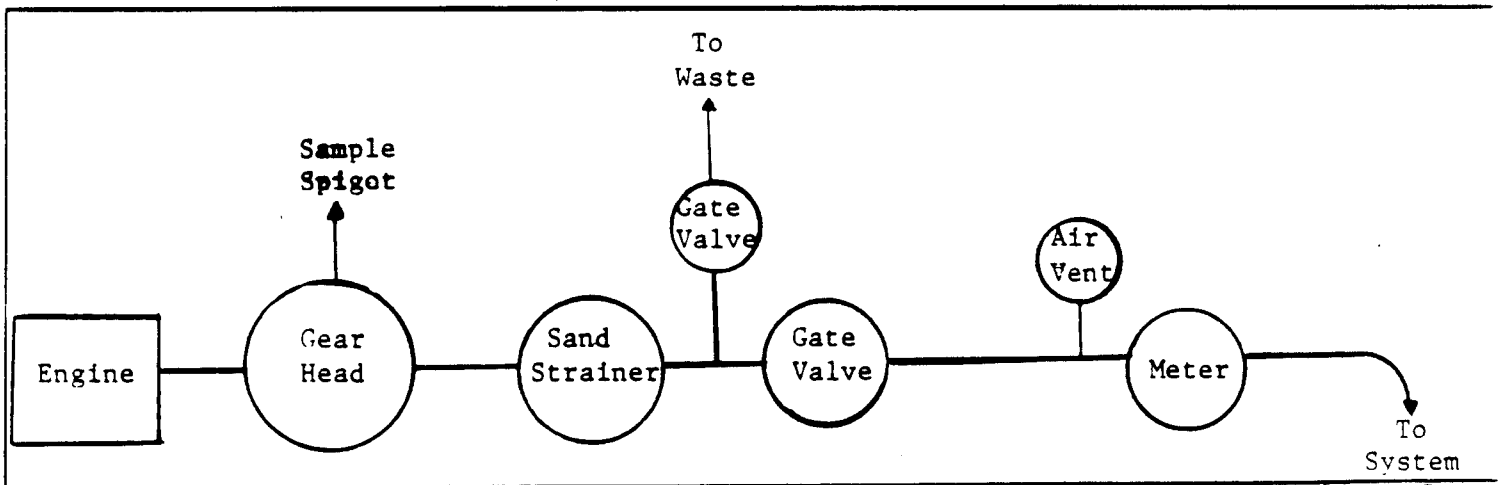
Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [ ] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:
[ ] - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

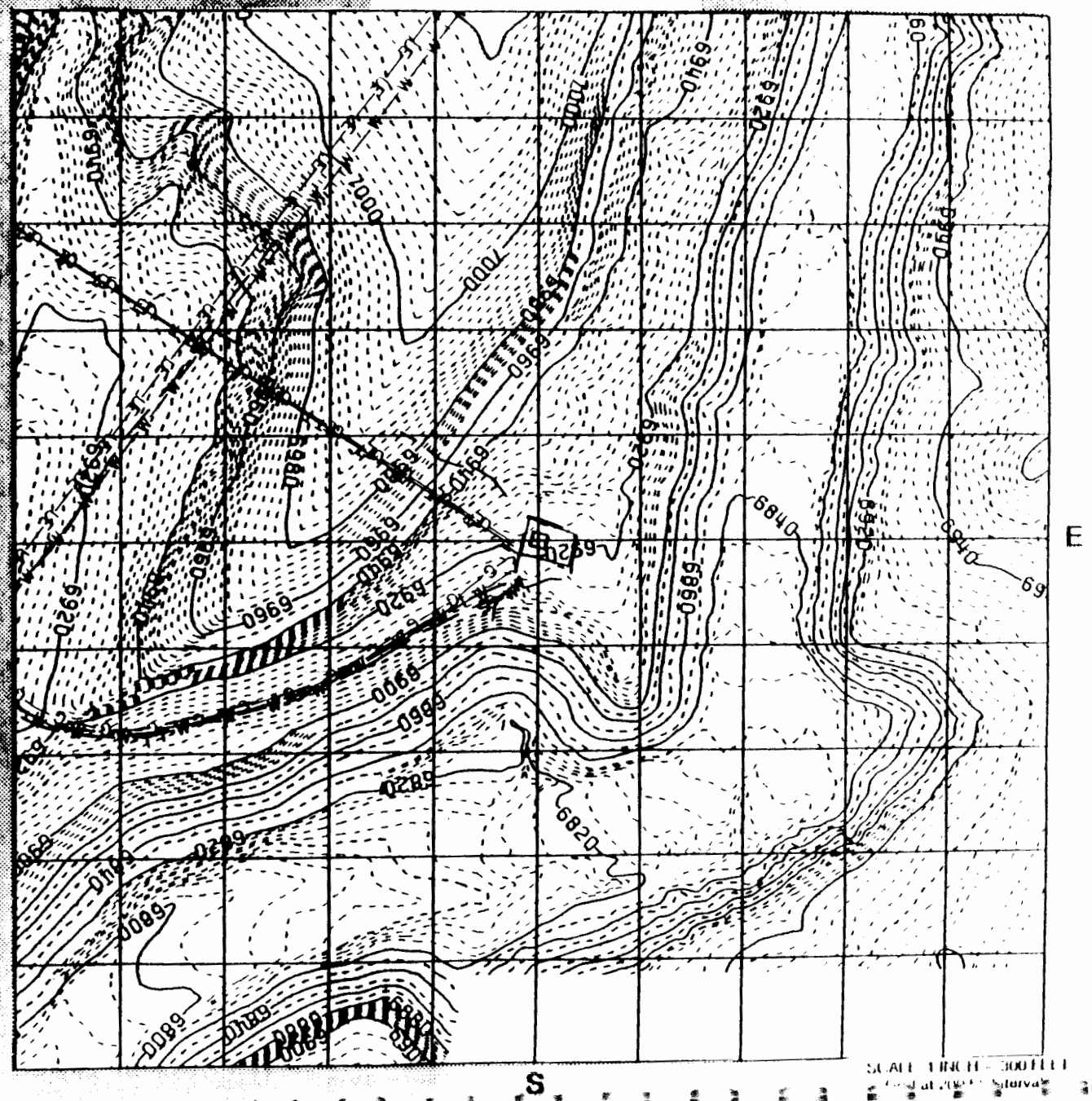
SECTION D - SOURCE AREA INFORMATION

PAJARITO WELL #4

LIST OF POTENTIAL POLLUTION SOURCES

(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location
	See attached list



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	WELL PM-4	**TA-54**	
21	SEPTIC SYSTEM	TA-51	1
10	ENVIRONMENTAL RESEARCH SITE	TA-51	2
21	HAZARDOUS WASTE CONTAINER STORAGE IN AREAS G & L	TA-54	1
21	COMPRESSED GAS STORAGE IN AREA L	TA-54	2
21	MATERIAL DISPOSAL AREA G (renumbered)	TA-54	3
21	MATERIAL DISPOSAL AREA H	TA-54	4
21	MATERIAL DISPOSAL AREA J	TA-54	5
21	MATERIAL DISPOSAL AREA L	TA-54	6
21	SEPTIC SYSTEMS IN AREA L AND TA-54 WEST	TA-54	7
21	SEWAGE TANK IN AREA L	TA-54	8
21	TREATMENT TANKS IN AREA L	TA-54	9
1	UNDERGROUND TANK IN AREA G	TA-54	10
21	TRU WASTE PACKAGING (renumbered)	TA-54	11
21	COMPACTORS IN AREAS G AND L	TA-54	12
21	TRUCK WASHING PITS AND OPERATIONAL RELEASES	TA-54	13
21	RADIOACTIVE WASTE STORAGE SHAFTS AND PITS	TA-54	14
21	SURFACE STORAGE OF RADIOACTIVE WASTE	TA-54	15
21	SUMPS IN AREA G AND TA-54 WEST	TA-54	16
21	MDA-G DISPOSAL PITS ACTIVE BEFORE 11/19/1980	TA-54	17
21	MDA-G DISPOSAL PITS ACTIVE AFTER 11/19/1980	TA-54	18
21	MDA-G DISPOSAL SHAFTS ACTIVE BEFORE 11/19/1980	TA-54	19
21	MDA-G DISPOSAL SHAFTS ACTIVE BEFORE 11/19/1980	TA-54	20
21	WASTE OIL STORAGE TANKS IN AREA G	TA-54	21
33	LEAKAGE FROM PCB TRANSFORMER	TA-54	22

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Pajarito Mesa Well No. 5

Directions to Site:
1/2 mi. east of TA-52 on Puye Rd. TA-5

Location Code (Township-Range-Section-Tracts, i.e. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 51' 30"	106° 16' 38"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
3120 Ft.	1384 Ft.	996 Ft.	1233 GPM	104 Ft.	1982	7096 Ft

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	4-86	[X] - Electric [ ] - Propane [ ] - Gas [ ] - Other [ ] - Diesel	700	Texaco Regal Oil R & O 150

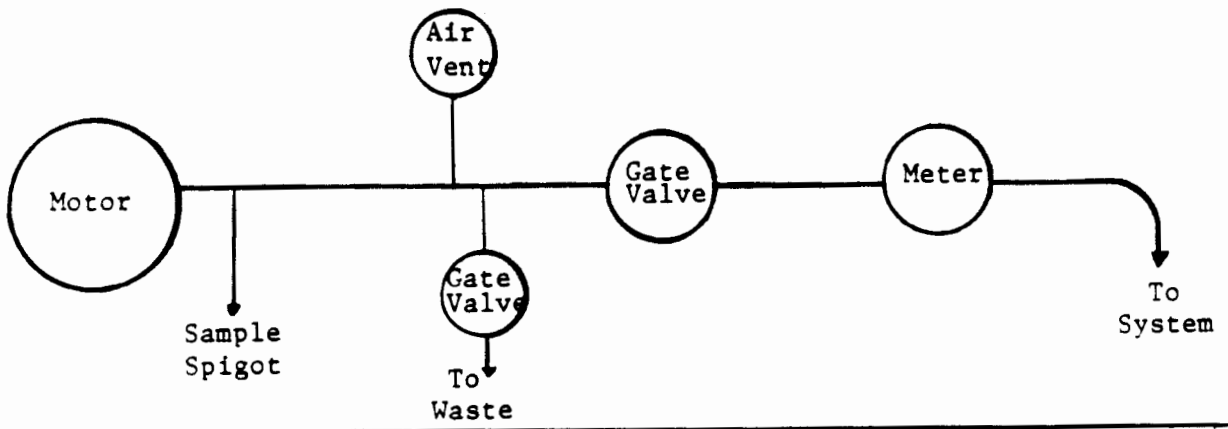
Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [ ] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:
[ ] - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

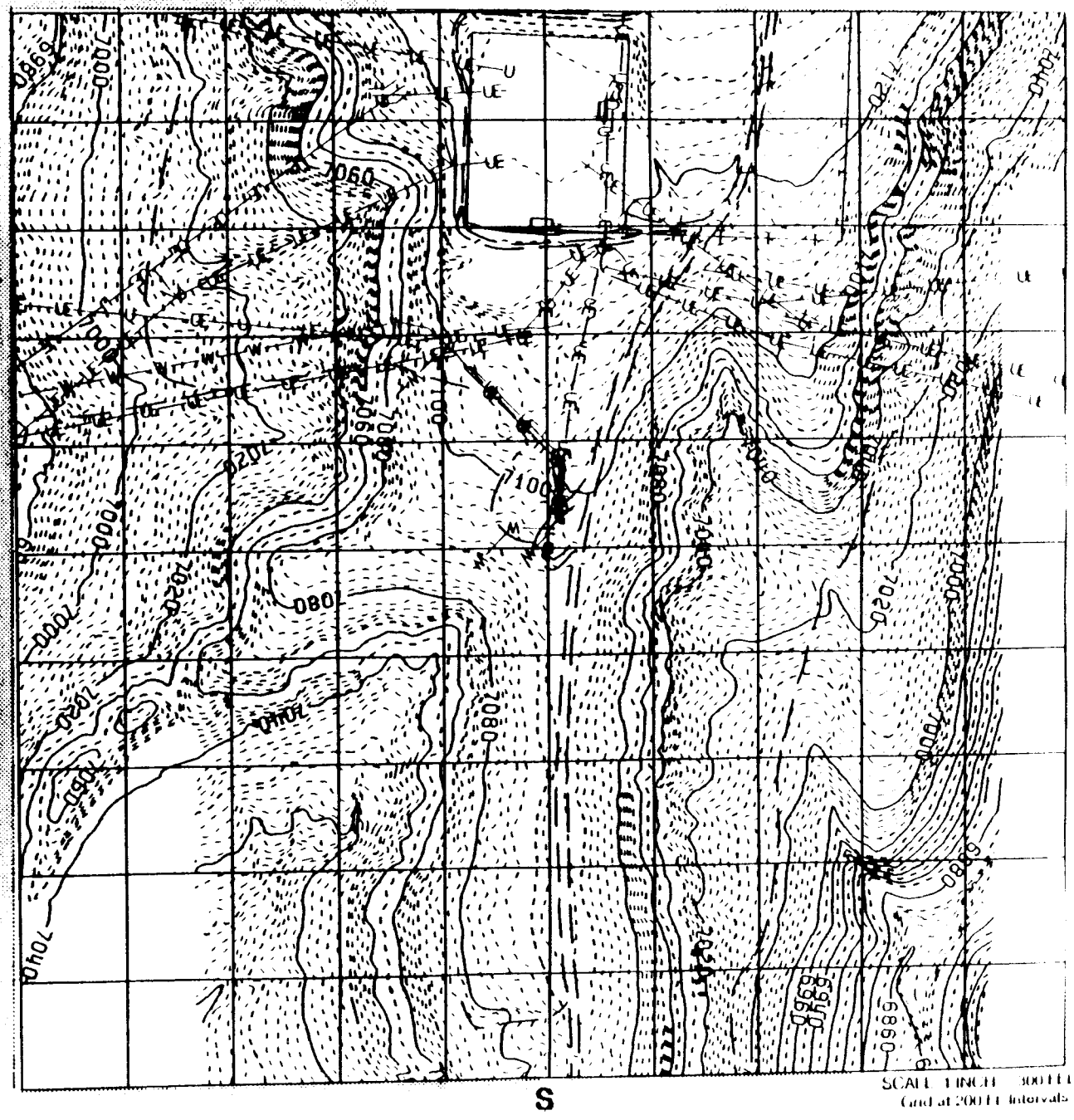
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

PAJARITO WELL #5

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location
	See attached list



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	WELL PM-5	**TA-05**	
10	FIRING SITES	TA-05	1
21	CANYONSIDE DISPOSAL	TA-05	2
21	CALIBRATION CHAMBER	TA-05	3
21	SEPTIC SYSTEM	TA-05	4
21	DRAINS AND OUTFALLS	TA-05	5
33	SOIL CONTAMINATION BENEATH FORMER BUILDINGS	TA-05	6

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir Intake
[ ] - Spring [ ] - Stream Intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Guaje Well No. 1

Directions to Site:
Guaje Canyon at San Ildefonso Pueblo Boundary TA-0

Location Code (Township-Range-Section-Tracts, e.g. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 07"	106° 11' 46"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or Installed)	Ground Elevation (at well site)
2002 Ft.	465 Ft.	280 Ft.	175 GPM	167 Ft.	1950	5969.9 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	7-50	[X] - Electric [ ] - Propane [ ] - Gas [ ] - Other [ ] - Diesel	150	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

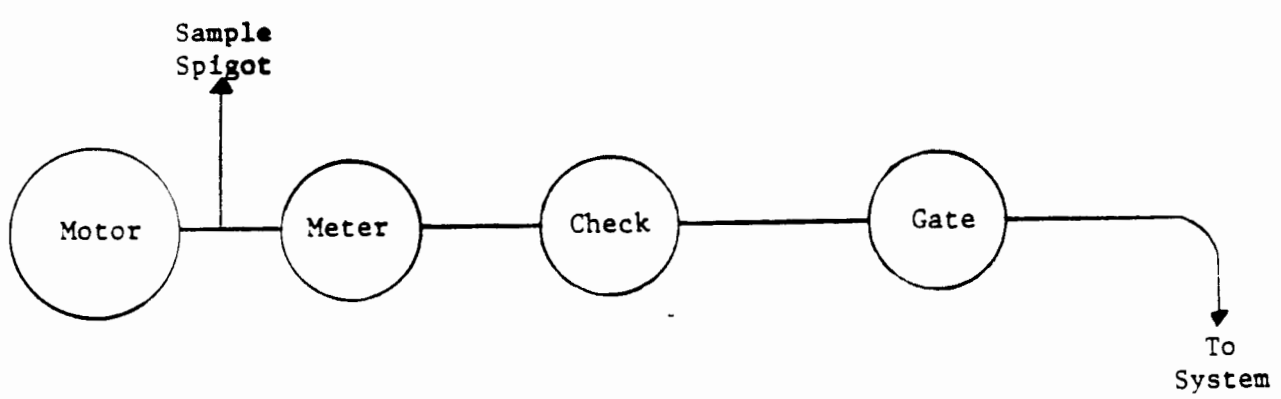
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS

(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:
[ ] - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

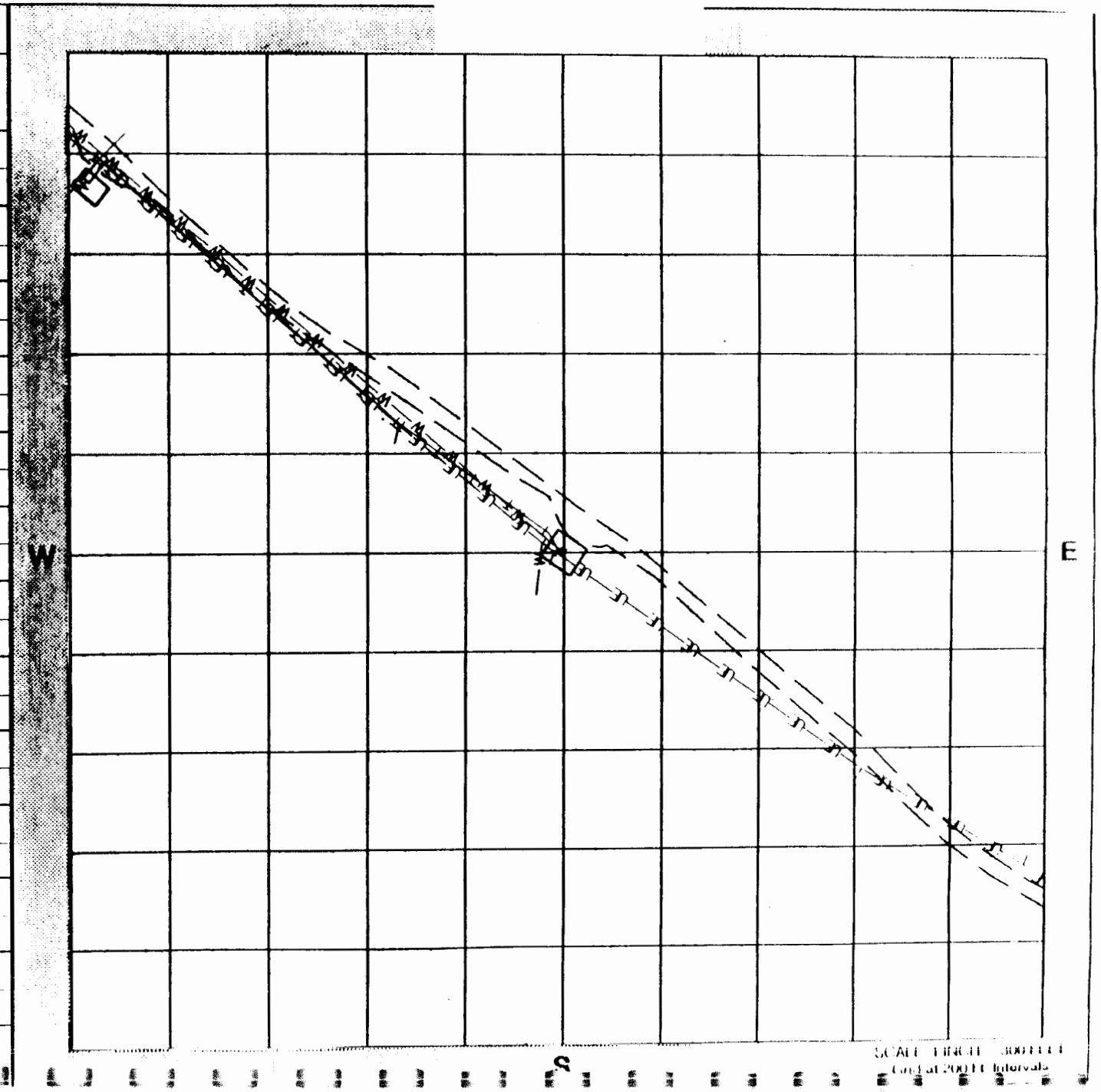
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

GAUJE WELL #1

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location
	See attached list for all Guaje Wells.



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	GUAJE WELLS	**TA-00**	
25	TANK MESA LANDFILL	TA-00	25
33	LEAKAGE FROM PCB TRANSFORMERS	TA-00	29

WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Guaje Well No. 1A

Directions to Site:
Guaje Canyon TA-0

Location Code (Township-Range-Section-Tracts, i.e. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 14"	106° 11' 57"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2071 Ft.	500 Ft.	326 Ft.	482 GPM	41 Ft.	1954	6017.7 Ft

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	12-54	[X] - Electric [ ] - Propane [ ] - Gas [ ] - Other [ ] - Diesel	150	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

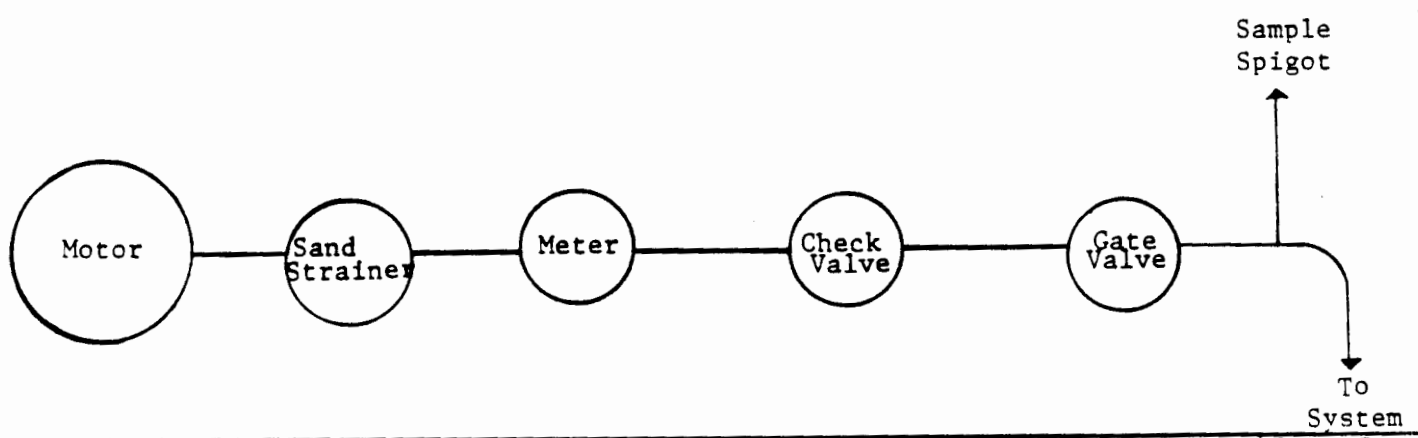
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:

[ ] - Other (Z) (including Fluoridation)

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

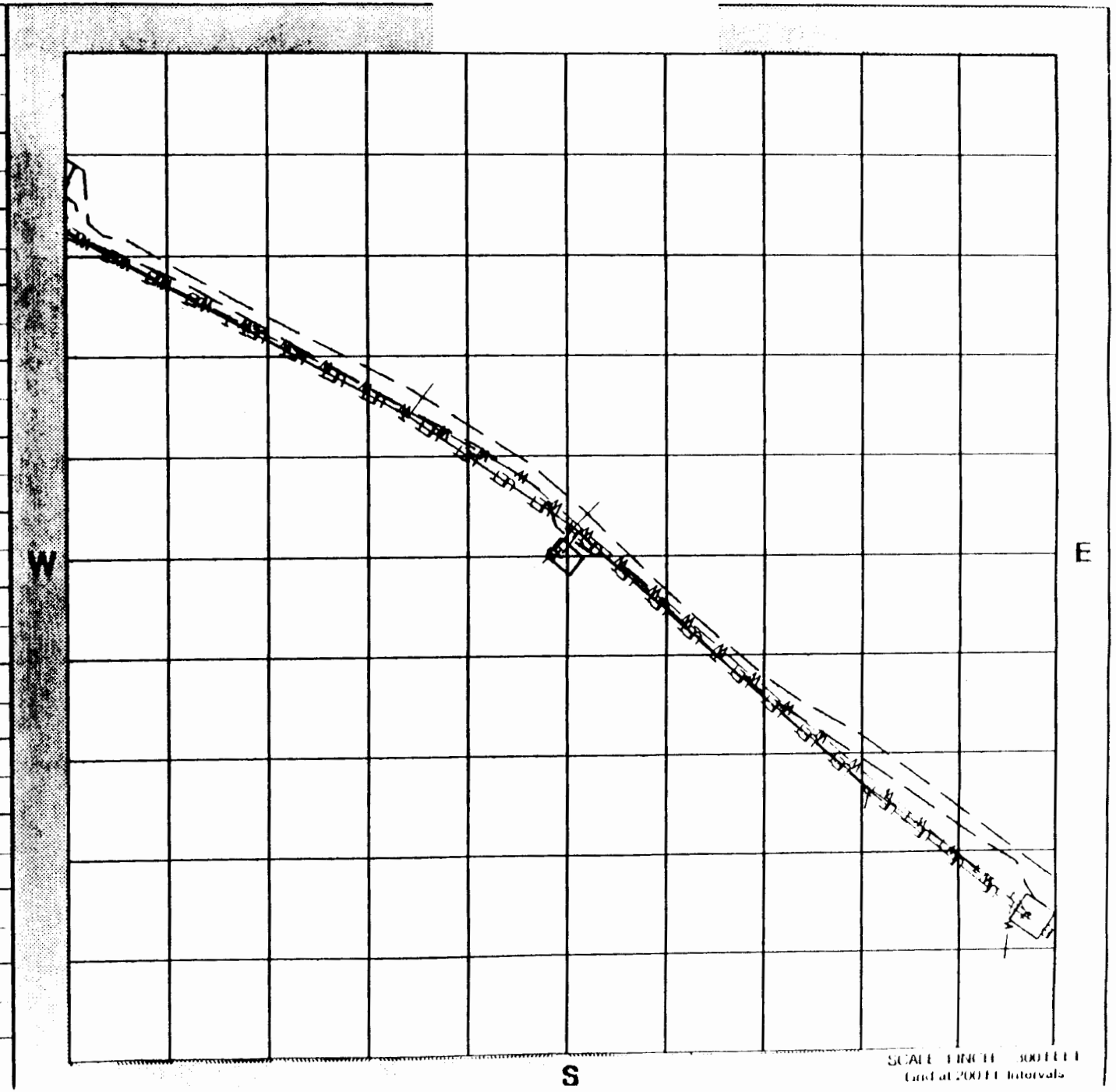
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

GAUJE WELL #1A

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) If Necessary)

Item # / Source Type #	Description / Location



WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Guaje Well No. 2

Directions to Site:
Guaje Canyon TA-0

Location Code (Township-Range-Section-Tracts, ie. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 22"	106° 12' 10"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2006 Ft.	500 Ft.	372 Ft.	421 GPM	30 Ft.	1951	6044 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	7-51	[X] - Electric [ ] - Gas [ ] - Diesel [ ] - Propane [ ] - Other	125	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

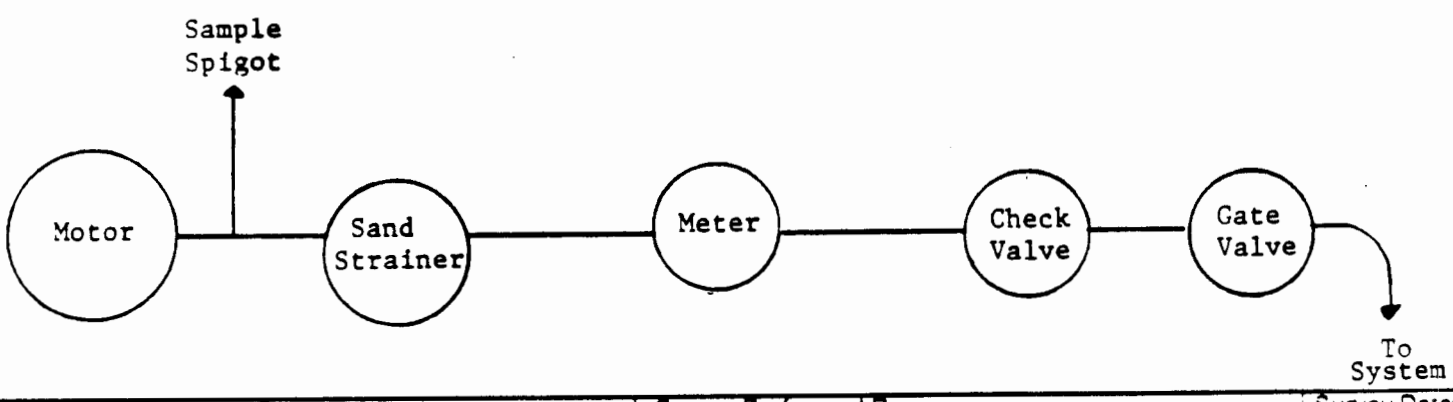
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:

[ ] - Other (Z) (including Fluoridation)

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

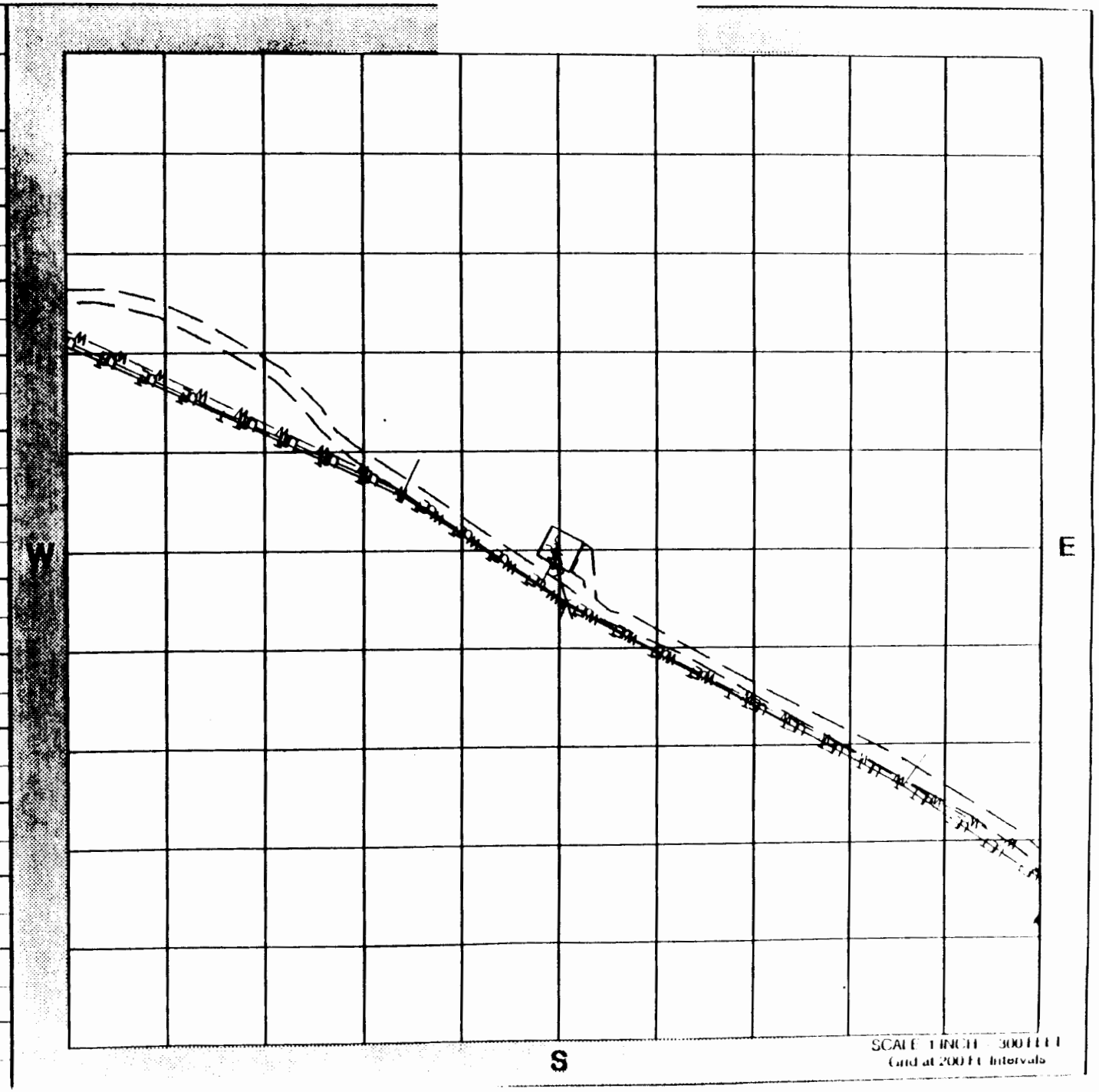
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

GAUJE WELL #2

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location



WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Guaje Well No. 4

Directions to Site:

Guaje Canyon TA-0

Location Code (Township-Range-Section-Tracts, ie. 10N08E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 35"	106° 13' 13"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2002 Ft.	610 Ft.	392 Ft.	168 GPM	163 Ft.	1951	6218 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	6-51	[X] - Electric [ ] - Gas [ ] - Diesel [ ] - Propane [ ] - Other	125	Texaco Regal Oil R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

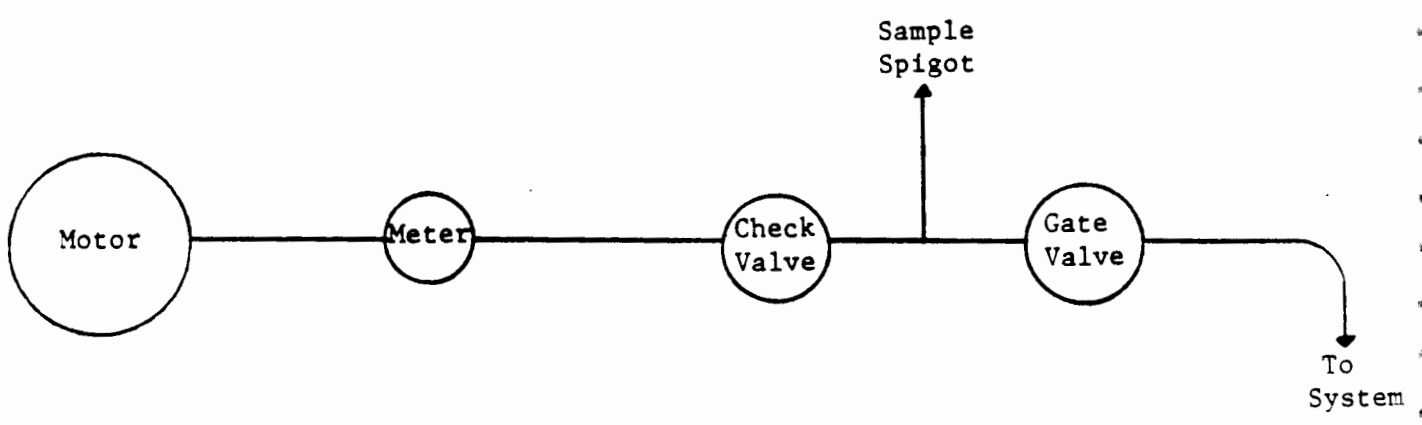
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS

(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:
[ ] - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

SDWA COMPLIANCE SUMMARY		
	MCLG (mG/L)	ACTION LEVEL (Mg/l)
Pb	0	0.015
Cu		1.300

LOS ALAMOS COUNTY DRINKING WATER LEAD & COPPER COMPLIANCE SAMPLING EFFORT

October 1992 - February 1993

SLD ROST #	LA CO. SAMPLE	SAMPLE DATE O=ORIGINAL R=RESAMPLE A=ADD'L	HOMEOWNER NAME	HOME ADDRESS	COMPT. DATE	PLUMBING TYPE	SAMPLE PARAMETER Pb	SAMPLE PARAMETER Cu	SLD ANALYTICAL DATA - Pb E=EXCEED	SLD ANALYTICAL DATA - Cu E=EXCEED	EM-9 ANALYTICAL DATA - Pb E=EXCEED
038160	92001	10/29/92	Steve W. Wells	205 Canada Way, WR		Cu	X	X	<0.0050	<0.0500	
038161	92002	10/26/92	Larry Dauelsberg	1462 Camino Medio, LA		Cu	X	X	<0.0050	<0.0500	
038162	92003	10/29/92	Betty Gunther	1510 Camino Medio, LA		Cu1	X	X	<0.0050	<0.0500	
038163	92004	10/17/92	Gary Kindsfather	379 Catherine, WR		P	X	X	<0.0050	0.0700	
038164	92005	10/19/92	Carl Huth	1950 Camino Mora, LA		Cu	X	X	<0.0050	<0.0500	
038165	92006	10/19/92	Michael McQuade	1137 San Ildefonso Rd., LA		Cu	X	X	<0.0050	0.0600	
038166	92007	10/22/92	David Jamriska	925 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038167	92010	10/29/92	Frank Motley	9222 Ridgeway, LA		Cu	X	X	<0.0050	<0.0500	
038168	92012	10/27/92	Leonard Trujillo	1489 Camino Medio, LA		U	X	X	<0.0050	<0.0500	
038169	92016	10/17/92	Monte Parker	985 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038170	92017	10/29/92	W. R. Huges	342 Garver Lane, WR		P	X	X	<0.0050	0.1200	
038171	92018	10/30/92	Steve Rourret	1 Arbol Court, WR		Cu	X	X	<0.0050	0.1400	
038172	92019	10/19/92	Richard Ryder	390 Richard Court, WR		Cu	X	X	<0.0050	0.1000	
038173	92020	11/13/92	James Sussman	1855 Camino Uva, LA		Cu	X	X	<0.0050	<0.0500	
038174	92021	10/23/92	C. Bharmatz *	377 Garver Lane, WR		U	X	X	<0.0050	0.0700	
038175	92022	10/18/92	Burt Burkett	955 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038176	92024	10/28/92	H. Darrell Holt	261 Canada Way, WR		Cu	X	X	<0.0050	0.1200	
038177	92025	11/09/92	Paul Cunningham	1127 San Ildefonso, LA		Cu	X	X	<0.0050	<0.0500	
038178	92026	10/20/92	Janina Hecker	117 Rim Road, LA		Cu1	X	X	<0.0050	<0.0500	
038179	92029	10/28/92	Keith Fife	157 Piedra Loop, LA		Cu1	X	X	<0.0050	0.0700	

SLD RQST #	LA CO. SAMPLE	SAMPLE DATE O=ORIGINAL R=RESAMPLE A=ADD'L	HOMEOWNER NAME	HOME ADDRESS	CONST. DATE	PLUMBING TYPE	SAMPLE PARAMETER Pb	Cu	SLD ANALYTICAL DATA - Pb E=EXCEED	SLD ANALYTICAL DATA - Cu E=EXCEED	EM-9 ANALYTICAL DATA - Pb E=EXCEED
038180	92030	10/30/92	Jerry Freer	374 Garver Lane, WR		Cu	X	X	<0.0050	0.0600	
038181	92031	10/27/92	Dan Sena	1163 Big Rock Loop, LA		Cu1	X	X	<0.0050	0.0500	
038182	92033	10/22/92	Walter Siglock	380 Rim Road, LA		Cu	X	X	<0.0050	<0.0500	
038183	92038	10/17/92	Dominic Chan	1185 Big Rock Loop, LA		Cu	X	X	<0.0050	<0.0500	
038184	92039	10/29/92	Rajan Gupta	1367 San Ildefonso Rd., LA		Cu	X	x	<0.0050	<0.0500	
038185	92043	11/13/92	Melvin Duran	68 Canada Circle, LA		Cu	X	X	0.0060	0.0900	
038186	92046	11/04/92	Helen Stanbro	1632 Camino Redondo, LA	02/27/85	Cu	X	X	0.0060	<0.0500	
038187	92048	10/21/92	David Littlefiel	30 Bonito Place, LA	04/02/85	Cu	X	x	<0.0050	<0.0500	
038188	92051	10/19/92	Charles Shull	1954 Camino Uva, LA	05/16/85	Cu	X	X	<0.0050	0.0500	
038189	92052	10/30/92	Douglas Weiss	1394 Big Rock Loop, LA	06/13/85	Cu	X	X	0.0070	0.0500	
038190	92053	10/25/92	Paul Stanek	1270 Big Rock Loop, LA	06/17/85	Cu	X	X	<0.0050	0.0500	
038191	92054	10/26/92 O	Robert Baca	994 Capulin, LA - Kitchen	06/26/85	U	X	X	0.0170 E	0.0700	
038153-B		02/25/93 R	Robert Baca	994 Capulin, LA - Kitchen	06/26/85	U	X		<0.0050		
038153-C		02/25/93 R	Robert Baca	994 Capulin, LA - Kitchen	06/26/85	U	X				<0.0070
038154-B		02/25/93 A	Robert Baca	994 Capulin, LA - U.Bath	06/26/85	U	X		<0.0050		
038154-C		02/25/93 A	Robert Baca	994 Capulin, LA - U.Bath	06/26/85	U	X				<0.0070
038192	92055	10/27/92	Carl Hoth	1930 Camino Redondo, LA	06/25/85	Cu	X	X	<0.0050	<0.0500	
038193	92056	10/19/92	Pamela Paine	1213 San Ildefonso Rd., LA	07/09/85	Cu	X	X	<0.0050	0.0600	
038194	92057	10/23/92	Jane Nordholt	1193 San Ildefonso Rd., LA	07/15/85	U	X	X	<0.0050	<0.0500	
038195	92059	10/20/92	Kevin McCabe	1165 Los Pueblos, LA	08/14/85	Cu	X	X	<0.0050	0.0500	
038196	92061	10/28/92	Constance Kelly	1130 Big Rock Loop, LA	09/16/85	Cu	X	X	<0.0050	<0.0500	
038197	92062	10/18/92 O	Stan Kosiewicz	958 Tsankawi, LA - R.S.Bath	10/17/85	Cu1	X	X	0.3500 E	0.0500	
038151-B		02/24/93 R	Stan Kosiewicz	958 Tsankawi, LA - R.S.Bath	10/17/85	Cu1	X		0.0430 E		
038151-C		02/24/93 R	Stan Kowiewicz	958 Tsankawi, LA - R.S.Bath	10/17/85	Cu1	X				0.0220 +6 E
038150-B		02/24/93 A	Stan Kosiewicz	958 Tsankawi, LA - L.S.Bath	10/17/85	Cu1	X		<0.0050		
038150-C		02/24/93 A	Stan Kosiewicz	958 Tsankawi, LA - L.S.Bath	10/17/85	Cu1	X				<0.0070
038152-B		02/24/93 A	Stan Kosiewicz	958 Tsankawi, LA - Laun.Rm.	10/17/85	Cu1	X		<0.0050		
038152-C		02/24/93 A	Stan Kosiewicz	958 Tsankawi, LA - Laun.Rm.	10/17/85	Cu1	X				<0.0070
038198	9302678	11/11/92	Marke Talley	1900 Diamond Drive, LA			X	X	<0.0050	<0.0500	
038199	9302679	11/17/92	Marke Talley	1900 Diamond Drive, LA			X	X	<0.0050	0.0500	
038540	92036	11/25/92	Carmen Rodriguez	967 Tsankawi, LA		U	X	X	<0.0050	<0.0500	
038541	92037	11/14/92	Wayne Danen	200 Canada Way, WR		Cu	X	X	<0.0050	0.1100	
038542	92044	11/25/92	Quinn Cremer	20 Terry Lane, LA	01/06/85	Cu	X	X	<0.0050	<0.0500	
038543	92060	10/17/92	C. R. Jones	1520 Camino Redondo, LA	09/03/85	Cu	X	X	0.0060	<0.0500	
038544	92065	11/03/92	Joe Rieken	929 Capulin Rd., LA	11/07/85	Cu	X	X	0.0050	0.0500	

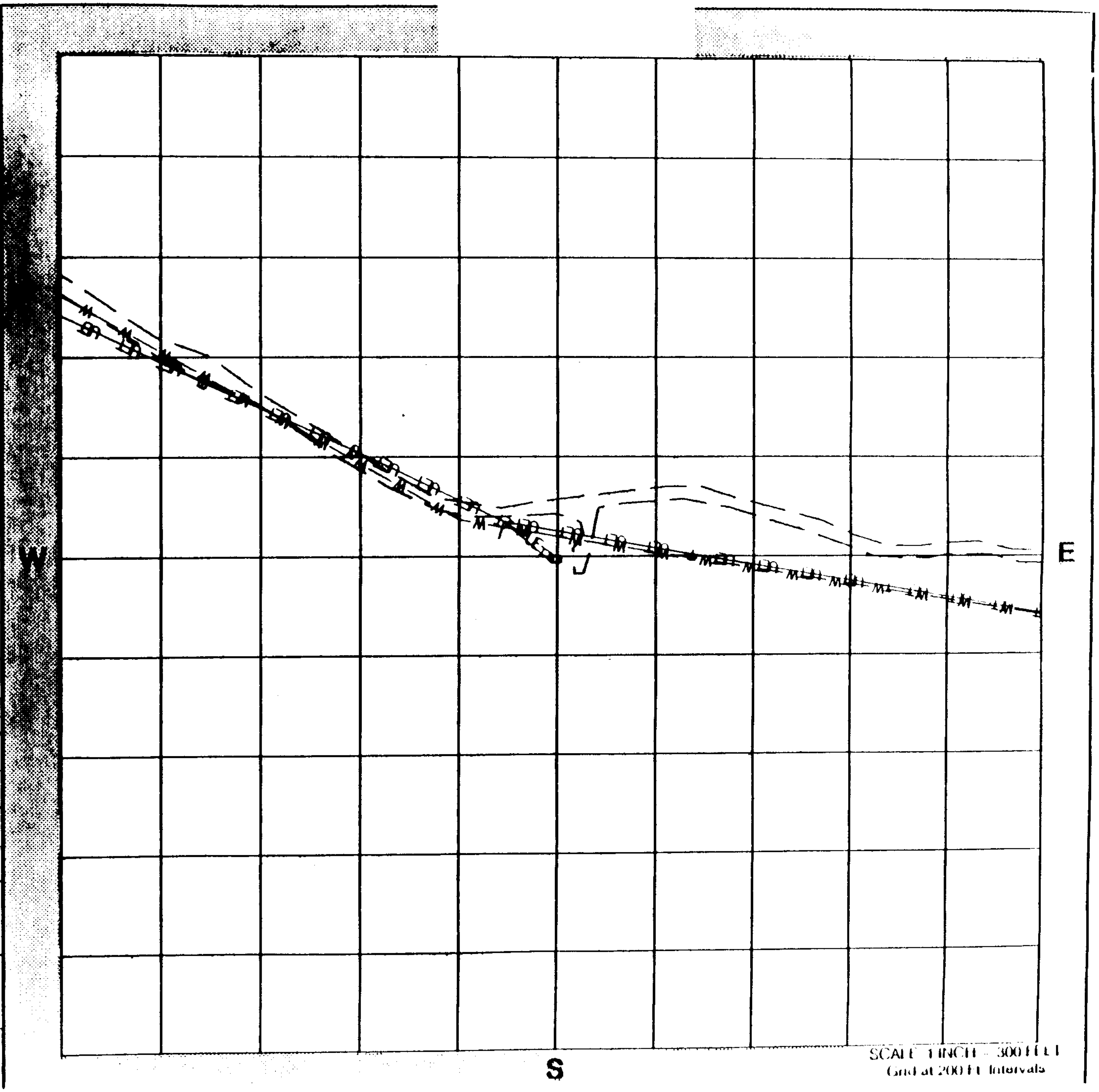
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

GAUJE WELL #4

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) If Necessary)

Item # / Source Type #	Description / Location



WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
☐ - Ground ☐ - Surface
☒ - Well ☐ - Reservoir intake
☐ - Spring ☐ - Stream intake
☐ - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Guaje Well No. 5

Directions to Site:
Guaje Canyon TA-0

Location Code (Township-Range-Section-Tracts, i.e. 10N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 49"	106° 13' 38"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation at well site
1997 Ft.	600 Ft.	490 Ft.	372 GPM	43 Ft.	1951	6920.5 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
☐ - Turbine ☒ - Submersible		☒ - Electric ☐ - Propane ☐ - Gas ☐ - Other ☐ - Diesel	150	N/A

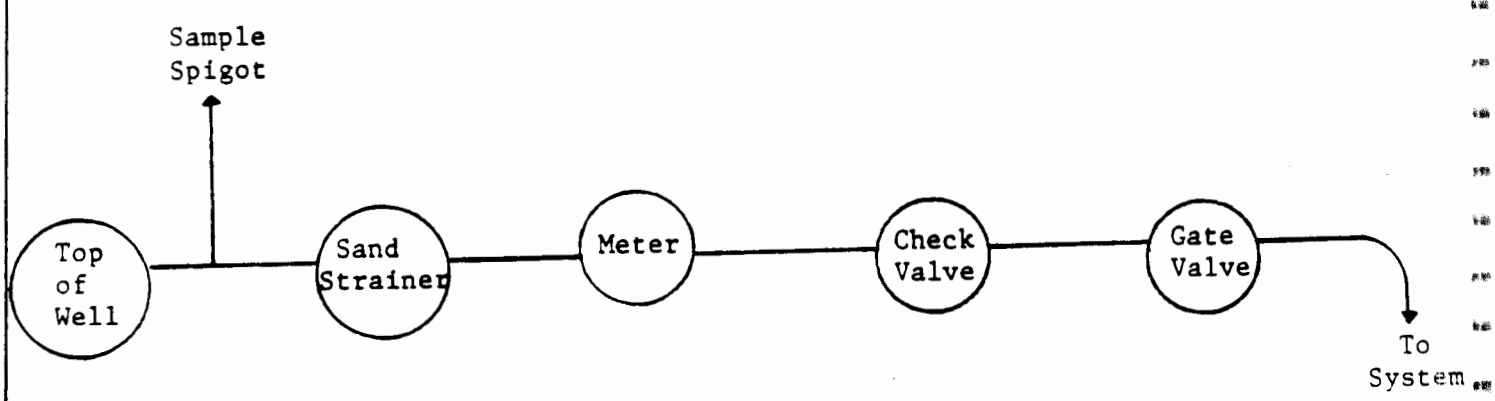
Source Availability: ☒ - Permanent ☐ - Seasonal ☐ - Emergency ☐ - Interim ☐ - Other

SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

☒ - No Treatment at Source (N) ☐ -Treated at Plant ☒ -Treated at Entry point	☐ - Iron Removal (F) Method(s) used:	☐ - Particulate Removal (P) Method(s) used:
☐ - Disinfection By-Products Control (B) Method(s) used:	☐ - Inorganics Removal (I) Method(s) used:	☐ - Radionuclides Removal (R) Method(s) used:
☐ - Corrosion Control (C) Method(s) used:	☐ - Manganese Removal (M) Method(s) used:	☐ - Softening (Hardness Control) (S) Method(s) used:
☐ - Disinfection (D) Method(s) used:	☐ - Organics Removal (O) Method(s) used:	☐ - Taste / Odor Control (T) Method(s) used:
☐ - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



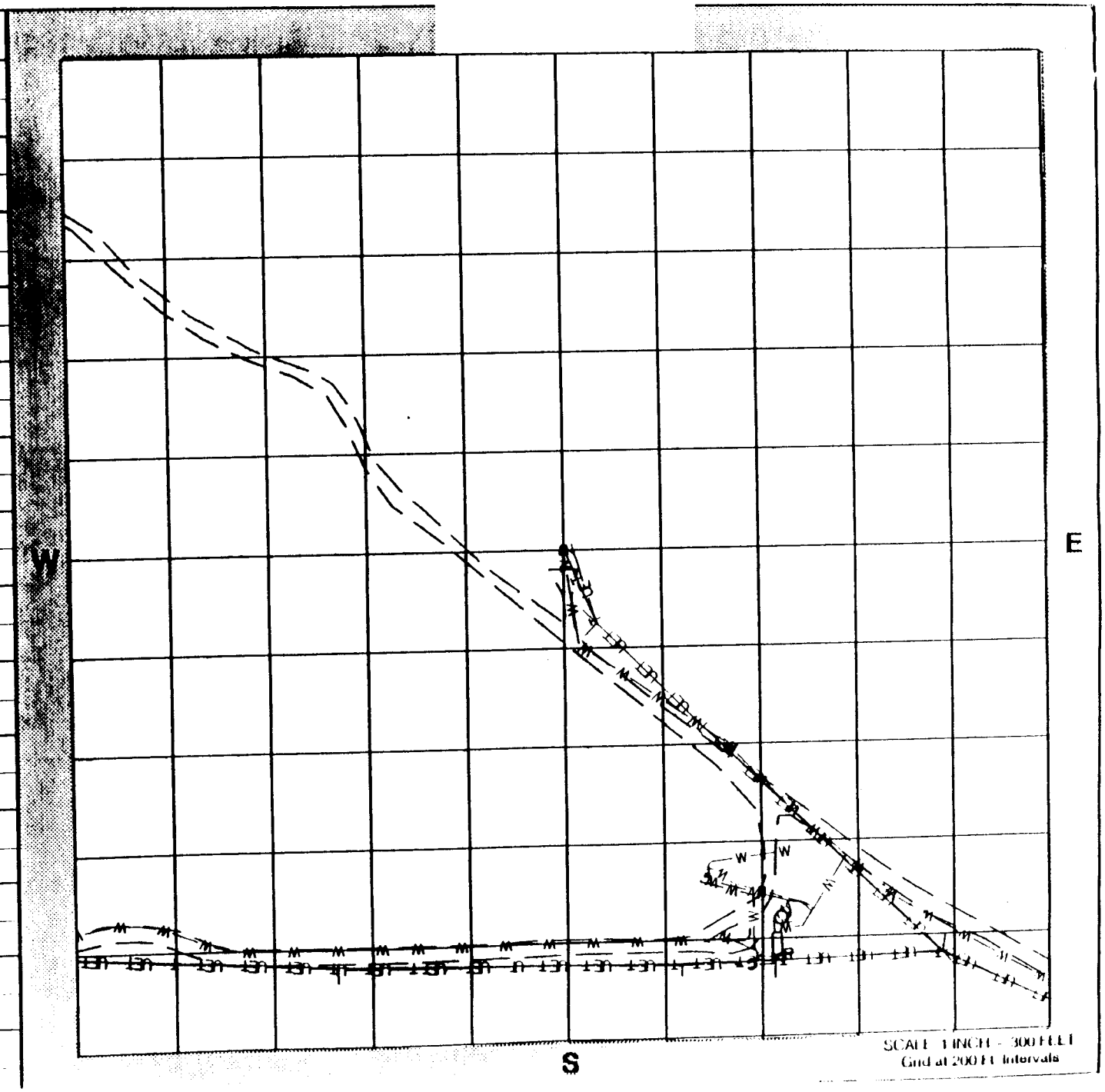
Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

LIST OF POTENTIAL POLLUTION SOURCES (Attach Continuation Sheet(s) if Necessary)	
Item # / Source Type #	Description / Location

GAUJE WELL #5



WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source:
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Guaje Well No. 6

Directions to Site:
In Guaje Canyon TA-0

Location Code (Township-Range-Section-Tracts, i.e. 19N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	35° 54' 39"	106° 14' 04"

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2005 Ft.	710 Ft.	604 Ft.	266 GPM	78 Ft.	1964	6423 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	6-64	[X] - Electric [ ] - Propane [ ] - Gas [ ] - Other [ ] - Diesel	200	Texaco Regal Oil R & O 150

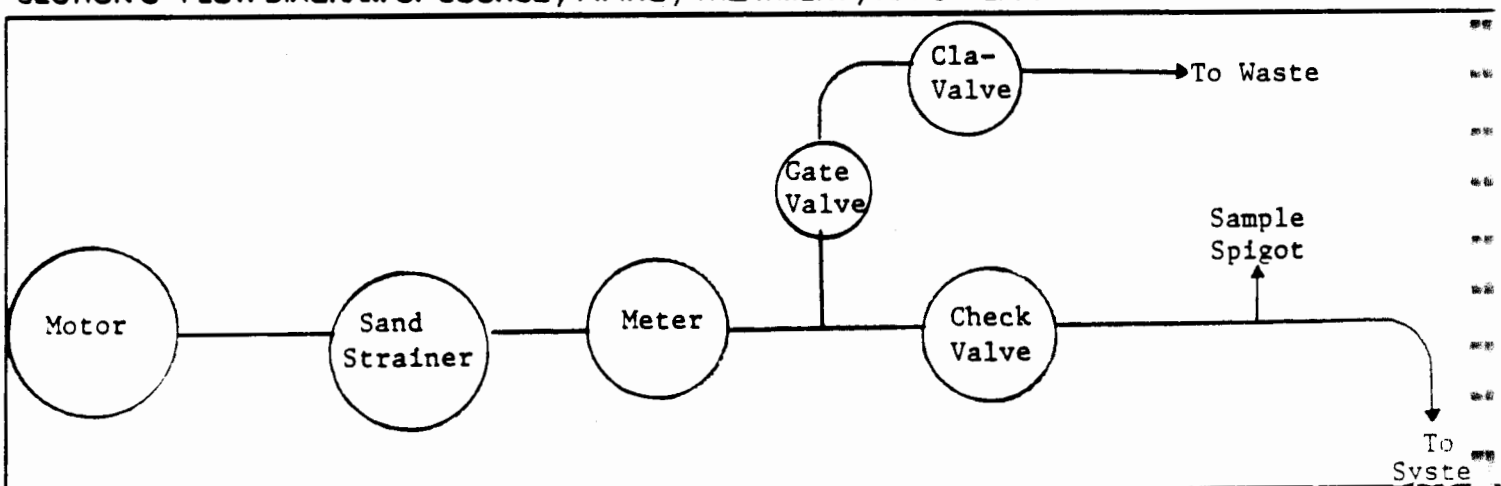
Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:
[ ] - Other (Z) (including Fluoridation)		

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date
Tim Glasco		

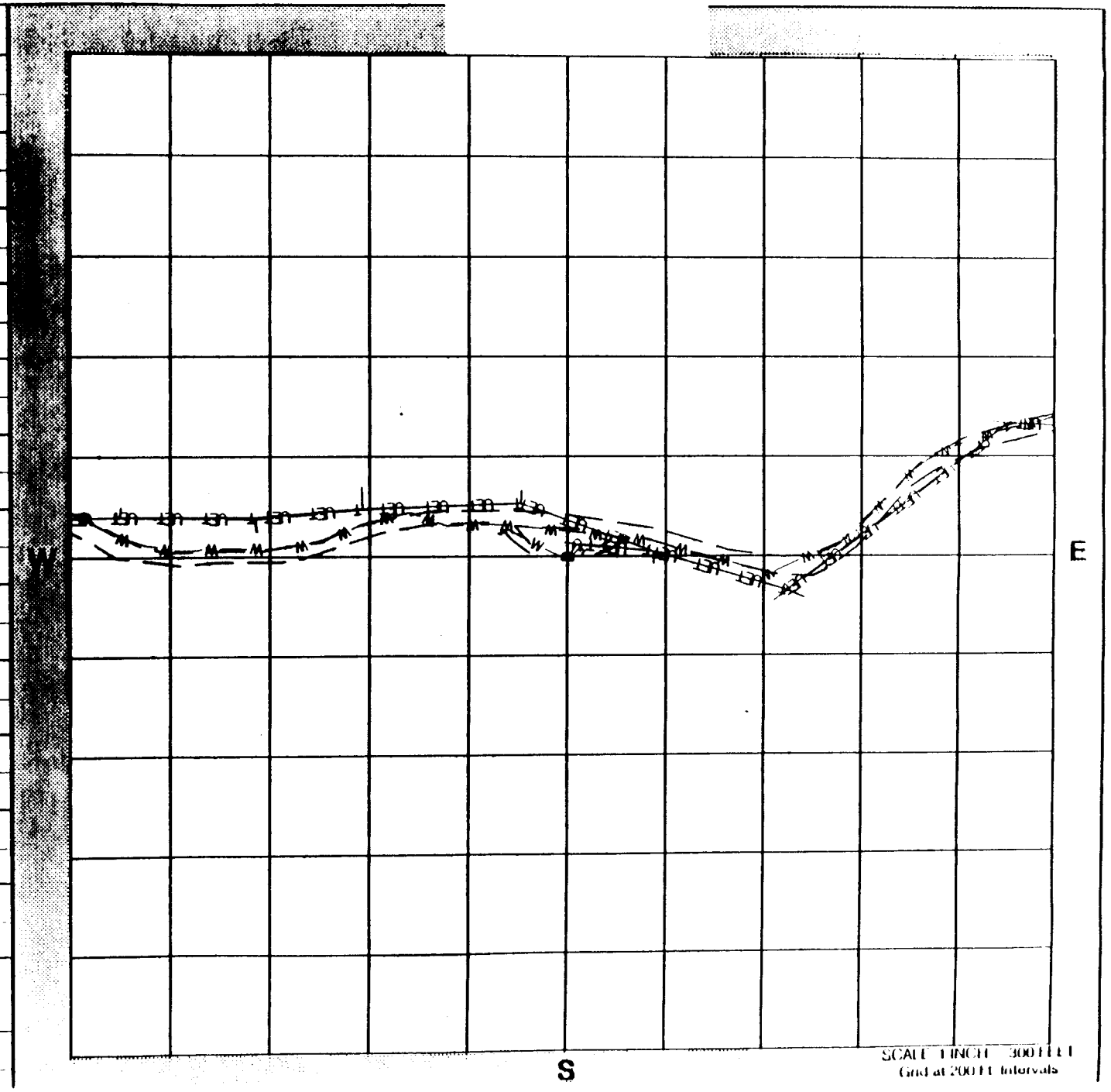
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

GAUJE WELL #6

SECTION D - SOURCE AREA INFORMATION

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) if Necessary)

Item # / Source Type #	Description / Location



WELL AND SOURCE INFORMATION FORM
for Public Water Supply Systems (Side 1)
(Complete one page for each well or source)

Type of Source
[X] - Ground [ ] - Surface
[X] - Well [ ] - Reservoir intake
[ ] - Spring [ ] - Stream intake
[ ] - Gallery

SECTION A - GENERAL / LOCATION INFORMATION

WSS Code #:	Water Supply System Name:	Water Supply Source Name:
001-15	Los Alamos	Otowi Well No. 4

Directions to Site:
In Los Alamos Canyon, TA-21

Location Code (Township-Range-Section-Tracts, e. 10N06E24342)	Latitude (DDMMSS)	Longitude (DDDMMSS)
	N 35 52 29	W 106 15 35

Well Depth	Pump Setting	Static Water Level	Pumping Capacity	Drawdown	Year Completed (Drilled or installed)	Ground Elevation (at well site)
2575 Ft.	925 Ft.	755 Ft.	1660 GPM	38 Ft.	March 1990	6638 Ft.

Pump Type:	Date Pump Installed:	Pump Motor Type:	Motor H.P.	Lubrication Product Used on Pump:
[X] - Turbine [ ] - Submersible	April 1992	[X] - Electric [ ] - Gas [ ] - Diesel [ ] - Propane [ ] - Other	800	Texaco R & O 150

Source Availability: [X] - Permanent [ ] - Seasonal [ ] - Emergency [ ] - Interim [ ] - Other

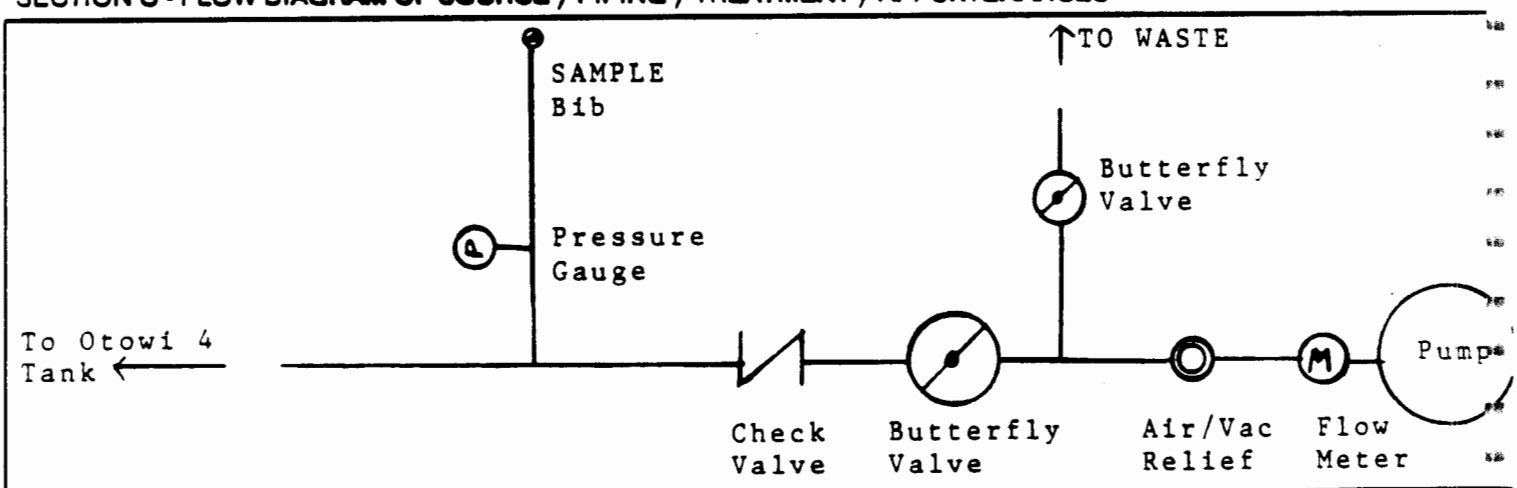
SECTION B - SOURCE TREATMENT OBJECTIVES AND METHODS
(See Instructions for Completing Sanitary Survey Form Appendix B, Tables 3-4 for applicable codes)

[X] - No Treatment at Source (N) [ ] -Treated at Plant [X] -Treated at Entry point	[ ] - Iron Removal (F) Method(s) used:	[ ] - Particulate Removal (P) Method(s) used:
[ ] - Disinfection By-Products Control (B) Method(s) used:	[ ] - Inorganics Removal (I) Method(s) used:	[ ] - Radionuclides Removal (R) Method(s) used:
[ ] - Corrosion Control (C) Method(s) used:	[ ] - Manganese Removal (M) Method(s) used:	[ ] - Softening (Hardness Control) (S) Method(s) used:
[ ] - Disinfection (D) Method(s) used:	[ ] - Organics Removal (O) Method(s) used:	[ ] - Taste / Odor Control (T) Method(s) used:

[ ] - Other (Z) (including Fluoridation)

Remarks or Recommendations:

SECTION C - FLOW DIAGRAM OF SOURCE / PIPING / TREATMENT / APPURTENANCES



Information Furnished By:	Survey Performed By:	Survey Date:
Tim Glasco		

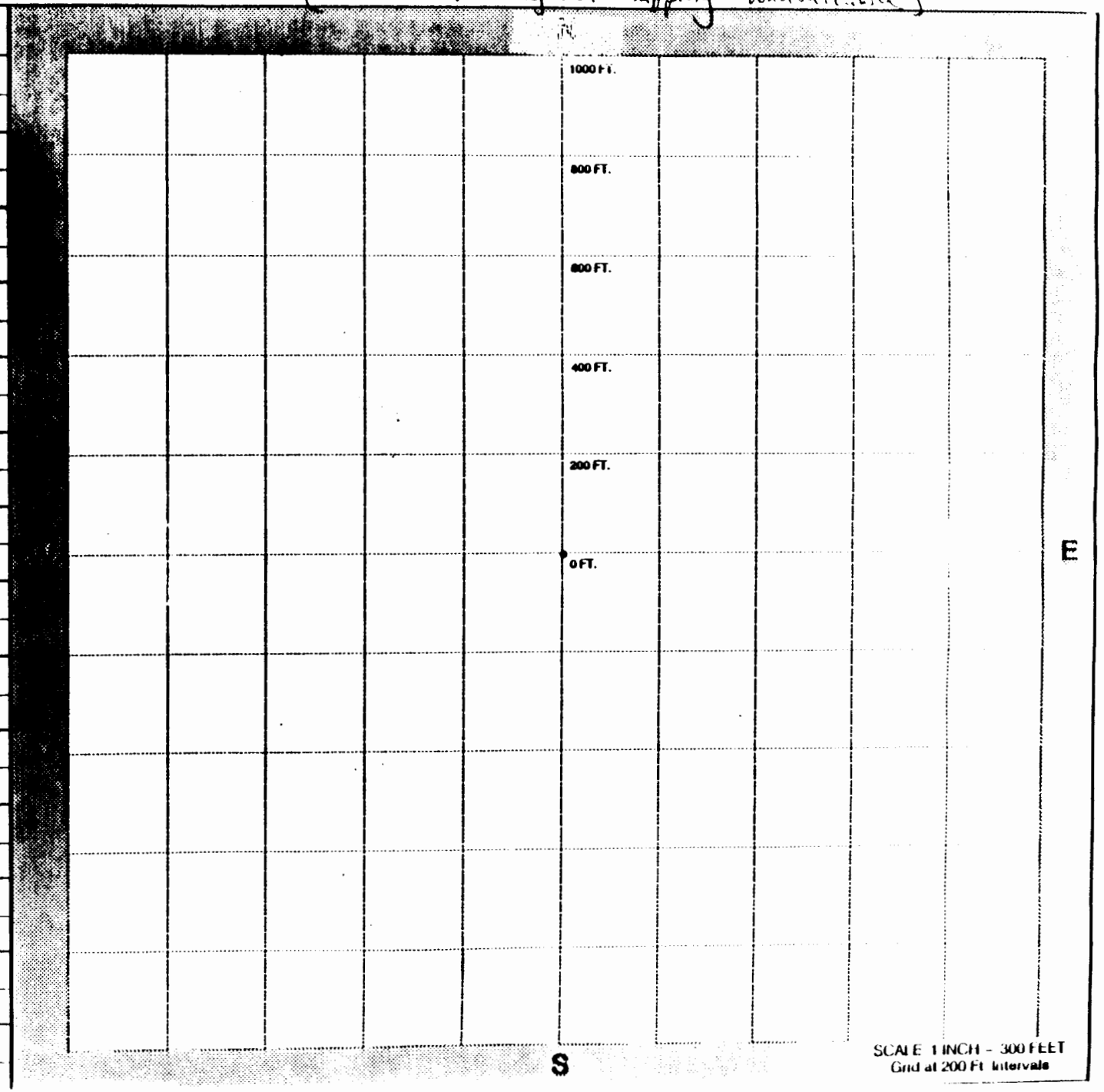
WELL AND SOURCE INFORMATION FORM (NMED-042b Side 2)

SECTION D - SOURCE AREA INFORMATION

(Otowi - 4 Digital Mapping Unavailable)

LIST OF POTENTIAL POLLUTION SOURCES
(Attach Continuation Sheet(s) If Necessary)

Item # / Source Type #	Description / Location
	See attached list.



SOLID WASTE MANAGEMENT UNITS (SWMU's)

NOTE: Digital mapping for SWMU areas was not available when well maps were made. For locations of SWMU's, refer to SWMU reports.

SOURCE TYPE	DESCRIPTION	LOCATION	SWMU NO.
	WELL OTOWI-4	**TA-21**	
21	RADIOACTIVE WASTE CONTAINER STORAGE AREA	TA-21	1
21	INACTIVE CONTAINER STORAGE AREAS	TA-21	2
21	PCB STORAGE AREA	TA-21	3
21	ABOVEGROUND TANKS AND DRAINLINES	TA-21	4
21	ACID PIT	TA-21	5
21	UNDERGROUND SEEPAGE PITS	TA-21	6
33	INCINERATOR OIL SPILLS	TA-21	7
21	INCINERATOR	TA-21	8
21	WASTE TREATMENT LABORATORY	TA-21	9
21	INDUSTRIAL LIQUID WASTE TREATMENT FACILITY	TA-21	10
21	NEW INDUSTRIAL WASTE TREATMENT PLANT	TA-21	11
37	DRY WELLS	TA-21	12
21	SURFACE DISPOSAL	TA-21	13
21	MATERIAL DISPOSAL AREA A	TA-21	14
21	MATERIAL DISPOSAL AREA B	TA-21	15
21	MATERIAL DISPOSAL AREA T	TA-21	16
21	MATERIAL DISPOSAL AREA U	TA-21	17
21	MATERIAL DISPOSAL AREA V	TA-21	18
21	FILTER HOUSES/EXHAUST STACKS SOIL CONTAMINATION	TA-21	19
21	DECOMMISSIONED FILTER HOUSES	TA-21	20
21	STACK EMISSIONS	TA-21	21
21	ACID WASTE LINES AND SUMPS	TA-21	22
21	DECOMMISSIONED SEPTIC SYSTEMS	TA-21	23
21	INACTIVE SEPTIC SYSTEMS/OUTFALLS	TA-21	24
21	OFF-GAS SYSTEM	TA-21	25
21	WASTEWATER TREATMENT PLANT AND OUTFALL	TA-21	26
21	SURFACE DISCHARGE	TA-21	27
21	ACTIVE CONTAINER STORAGE AREAS	TA-21	28
1	DP TANK FARM	TA-21	29

APPENDIX G

LEAD AND COPPER SAMPLING RESULTS

JLD POST #	LA CO. SAMPLE	SAMPLE DATA PRIOR R=RESAMPLE A=ADD'L	HOMEOWNER NAME	HOME ADDRESS	CONST. DATE	PLUMBING TYPE	SAMPLE Pb	PARAMETER Cu	BLD ANALYTICAL DATA - Pb E=EXCEED	BLD ANALYTICAL DATA - Cu E=EXCEED	EM-9 ANALYTICAL DATA - Pb E=EXCEED
038545	92066	10/19/92	Gene Mroz	1403 San Ildefonso Rd., LA	11/21/85	Cu	X	X	<0.0050	<0.0500	
038546	92067	11/10/92	Allyn Pratt	1214 Big Rock Loop, LA	12/05/85	P	X	X	<0.0050	<0.0500	
038547	92069	10/28/92	Keith Despain	413 Pruitt Ave, WR	02/18/86	Cu	X	X	0.0060	0.1200	
038548	92070	10/20/92	D. Byrd	905 Canyon Rd., LA	03/14/86	Cu	X	X	<0.0050	0.0500	
038549	92071	11/17/92	Judith Fife	112 La Senda Rd., WR	04/18/86	U	X	X	<0.0050	0.1100	
038550	92074	11/20/92	R. N. Rogers	1961 Cumbres Patio, LA	05/15/86	Cu	X	X	<0.0050	<0.0500	
038551	92078	11/12/92	Victor Medina	1319 La Mirada Circle, LA	08/20/86	P	X	X	<0.0050	0.0500	
038552	92079	11/04/92	James Archer	2141 Loma Linda Drive, LA	07/08/86	Cu	X	X	<0.0050	0.0500	
038553	92080	11/18/92	Kathy Sutton	11 Karen Circle, WR	07/22/86	Cu	X	X	<0.0050	0.1100	
038554	92083	11/17/92	Paul Bunch	5 Karen Circle, WR	09/25/86	Cu2	X	X	<0.0050	0.1200	
038555	92084	11/17/92	Darryl Smith	103 La Senda Rd., WR	10/24/86	Cu	X	X	<0.0050	0.1800	
038556	92085	11/09/92	Steve Howe	19 Karen Circle, WR	11/07/86	Cu	X	X	<0.0050	0.0580	
038557	92086	11/04/92	Richard Elphic	3452 Urban St., LA	12/08/86	Cu	X	X	<0.0050	0.0500	
038558	92088	11/04/92	Ken Wohletz	4 Karen Circle, WR	01/22/87	Cu	X	X	<0.0050	0.1300	
038559	92089	11/16/92	Mary Calanni	2144 Loma Linda Drive, LA	03/02/87	P	X	X	<0.0050	0.0500	
038522	92032	11/30/92	Harry Dewey	1533 Camino Medio, LA		Cu	X	X	<0.0050	<0.0500	
038523	92047	12/02/92	John Dallman	106 La Senda Rd., WR	03/18/85	Cu	X	X	0.0080	0.1300	
038524	92091	11/05/92	Steven Reneau	12 Karen Circle, WR	03/23/87	Cu	X	X	<0.0050	0.1300	
038525	92092	11/16/92	Rosine McGhee	962 Alamo Rd., LA	04/17/87	Cu	X	X	<0.0050	<0.0500	
038526	92093	11/24/92	Dennis Paluszcyk	1154 Big Rock Loop, LA	05/04/87	Cu	X	X	0.0070	<0.0500	
038527	92094	11/06/92	Teri Jachim	15 Chaco, LA	06/25/87	Cu	X	X	<0.0050	<0.0500	
038528	92101	12/22/92	Gerald Vogt	1534 Camino Medio, LA		Cu	X	X	<0.0050	<0.0500	
038529	92106	12/22/92	Darien Raistrick	680 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038530	92107	12/22/92	Robert L. Judd	1558 Camino Medio, LA		U	X	X	<0.0050	<0.0500	
038531	92108	12/22/92	Joan Boudreau	1000 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038532	92109	12/22/92	David Bish	394 Richard Ct., LA		Cu	X	X	<0.0050	0.1100	
038533	92112	12/22/92	Joel Gilbert	208 Canada Way, WR		Cu1	X	X	<0.0050	0.1500	
038534	92113	12/22/92	David Trujillo	1210 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038535	92114	12/22/92	*	204 Canada Way, WR			X	X	<0.0050	0.0900	
038536	92115	12/22/92	John Bradley	1225 Los Pueblos, LA		Cu	X	X	<0.0050	<0.0500	
038537	92116	12/22/92	Ernest Buenafe	1888 Camino Mazana, LA		Cu	X	X	<0.0050	<0.0500	
038538	92117	12/22/92	Robert Rundberg	398 Richard Ct., LA		Cu	X	X	<0.0050	0.1000	
038539	92119	12/22/92 O	Barbara Hoffbaue	1262 Big Rock Loop, LA - Kitch	06/19/85	Cu	X	X	1.9000 E	0.1600	
038147-A		02/23/93 R	Barbara Hoffbaue	1262 Big Rock Loop, LA - Kitch	06/19/85	Cu	X		<0.0050		
038147-C		02/23/93 R	Barbara Hoffbaue	1262 Big Rock Loop, LA - Kitch	06/19/85	Cu	X				<0.0070

SLD NQST #	LA CO. SAMPLE	SAMPLE DATE O=ORIGINAL R=RESAMPLE A=ADD'L	HOMEOWNER NAME	HOME ADDRESS	CONST. DATE	PLUMBING TYPE	SAMPLE PARAMETER Pb	Cu	SLD ANALYTICAL DATA - Pb E=EXCEED	SLD ANALYTICAL DATA - Cu E=EXCEED	EM-9 ANALYTICAL DATA - Pb E=EXCEED
038148-A		02/23/93 A	Barbara Hoffbaue	1262 Big Rock Loop, LA - U.Bat	06/19/85	Cu	X		<0.0050		
038148-C		02/23/93 A	Barbara Hoffbaue	1262 Big Rock Loop, LA - U.Bat	06/19/85	Cu	X				0.0140 +5
038149-A		02/23/93 A	Barbara Hoffbaue	1262 Big Rock Loop, LA - L.Bat	06/19/85	Cu	X		<0.0050		
038149-C		02/23/93 A	Barbara Hoffbaue	1262 Big Rock Loop, LA - L.Bat	06/19/85	Cu	X				<0.0070
039379-A		02/25/93	EM-9 QA/QC	TA-59-OH1					2.2000		
00.26026		02/25/93	EM-9 QA/QC	TA-59-OH1							2.4000 +0.1

Footnotes: *Plumbing Type* as reported by LA Co. Resident: **Cu**=Copper, **Cu_1**=Indicated more than one type, **Cu_2**=Sample container had hole, repaired w/silicone sealant adhesive, **P**=Plastic, **U**=Unknown

Homeowner Name: *****=No personal information sheet provided, correct name and spelling unverifiable

SAFE DRINKING WATER ACT (SDWA)
UNDERGROUND INJECTION CONTROL

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Investigators

Margo Dusenbury, NEIC
Raymond Leissner, EPA Region 6
Dan Chadwick, EPA Headquarters
Richard Ohrbom, New Mexico Environment Department

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. This report, one of a series, addresses investigation findings and discusses Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) issues and compliance at LANL.

REGULATORY SUMMARY

Discharges of substances into the subsurface are regulated under the Underground Injection Control requirements of 40 CFR Parts 144, 145, and 146. The New Mexico Environment Department (NMED) has primacy for the UIC program.

LANL has about 30 known septic/sanitary waste holding tank systems on-site. These were planned to be replaced when the centralized sanitary collection and treatment system was on-line. According to LANL, all septic systems have been registered with NMED. Two waste holding tank systems at TA-49 were recently converted into waste treatment systems using evapotranspiration beds.

An inactive injection well is located at the TA-57 Fenton Hill Geothermal Site. LANL has a plan for plugging and abandoning the well. TA-22 has three Class V injection wells. Two are abandoned and one remains active. The active well is regulated as a Class 5W20 well under New Mexico's UIC program, and needs a permit. The active well receives about 300 gallons per week of wastewater from high explosive activities. The wastewater passes through two settling tanks for solids removal prior to injection.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL environmental issues, the facility inspection ensued. An inspection of Class V underground injection control (UIC) well activities was conducted by EPA Region 6, EPA Headquarters, and NMED.

EPA Region 6 conducted a class V well inspection August 3 through 5, 1993. NMED and EPA Headquarters also participated. TAs 16, 22, 33, 39, 57, and 60 were selected for site visits. Region 6 summarized the preliminary inspection findings in an August 26, 1993 memorandum [Appendix A]. As part of the multi-media inspection, NEIC inspectors also observed potentially regulated UIC activities. The combined inspection observations are presented in Table 1.

Table 1

UNDERGROUND INJECTION CONTROL ACTIVITIES INSPECTED
Los Alamos National Laboratory
Los Alamos, New Mexico

Location Inspected	Comments
Region 6 Inspection Team Observations	
TA-16, 300 Line High explosives processing	Fluids containing high explosives were passed through a settling tank, then injected through a gravel-filled corrugated pipe. Injection well replaced with an NPDES outfall due to lack of capacity.
TA-16, building 540 steam plant	Two buried wells, constructed of 12-14 feet of vertical gravel-filled corrugated pipe. Used in the early 1970s to dispose of cooling tower blowdown. Records indicate the wells were replaced shortly after startup with an NPDES outfall due to lack of capacity. Wells were not visible during the inspection.
TA-22 detonator facility Group M-7	Three dry wells were found at the site. Two were abandoned and one was active. The vent pipe on one of the inactive wells was not capped. The unpermitted active well receives about 300 gallons per week of high explosive contaminated wastewater. The wastewater passes through two settling tanks for solids removal prior to injection.
TA-33, building 86 Former tritium processing facility	Floor drains, leading from the old tritium processing facility to a septic system and leachfield, were sealed. Sampling, conducted by LANL contractor Santa Fe Engineering, has revealed a tritium plume north of the leachfield. LANL suspects an NPDES outfall within the same area as the tritium source. Further study planned.
TA-39, building 2 Shockwave testing facility	Facility is served by a septic system and leachfield. Numerous floor drains and wash basins connected to septic system and could collect machinery and/or photographic development wastes.

Table 1 (continued)

Location Inspected	Comments
TA-57 Fenton Hill Geothermal Site	Inactive injection well formerly used to dispose of potable water chlorinated for algae control. The 4 1/2" - 9 5/8" annulus has a leak at zero injection pressure. A constant flowrate of about 5 to 7 gallons per minute from the 4 1/2" - 9 5/8" annulus indicates communication between the longstring (9 5/8") casing and the surrounding formation below the 13 5/8" casing set at 2,556 feet. However, this is well below any usable groundwater (about 800- to 1,000-foot depth).
TA-60, building 60 GSA Motorpool	Floor drains are connected to fluid trap and central sewer treatment system.
NEIC Inspector Observations	
TA-9, various buildings High explosives activities	High explosive wastewater from process areas in buildings drained through settling tanks into septic systems. Settling tanks now bypassed, and wastewater discharges into the Sanitary Wastewater Systems Consolidation Facility.
TA-21 Radioactive treatment facility	Influent storage tanks for the TA-21 radioactive wastewater treatment facility have an overflow pipe which discharges into a tile drain field.

SUMMARY OF FINDINGS

Based on inspection observations, discussions with LANL personnel, and review of documents, the following area of noncompliance and areas of concern of underground injection control requirements were identified:

AREA OF NONCOMPLIANCE

40 CFR 144.26	LANL did not submit inventory information for the following Class V well: TA-22-93, high explosive discharge.

AREAS OF CONCERN

The following areas of concern were identified during the NEIC investigation. Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements.

- Proper plugging and abandonment of closed injection wells at TA-16 has not been verified.

- The vent pipe on an inactive class V well at TA-22 was not capped.

- Floor drains leading to septic system drain fields at TA-39 building 2 and other locations with industrial processes are not all properly plugged.

- The 4 1/2" - 9 5/8" annulus of the inactive injection well at the TA-57 Fenton Hill Geothermal Site has a leak at zero injection pressure.

- Influent storage tanks for the TA-21 radioactive wastewater treatment facility have an overflow pipe which discharges into a tile drain field. If this overflow pipe has received radioactive wastewater, then this would be an unpermitted Class V well.

APPENDIX

EPA REGION 6 MEMORANDUM
PRESENTING PRELIMINARY UIC INSPECTION FINDINGS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

SEP 15 1993

August 26, 1993

MEMORANDUM

SUBJECT: Preliminary Findings of the Underground Injection Control (UIC) Portion of the Multi-Media Inspection of the Los Alamos National Laboratory (LANL), Los Alamos, New Mexico

FROM: Ray Leissner (6W-SU) Ray Leissner
UIC State Programs Section (6W-SU)

TO: Mac Weaver, P. E.
Chief, UIC State Programs Section (6W-SU)

BACKGROUND

The LANL is made up of 73 technical areas (TAs); each of which perform a specific function in support of the goals of the laboratory. Some of the TAs are remotely located throughout a 43 square mile area containing LANL and require separate site security. Each TA contains several buildings/structures (depending on the TA's function), and operates as a separate and integral unit of the Laboratory. Each TA is directed by a on-site management staff which in turn is directed by a central administration headed by the LANL Director and staff. The Department of Energy (DOE) owns LANL and has approximately 60 employees on-site for DOE concerns which include environmental compliance. The LANL is operated by the University of California with approximately 8000 employees.

At the request of EPA Region 6, the multi-media inspections conducted at LANL were directed by the National Enforcement Investigation Center (NEIC), Denver, Colorado.

INSPECTION, AUGUST 3-5, 1993

The UIC inspection began with a briefing in building 100 of TA 3. The UIC inspection team was assembled and consisted of Dan Chadwick: EPA Headquarters, Richard Ohrbom: New Mexico Environment Department, Steven Rae and Michael Alexander of DOE's Environmental Protection Group, EM-8 and myself. Security/safety requirements were addressed; the inspection team goals were discussed; a list of active septic systems was provided

(attachment 1) and; inspection sites were prioritized. Our DOE hosts arranged for transportation, escort, and the opportunity of photographs at our inspection sites as well as accomindating numerous requests for records. The photographs have not yet arrived.

Following, in chronological order, are the TAs the team inspected and a brief summary of our findings.

TA 60, GSA Motorpool, Building 60

This facility handles the maintenance for all government vehicles at LANL. The facility was examined for possible 5X28 well(s). The motorpool has a active plan for the recycling of all used motor oil and antifreeze. All washdown and bay areas allowed for containment and collection of all waste materials. The floor drains were connected to a fluid trap and central sewer treatment system.

TA 57, Fenton Hill Geothermal Site

Roger Anderson and Kathy Brown of the Oil Conservation Division, New Mexico joined the team for this inspection. A site description is provide for in the Fenton Hill site plan (attachment 2). The injection well (diagramed in attachment 3) is currently inactive. It is unknown if the facility will be reactivated. A constant flowrate of approximately 5-7 gpm from the 4 1/2"-9 5/8" annulus indicates communication between the longstring (9 5/8") casing and the surrounding formation below the 13 5/8" casing set at 2556 feet. However, this is well below any usable groundwater (est. 800-1000').

OCD's permit requires proof of mechanical integrity of the 9 5/8"-13 3/8" annulus only. When the 4 1/2"-9 5/8" annulus flow rate is shut in, the annulus will reach approximately 300 psi. Zero pressure readings on the wellhead gauges for the 9 5/8"-13 3/8" annulus indicate no communication.

It should be noted: When active, the well injected only potable water chlorinated for algae control. The annulus flow is directed into two large holding tanks and appeared non-saline (algae growth evident). And, LANL has in place a plan for plugging and abandonment of the well should the project be concluded.

TA 22, Group M-7 Detonator Facility

Three dry wells (Class 5W20) were found at this site. Two were abandoned and one active. The wellbore diagrams are described in attachment 4. Fluids accepted by the active

well consists of washwater from washateria activities at the facility (est. at 300 gal./week). Prior to disposal the water is routed through two settling tanks for solids removal. Recent testing of the water at the well revealed no high explosives (HE) contamination (see attachment 5).

The two inactive wells were abandoned shortly after start-up due to inadequate drainage capacity. Only two vent pipes were visible (see diagram-attachment 4). One of these vent pipes was not capped. This was noted by our DOE escort and addressed at the exit interview.

There has been previous correspondence (1986-1989) between LANL, DOE and NMED regarding these wells. NMED and DOE/LANL have agreed to complete the process to document proper plugging and/or permitting of these wells where applicable.

TA 39, Building 2, Shockwave Testing Facility

This remote facility is serviced by a septic system with a leachfield. In addition numerous floor drains and wash basins were/are connected to the septic system and could collect machinery and/or photo lab fluids. However, the estimated volumes disposed do not warrant the classification of the system as a class V well as defined by the State of New Mexico.

LANL was in the process of plugging all floor drains at TA 39 utilizing rubber stoppers. One drain remained open at the time of inspection. The inspection team recommended all floor drains be permanently plugged.

It should be noted; to prevent disposal of undesirable fluids into the wash basins, signs have been posted (attachment 6) over every wash basin in LANL and personnel trained in proper disposal of waste chemicals.

TA 33, Building 86

This was an tritium processing facility with a septic system and leachfield. The facility is now being decommissioned and the septic system is only used by the security guardhouse. Floor drains originally connected to the septic system have been sealed. The team did not enter the building due to time constraints.

Sampling conducted as part of an ongoing site assessment program by Santa Fe Engineering, Ltd., for LANL has determined a tritium plume exists just north of the leachfield. LANL currently suspects a National Pollutant Discharge Elimination System (NPDES) outfall within the same area as the source. Further study and remediation are planned.

TA 16, Building 540, Steamplant

This facility consists of a steam generation plant that in the early 1970s used two wells to dispose of cooling tower blowdown. Few records were available. Each well consisted of a corrugated pipes buried 12'-14' vertically into the ground, connected in series and filled with gravel. There was no surface evidence of their existence. A veteran employee was recruited to point out their probable location. Records indicate they were replaced by a NPDES outfall shortly after start-up due to lack of capacity.

TA 16, 300 Line

This facility is a line of buildings (now partially abandoned) that processes HE. Fluids from these buildings passed through a settling tank prior to injection. The well was similar in construction to those described above and was found filled to the surface with local soil/rocks. Only the upper most edge of the corrugated pipe was partially exposed. An aluminum cover plate was found nearby. Records indicate the well lacked capacity and was replaced by a NPDES outfall. NMED has requested LANL to submit for approval, plans to cap the well with cement.

SUMMARY

From a UIC standpoint the inspection revealed no significant problems. Concerns discovered during the inspection were discussed in the exit interview with LANL, DOE and NEIC personnel. These concerns included the need to verify adequate closure of those wells already plugged and abandoned, follow-up on LANL's on-going program to plug floor drains leading to septic system drain fields and documenting the existing well that qualifies as a Class V well under State regulations (see TA 22). Follow-up to these issues will be carried out by the State UIC program and EPA will be copied on all correspondence.

The final determination regarding UIC issues has not yet been made. This will be made in the NEIC's final report covering all programs involved in the multi-media inspection. Observations from other programs' inspection teams have not been assimilated by the NEIC team leader. Any additional discoveries made by other program inspection teams may effect the final determination regarding UIC issues.

Floors Drains that go Septic Tank
→ inspected

ACTIVE SEPTIC TANK SYSTEMS

Los Alamos National Laboratory — Environmental Surveillance Section (HSE-8)
January 1991

Septic Tank	Location Section, Town, Range	Year Installed	Buildings Served	Persons Served	Volume (gal.)	Discharge Point	To Be Eliminated	Comments
							9/17/92	
TA-3-1484	NE 1/4, Sec. 20, T19N, R6E	1981	Bldg. 130	2	1000	Seepage pit	SWSC	
TA-3-2035	SE 1/4, Sec. 17, T19N, R6E	?	Cafeteria	N.A.	1500	Sanitary sewer		Holdin[illegible]
TA-6-40	SW 1/4, Sec. 20, T19N, R6E	1946	Bldgs. 1 & 3	0–2	840	Holding tank	SWSC	Drain line plugged, [illegible]
TA-6-43	SW 1/4, Sec. 20, T19N, R6E	1946	Bldg. 6	3–5	960	Holding tank	SWSC	Drain line plugge[illegible]
TA-9-107	NE 1/4, Sec. 30, T19N, R6E	1952	Bldgs. 41–43, 45 & 46	0–2	540	Holding tank	SWSC	Drain line plugged, [illegible]
TA-9-108	NE 1/4, Sec. 30, T19N, R6E	1952	Bldg. 48	2	1360	Leach field	SWSC (12/1/92)	New leach field [illegible]
TA-9-109	NE 1/4, Sec. 30, T19N, R6E	1952	Bldg. 50	0–2	600	Leach field	SWSC (11/13/92)	New leach field [illegible]
TA-9-110	NE 1/4, Sec. 30, T19N, R6E	1952	Bldg. 51	0–2	425	Holding tank	SWSC	Drain line plugg[illegible]
TA-11-20	NE 1/4, Sec. 32, T19N, R6E	?	Bldg. 4	6	500	Holding tank		Drain line plugged, 1938
TA-11-43	NE 1/4, Sec. 32, T19N, R6E	1963	Bldg. 3	0–2	300	Leach field		New leach field installed, [illegible]
TA-14-19	SW 1/4, Sec. 28, T19N, R6E	?	Bldg. 6	0–2	640	Leach field	SWSC	New leach field installed, 19[illegible]
TA-15-00	NE 1/4, Sec. 33, T19N, R6E		Hydrotest site	10	1000	Leach field		
TA-15-00	NE 1/4, Sec. 33, T19N, R6E		Radiographic lab	18	1000	Leach field	SWSC	
TA-15-51	SE 1/4, Sec. 28, T19N, R6E	?	Bldg. 20	2	505	Seepage pit	SWSC (8/31/92)	
TA-15-61	SW 1/4, Sec. 27, T19N, R6E	?	Bldg. 45	1	540	Seepage pit		
TA-15-62	SE 1/4, Sec. 27, T19N, R6E	?	Bldg. 44	0–2	540	Holding tank		Drain line plugge[illegible]
TA-15-63	SE 1/4, Sec. 28, T19N, R6E	?	Bldg. 40	35	2060	Seepage pit	SWSC (6/29/92)	
TA-15-195	NE 1/4, Sec. 33, T19N, R6E	1988	Bldg. 183	34	4000	Seepage pit	SWSC	New septic tank installed, [illegible]
TA-15-205	NW 1/4, Sec. 34, T19N, R6E	?	Bldgs. 185 & 186	8	605	Leach field	(SWSC) (11/23/92)	
TA-15-282	SW 1/4, Sec. 27, T19N, R6E	?	Bldg. 280	1	1000	Leach field	SWSC (11/17/92)	

Active Septic Tank Systems (Continued)

Septic Tank	Location Section, Town, Range	Year Installed	Buildings Served	Persons Served	Volume (gal.)	Discharge Point	To Be Eliminated	Comments
TA-15-284	NE 1/4, Sec. 33, T19N, R6E	?	Bldg. 233	0–2	750	Seepage pit		
TA-15-286	NE 1/4, Sec. 33, T19N, R6E	?	Bldg. 285	3	1500	Seepage pit	SWSC	
TA-16-000	NE 1/4, Sec. 31, T19N, R6E	?	Bldg. 370	0–2	1000	Seepage bed		
TA-16-175	SW 1/4, Sec. 30, T19N, R6E	?	Bldg. 54	0–2	1500	Leach field		New system installed, 1[illegible]
TA-16-178	NW 1/4, Sec. 30, T19N, R6E	?	Bldg. 210	0–2	380	Leach field		
TA-16-371	NE 1/4, Sec. 31, T19N, R6E	1951	Bldg. 370	0–2	1216	Holding tank		Drain line plugged, 1989
TA-16-381	NW 1/4, Sec. 32, T19N, R6E	1954	Bldg. 380	0–2	540	Leach field		
TA-16-385	SW 1/4, Sec. 29, T19N, R6E	?	Bldg. 389	2	300	Holding tank		Drain line plugged, 1989
TA-18-39	NE 1/4, Sec. 35, T19N, R6E	1950	Bldg. 23	0–2	524	Leach field		
TA-18-42	NE 1/4, Sec. 35, T19N, R6E	1950	Bldg. 32	0–2	587	Leach field		
TA-18-120	NE 1/4, Sec. 35, T19N, R6E	1959	Bldg. 116	0–2	500	Leach field	SWSC (10/9/92)	
TA-22-50	SW 1/4, Sec. 20, T19N, R6E	?	Bldg. 34	3	1365	Leach field	SWSC →	
TA-22-51	SW 1/4, Sec. 20, T19N, R6E	1952	Bldgs. 1, 32, & 52	73	8775	Sand filter	SWSC →	
TA-33-31	SE 1/4, Sec. 13, T18N, R6E	?	Bldgs. 19, 39, 113, 114, & 168	56	1360	Seepage pits (2)		
TA-33-33	SE 1/4, Sec. 24, T18N, R6E	?	Bldg. 24	0–2	730	Holding tank		Drain line plugged, 1989
TA-33-93	NE 1/4, Sec. 24, T18N, R6E	1955	Bldg. 86	6	1660	Sand filter		
TA-33-96	SE 1/4, Sec. 19, T18N, R7E	?	Bldg. 87	0–2	768	Sand filter		
TA-33-121	SE 1/4, Sec. 13, T18N, R6E	1957	Bldg. 1	0–2	500	Leach field		Drain line covered
TA-33-179	SE 1/4, Sec. 19, T18N, R7E	1987	NRAO	0–2	1000	Leach field		
TA-33-206	NE 1/4, Sec. 24, T18N, R6E	1987	Trailer	0–2	1000	Holding tank		Previously TA-33-HP23
TA-36-17	NE 1/4, Sec. 35, T19N, R6E	1950	Bldgs. 1 & 22	21	1360	Seepage pit	SWSC (11/17/92)	
TA-36-61	NW 1/4, Sec. 34, T19N, R6E	?	Bldg. 31	0–2	420	Holding tank		Drain line plugged, 1989; previously TA-15-57

Active Septic Tank Systems (Continued)

Septic Tank	Location Section, Town, Range	Year Installed	Buildings Served	Persons Served	Volume (gal.)	Discharge Point	To Be Eliminated	Comments
TA-36-70	NW 1/4, Sec. 36, T19N, R6E	?	Guard station	1	500	Seepage pit	SWSC (12/14/92)	
TA-36-100	NE 1/4, Sec. 35, T19N, R6E	1988	Bldg. M-8	20	1000	Leach field	SWSC (11/17/92)	Next to TA-36-[illegible]; previously TA-36-[illegible]
TA-37-28	NE 1/4, Sec. 32, T19N, R6E	?	Bldg. 1	0–2	540	Leach field		
TA-39-104	SE 1/4, Sec. 13, T18N, R6E	1985	Bldgs. 2 & 100	80	2500	Sand filter		New sand filter, 1985; previously TA-39-[illegible]2
TA-39-132	NE 1/4, Sec. 13, T18N, R6E	1989	Pulsed power bldg.	10	1000	Leach field		Previously TA-39-[illegible]
TA-40-24	SW 1/4, Sec. 21, T19N, R6E	1949	Bldgs. 1, 19, & 23	37	1215	Seepage pit		
TA-40-25	NW 1/4, Sec. 28, T19N, R6E	1949	Bldg. 11	0–2	540	Leach field		Leach field installed, 1988
TA-46-230	NW 1/4, Sec. 26, T19N, R6E	?	Bldg. 158	25–30	1000	Seepage pit	SWSC	Drain line plugged, 1983
TA-48-32	NE 1/4, Sec. 21, T19N, R6E	1983	Bldg. 29	70	2000	Seepage pit	SWSC (11/17/92)	Two 1000-gal. tanks
TA-49-118	NW 1/4, Sec. 3, T18N, R6E	1985	Office	0–4	1000	Evapotrans. bed		Bed installed, 1990
TA-49-119	NW 1/4, Sec. 3, T18N, R6E	1985	Bldg. 113	8–10	1500	Evapotrans. bed		Bed installed, 1990
TA-51-4	SE 1/4, Sec. 26, T19N, R6E	1962	Bldg. 7	0–2	972	Leach field	SWSC (11/20/92)	
TA-51-9	SW 1/4, Sec. 25, T19N, R6E	1960	Bldg. 15	3	1500	Leach field	SWSC (11/23/92)	
TA-51-30	NW 1/4, Sec. 26, T19N, R6E	1983	Bldgs. 11 & 12	35	1000	Seepage pit	SWSC (11/25/92)	
TA-52-3	SE 1/4, Sec. 22, T19N, R6E	1968	Utrex bldg.	12	2580	Leach field	SWSC →	
TA-52-34A	SE 1/4, Sec. 22, T19N, R6E	1983	Bldg. 44	18	2000	Seepage pit	SWSC →	Common seepage pit
TA-52-34B	SE 1/4, Sec. 22, T19N, R6E	1983	Bldg. 45	18	2000	Seepage pit	SWSC →	Common seepage pit
TA-52-95	SE 1/4, Sec. 22, T19N, R6E		Trailers	35	3000	Holding tank	SWSC	
TA-52-97	SE 1/4, Sec. 22, T19N, R6E	1983	Bldgs. 41 & 42	65	2500	Seepage pit	SWSC →	Common seepage pit; overflow to TA-[illegible]

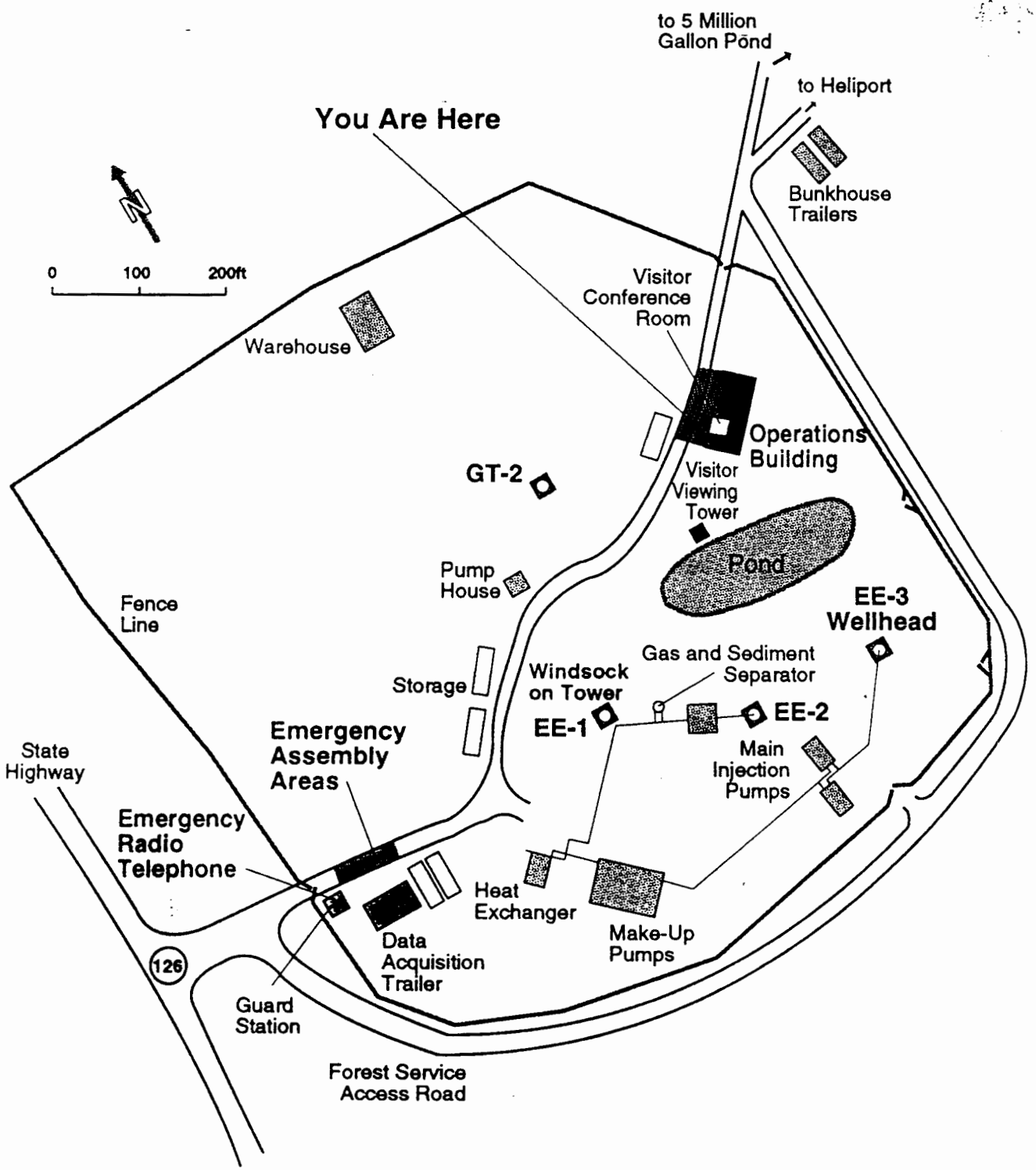
Active Septic Tank Systems (Continued)

Septic Tank	Location Section, Town, Range	Year Installed	Buildings Served	Persons Served	Volume (gal.)	Discharge Point	To Be Eliminated	Comments
TA-52-98	SE 1/4, Sec. 22, T19N, R6E	1983	Bldg. 33	10	1000	Seepage pit	SWSC→	Common seepage pit; overflow to TA-52-[illegible]
TA-52-99	SE 1/4, Sec. 22, T19N, R6E	1983	Bldgs. 35 & 36	32	1500	Seepage pit	SWSC	Previously TA-[illegible]
TA-53-1016	NE 1/4, Sec. 23, T19N, R6E	?	Trailer	4	500	Holding tank	~~SWSC (11/29/91)~~	Previously TA-53-[illegible]
TA-54-16	SE 1/4, Sec. 31, T19N, R7E	1977	Bldg. 11	1	1000	Leach field		
TA-54-28	SW 1/4, Sec. 31, T19N, R7E	1983	Bldg. 22	13	1000	Seepage pit		
TA-54-43	NE 1/4, Sec. 36, T19N, R6E	1988	PCB facility	8	1700	Holding tank		
TA-54-80	NE 1/4, Sec. 36, T19N, R6E	1989	Trailers	8	1500	Holding tank		
TA-54-89	SW 1/4, Sec. 25, T19N, R6E	1988	MD-34	12	1500	Evapotrans. bed	SWSC	
TA-54-150	NE 1/4, Sec. 36, T19N, R6E	1990	Bldg. 117	6	500	Holding tank		
TA-58-00	SE 1/4, Sec. 17, T19N, R6E	1989	EEO trailer	12–24	3000	Holding tank	SWSC	
TA-63-12	SW 1/4, Sec. 22, T19N, R6E	?	Bldg. 48	20–30	1000	Seepage pit	SWSC →	Pending; previously TA-52-[illegible]
TA-63-14	SW 1/4, Sec. 22, T19N, R6E	?	Bldgs. 101 & 155	30–40	920	Seepage pit	SWSC→	Previously TA-52-154 & [illegible]
TA-66-03	NE 1/4, Sec. 21, T19N, R6E	1988	ATAC bldg.	16	2000	Seepage pit		Previously TA-66-00
TA-69-09	NW 1/4, Sec. 19, T19N, R6E	1953	Guard station	1	600	Holding tank		Drain line plugged, 1988; previously TA-0-69
TA-69-10	SW 1/4, Sec. 20, T19N, R6E	1986	Trailer		1000	Seepage pit		Previously TA-0-00
TA-72-18	SE 1/4, Sec. 24, T19N, R6E	1989	Pistol range	0–40	2000	Leach field		Replaced TA-0-[illegible]; previously TA-0-[illegible]

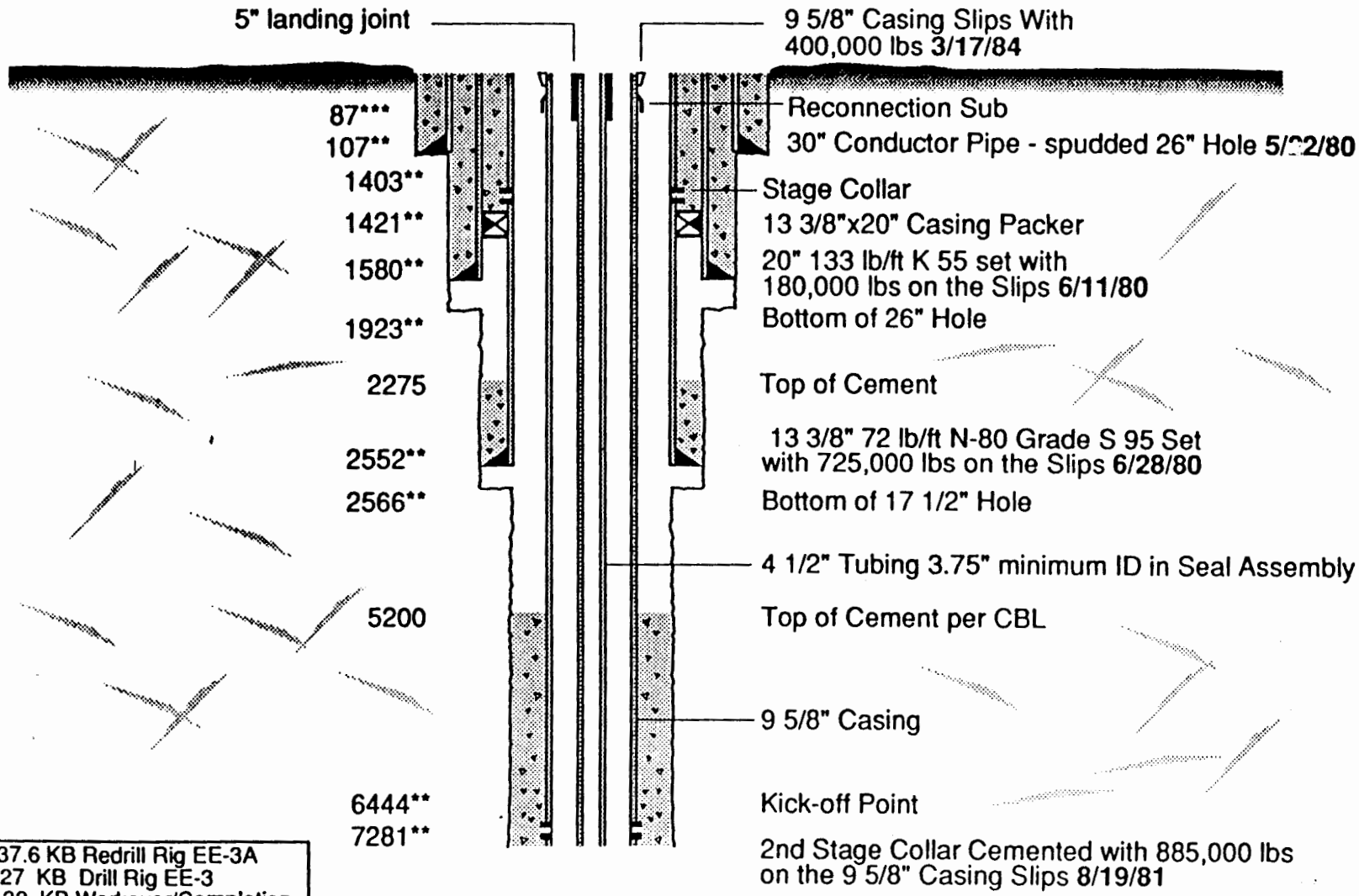
Note: SWSC means the Sanitary Wastewater Systems Consolidation Project.

Attachment II

Fenton Hill Site Plan

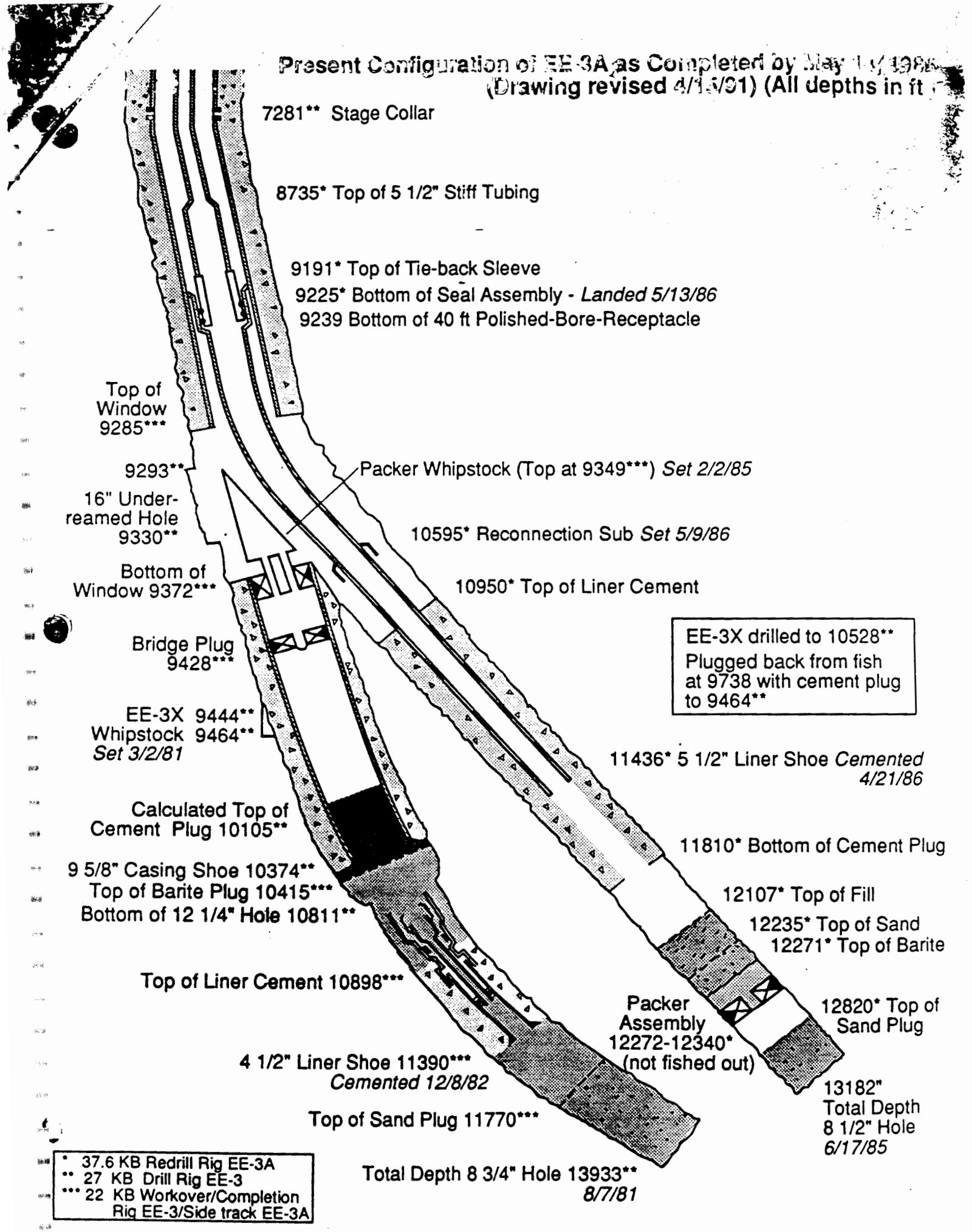


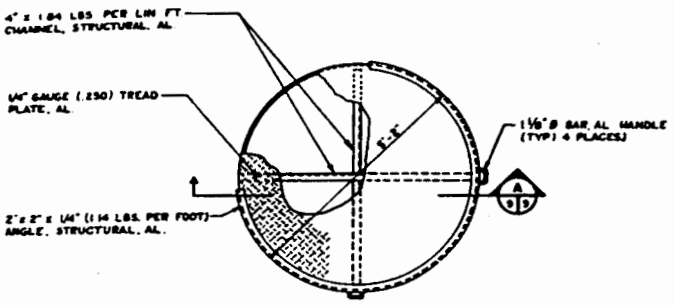
Present Configuration of EE 3-A as Completed by May 14, 1986
(Drawing revised 4/15/91) (All depths in ft)



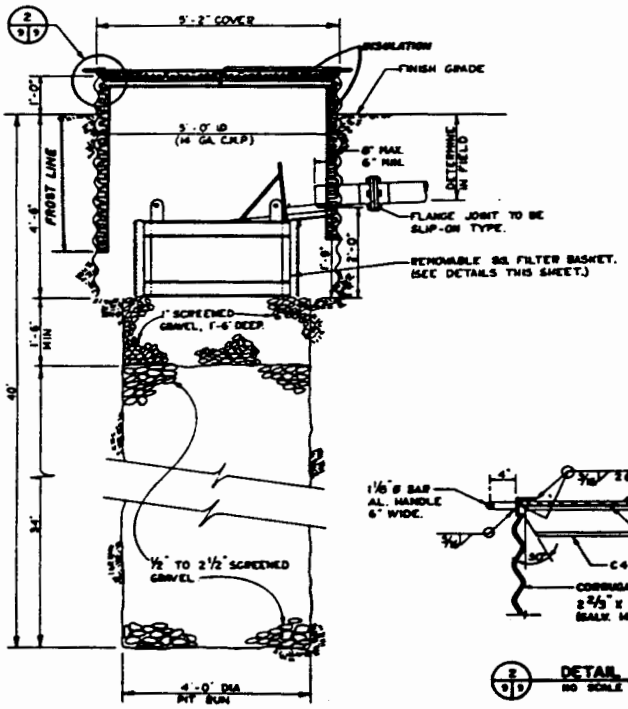
* 37.6 KB Redrill Rig EE-3A
** 27 KB Drill Rig EE-3
*** 22 KB Workover/Completion Rig EE-3/Side track EE-3A

Attachment 3


Present Configuration of EE-3A as Completed by May 1, 1986
(Drawing revised 4/15/91) (All depths in ft)
7281** Stage Collar
8735* Top of 5 1/2" Stiff Tubing
9191* Top of Tie-back Sleeve
9225* Bottom of Seal Assembly - Landed 5/13/86
9239 Bottom of 40 ft Polished-Bore-Receptacle
Top of Window 9285***
9293**
16" Under-reamed Hole 9330**
Packer Whipstock (Top at 9349***) Set 2/2/85
10595* Reconnection Sub Set 5/9/86
Bottom of Window 9372***
10950* Top of Liner Cement
Bridge Plug 9428***
EE-3X drilled to 10528**
Plugged back from fish at 9738 with cement plug to 9464**
EE-3X 9444**
Whipstock 9464**
Set 3/2/81
11436* 5 1/2" Liner Shoe Cemented 4/21/86
Calculated Top of Cement Plug 10105**
11810* Bottom of Cement Plug
9 5/8" Casing Shoe 10374**
Top of Barite Plug 10415***
Bottom of 12 1/4" Hole 10811**
12107* Top of Fill
12235* Top of Sand
12271* Top of Barite
Top of Liner Cement 10898***
Packer Assembly 12272-12340* (not fished out)
12820* Top of Sand Plug
4 1/2" Liner Shoe 11390***
Cemented 12/8/82
13182" Total Depth 8 1/2" Hole 6/17/85
Top of Sand Plug 11770***
Total Depth 8 3/4" Hole 13933**
8/7/81
* 37.6 KB Redrill Rig EE-3A
** 27 KB Drill Rig EE-3
*** 22 KB Workover/Completion Rig EE-3/Side track EE-3A



1 DRYWELL MANHOLE COVER PLAN



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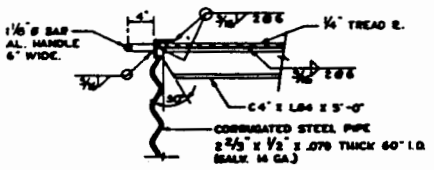

2 DETAIL
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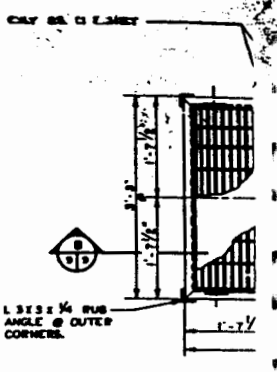
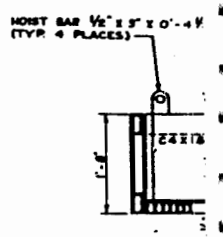
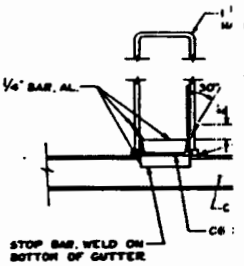


FILTER
NO SCALE

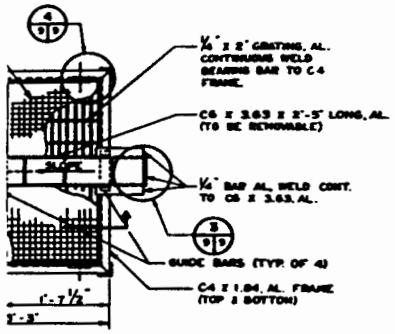




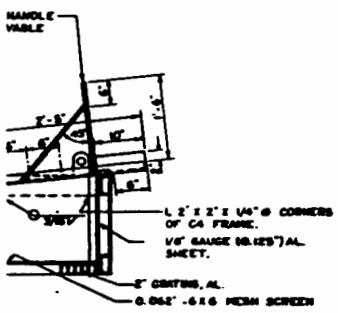
3 DETAIL
NO SCALE

PHASE II

NOTES:
1. TOTAL WEIGHT OF MANHOLE COVER IS 111 LBS.
2. TOTAL WEIGHT OF FILTER BASKET WITH SAND IS 1272 LBS.
3. FILTER BASKET SHALL BE ALL ALUMINUM ALLOY (6061-T61) CONFORMING TO ASTM B221, AND SHALL BE ALL WELDED CONSTRUCTION.
4. FILTER BASKET SHALL HAVE 1'-0" OF SAND, LEVEL, IN BOX. USING GROUP WILL SPECIFY GRADE.
5. ALL WELDS MUST BE CONTINUOUS WITH NO CRACKS OR CREVICES THAT CONTAMINATED WATER CAN ENTER.

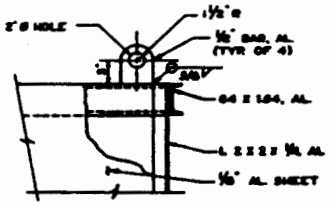


KET PLAN



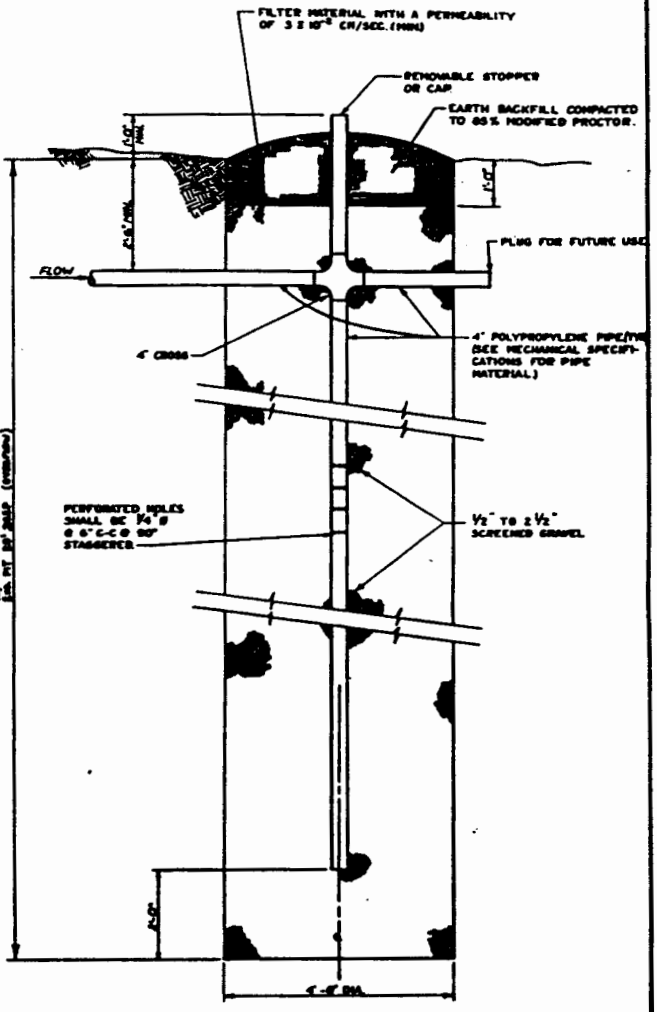
ION

BAR AL. 6" WIDE.



14 ALUM. FRAME

4/1/0 DETAIL
NO SCALE



4/1/0 SEEPAGE PIT SECTION
NO SCALE

PHASE I

A			

UNITED STATES
DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE • LOS ALAMOS, NEW MEXICO

NEW DETONATOR FACILITY, TA-22

SEEPAGE PIT DETAIL

PHASE I & II

BERNARD JOHNSON INC.
ARCHITECTS ENGINEERS PLANNERS
NEW MEXICO HOUSTON, TEXAS 1980

LA-XA-C8

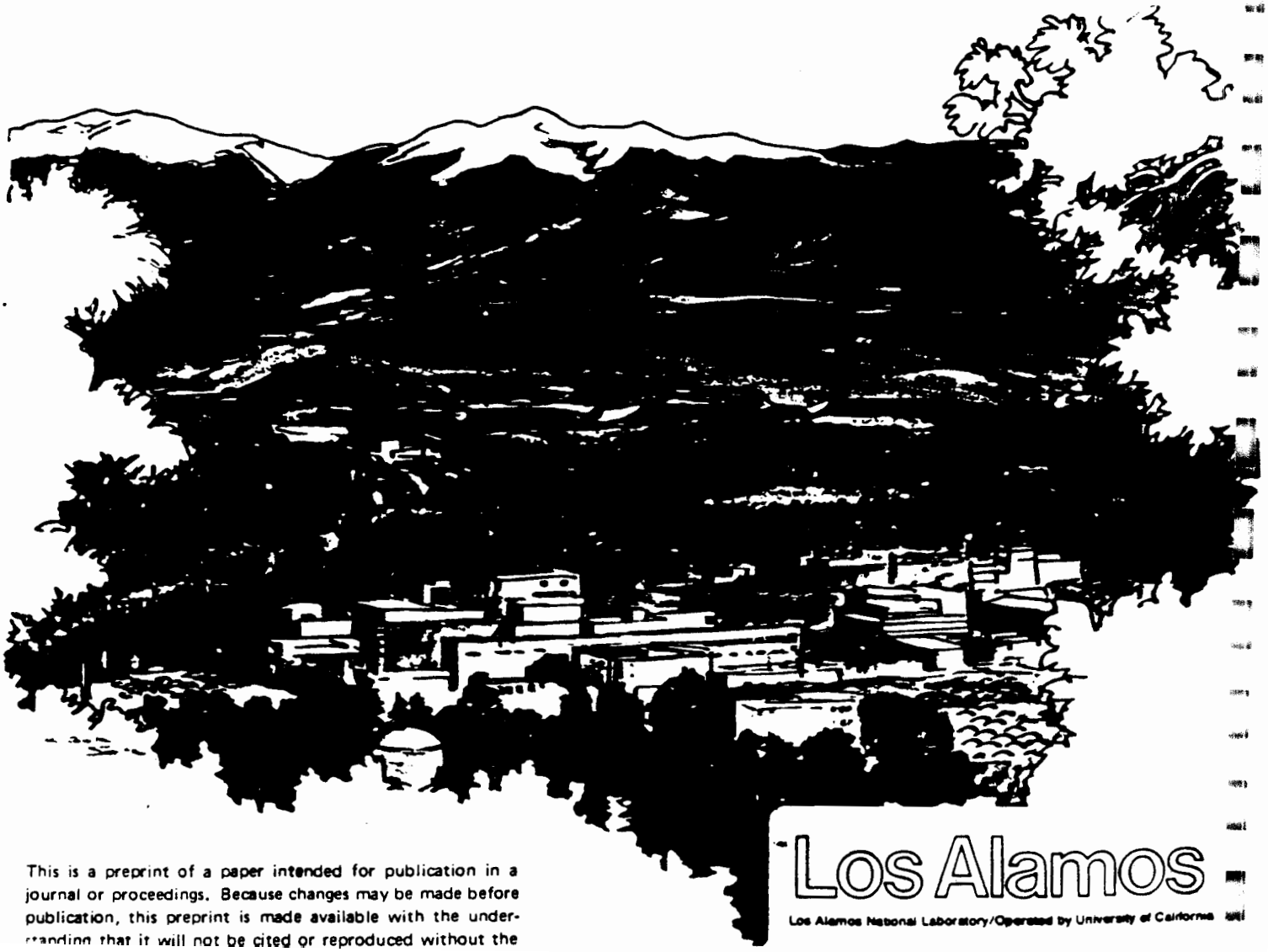
15 | 120

[redacted]

EWS O-44942 LAB JOB 6799-22

Attachments

FIELD SPOT TESTS FOR CAST & PLASTIC BONDED EXPLOSIVES



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Los Alamos

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Attachment 5

M-7 EXPLOSIVE SWIPE TEST FORM

Attachment, Group M-7 SOP TD-194

Under the reagent headings please indicate the test results: Y or P for tests positive and N or X for tests negative. Revision 2/5/93

Tester: Tom Turner
Date: 8/4/93
Location (TA-?-?-?):

Page: of

Reference M-7 Memorandum:

Test No.	Item	Reagent A	Reagent B	Reagent C	Comments
1.	Reference (IRMA Exhaust)	[P]	[P]	[N]	
2.	Reference (IRMA Exhaust)	[P]	[P]	[P]	
3.	End of Trench	[N]	[N]	[N]	
4.	Water	[N]	[ ]	[ ]	B + C NOT TESTED
5.	Water	[ ]	[N]	[ ]	A + C NOT TESTED
6.	Water	[ ]	[ ]	[N]	A + B NOT TESTED
7.	Pipe	[N]	[N]	[N]	
8.	Repeat Test 3	[N]	[N]	[N]	
9.	Repeat Test 4	[N]	[ ]	[ ]	B + C NOT TESTED
10.	Repeat Test 5	[ ]	[N]	[ ]	A + C NOT TESTED
11.	Repeat Test 6	[ ]	[ ]	[N]	A + B NOT TESTED
12.	Repeat Test 7	[N]	[N]	[N]	
13.		[ ]	[ ]	[ ]	
14.		[ ]	[ ]	[ ]	
15.		[ ]	[ ]	[ ]	
16.		[ ]	[ ]	[ ]	
17.		[ ]	[ ]	[ ]	
18.		[ ]	[ ]	[ ]	
19.		[ ]	[ ]	[ ]	
20.		[ ]	[ ]	[ ]	

Attachment 6

NOTICE!

NO CHEMICAL WASTE IN THIS DRAIN

SEE H&S MANUAL, AR 10-3

OR CONTACT THE WASTE MANAGEMENT GROUP (HSE-7) AT 7-6095

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT

EPA-330/2-94-020

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico
(Volume 4 of 4)

April 1994

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Jacquelyn Miller
Mike Webb

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
Denver, Colorado

PREFACE

NEIC conducted a multi-media compliance investigation of Los Alamos National Laboratory (LANL), located near Los Alamos, New Mexico, about 25 miles northwest of Santa Fe, New Mexico. The on-site inspection of LANL, a government-owned (Department of Energy), contractor-operated (University of California) facility, was conducted August 2 through 12, 1993. The investigation findings are presented in four report volumes:

Volume 1

- Executive summary
- Environmental management
- Pollution prevention
- Critical habitat

(NOTE: Volume 1 presents an overall perspective of the facility, allowing a better understanding of individual media reports in volumes 2, 3, and 4)

Volume 2

- Resource Conservation and Recovery Act (RCRA)
- Underground Storage Tanks (UST)
- Toxic Substances Control Act (TSCA)

Volume 3

- Clean Water Act (CWA)
  - National Pollutant Discharge Elimination System (NPDES)
  - Spill Prevention Control and Countermeasures (SPCC)
  - Wetlands
- Safe Drinking Water Act (SDWA)
  - Public water supply
  - Underground Injection Control (UIC)

Volume 4

- Clean Air Act (CAA)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

GLOSSARY

GLOSSARY

ACM: asbestos containing materials
AO: administrative order
AQCR: air quality control regulations
ARs: administrative requirements
BHP: boiler horsepower
BOD: biological oxygen demand
BTU: British Thermal Unit
CAA: Clean Air Act
CAAA: Clean Air Act Amendments
CE: civil engineering
CFR: Code of Federal Regulations
CLS: Chemical Laser and Science
CME: comprehensive groundwater monitoring evaluation
COD: chemical oxygen demand
Corps: U.S. Army Corps of Engineers
CWA: Clean Water Act
DMR: discharge monitoring report
DOE: Department of Energy
EDL: economic discard limit
EDM: electrical discharging machining
EHS: extremely hazardous substance
EM: environmental management
EOD: Explosive Ordnance Disposal
EPA: Environmental Protection Agency
EPCRA: Emergency Planning and Community Right-to-Know Act
ESP: electrostatic precipitator
FFCA: federal facility compliance agreement
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
GOCO: government owned, contractor operated
GPD: gallons per day
HE: high explosives
HEPA: high efficiency particulate air
HS-5: Health Services Department
HSWA: Hazardous and Solid Waste Amendments
INEL: Idaho National Engineering Laboratory
JCI: Johnson Controls, Inc.
LANL: Los Alamos National Laboratory
lb/MBTU: pounds per million British thermal unit
LDR: land disposal restrictions
LERC: local emergency response committee
MCL: maximum contaminant level
MEK: methyl ethyl ketone
MLSS: mixed liquid suspended solids
MOU: memorandum of understanding
MSDS: material safety data sheet
NDT: nondestructive testing
NEIC: National Enforcement Investigations Center
NEPA: National Environmental Policy Act
NESHAP: National Emission Standards for Hazardous Air Pollutant
NMAQR: New Mexico Air Quality Standards and Regulations
NMED: New Mexico Environment Department
NOI: Notice of Intent
NON: Notice of Noncompliance
NPDES: National Pollutant Discharge Elimination System
NWP: Nationwide Permit
NWT: program office for aboveground experiments
NWUSTR: New Mexico Underground Storage Tank Regulations
O&M: Operations and Maintenance
OB/OD: open burning/open detonation
PCB: polychlorinated biphenyl
pCi/L: picocuries per liter
PEDE: potential effective dose equivalent
PETN: pentaerythitol tetranitrate (an explosive compound)
PTO: permit to operate
P2: pollution prevention
PVC: polyvinyl chloride
QA/QC: quality assurance/quality control
RCRA: Resource Conservation and Recovery Act
RDX: cyclonite (an explosive compound)
RMMAs: radiological material management areas
SAIC: Science Application International Corporation
SARA: Superfund Amendments Reauthorization Act
SDWA: Safe Drinking Water Act
SERC: state emergency response commission
SIP: State Implementation Plan
SOP: standard operating procedures
SPCC: Spill Prevention Control and Countermeasures

SWPPP: Storm Water Pollution Prevention Plan
SWMU: solid waste management units
SWP: special work permits
SWSC: Sanitary Wastewater Systems Consolidation
SWTR: surface water treatment rule
TA: technical area
TAPS: toxic air pollutants
TCA: 1,1,1-trichloroethane
TCE: trichloroethylene
TCLP: toxicity characteristic leaching procedure
TDS: total dissolved solids
TNT: trinitrotoluene (an explosive compound)
TRU: transuranic
TSF: Tritium Salt Facility
TSD: treatment, storage, and disposal
TSS: total suspended solids
TSTA: Tritium Systems Test Assembly
TSCA: Toxic Substances Control Act
UC: University of California
UIC: Underground Injection Control
UST: underground storage tank
VOC: volatile organic compound
WAP: waste analysis plan
WCS: waste characterization study
WMPO: Waste Minimization Program Office
WWTP: wastewater treatment plant

CLEAN AIR ACT
(CAA)

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Investigators

Anne Bevington, EPA-NEIC
Ken Garing, EPA-NEIC

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MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of Los Alamos National Laboratory (LANL). This report, one of a series, addresses investigation findings and discusses regulated air pollution control activities and compliance at LANL.

REGULATORY SUMMARY

Air contaminant emissions are regulated by the New Mexico Air Quality Standards and Regulations (NMAQR) Sections 100 through 1301, Air Quality Control Regulations. Operating permits are issued by New Mexico Environment Department (NMED).

The air pollutant emission sources at LANL include: beryllium operations, radionuclide handling activities (over 150 release points), open burning operations, asphalt plant, power and steam boilers. Other emission sources include toxic air pollutants, volatile organic compounds and asbestos.

Beryllium emissions are regulated by the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, Subpart C. The provisions of this subpart apply to machine shops processing beryllium, beryllium oxides, or any alloy containing more than 5% beryllium by weight. LANL operates several beryllium processing facilities in Technical Areas (TA) 3, 16, 35, and 55 and are subject to the requirements outlined in NMED air quality permits. Six beryllium permits have been issued for the machining operations. NMED requires small beryllium operations with minimal emissions potential to be registered with the state. Five additional beryllium operations have been registered with the state.

Radionuclide emissions are regulated by the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, Subpart H. The provisions of this subpart apply to emissions of radionuclides other than radon from Department of Energy facilities. LANL has been issued two notices of noncompliance (NON). The first, issued in November 1991, identified the following deficiencies:

- Unidentified release points
- Release points not evaluated
- Inadequate sampling systems
- No Quality Assurance/Quality Control program
- Incomplete annual reporting

The second NON was issued in November 1992 for the use of an inappropriate shielding factor in the computer release modeling. Subsequently, a Federal Facilities Compliance Agreement (FFCA) is in negotiation to bring the laboratory into compliance with the radionuclide NESHAP. The FFCA is expected to be signed by LANL in the spring of 1994.

Open burning of high explosive (HE) contaminated materials is subject to NMAQR 301, Regulation to Control Open Burning. An air permit is required for burning HE contaminated materials that can not otherwise safely be disposed of. Two open burning air permits have been issued by NMED and two additional open burning air permit applications were submitted to NMED in June 1993. One additional open burning air permit application was under preparation by LANL and was submitted to the state in September 1993. LANL conducts open burning at TA-11, 14, 16, and 36.

Toxic air pollutants (TAPS) are subject to the requirements of NMAQR 752, Registration of Existing Toxic Air Pollution Sources. All stationary sources with a potential emission rate of TAPS greater than the specified

regulatory value must register the source with NMED. LANL submitted a registration for one compound, lithium hydride, in 1991.

Asbestos removal projects are regulated by NESHAP, 40 CFR Part 61, and the state rule NMAQR 751. Major asbestos removal projects at LANL are conducted by contractors subject to contract specifications, including compliance with the Asbestos NESHAP and state regulations.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a facility safety presentation and a general discussion of LANL operations, including waste generation and handling, a facility tour was conducted. Later in the inspection, a more detailed inspection was conducted of TA numbers 3, 11, 14, 16, 21, 35, 36, 53 and 55 including process areas, control rooms, air pollution control equipment, and emission points. Records/documents affiliated with the regulated activities were also reviewed. Photographs referenced in this report are included in Appendix A.

Permitted Beryllium Operations

Six beryllium emission sources are currently permitted with NMED. The permits are summarized in Table 1. The permitted beryllium operations at TA-3 building 35 were not constructed. A discussion of beryllium operations at each source inspected including a brief description of activities and observations noted, follows. A copy of the permit applications, permits, and source test results are provided in Appendix B.

Table 1

PERMITTED BERYLLIUM SOURCES
Los Alamos National Laboratory
Los Alamos, New Mexico

Location TA-Building	Permit Number	Permit Date	Annual Usage (kilograms)	Control Equipment	Description of Activities
3-35	741	4/26/89	NA	NA	Beryllium activities identified in the permit application have not been conducted
3-39	635	3/19/86	10	Baghouse	Dedicated beryllium shop with milling, cutting, grinding, and electrical discharge machining
3-102	636	3/19/86	10	HEPA filter and baghouse	Machining of beryllium parts that cannot be machined at building 3-39 due to size or shape
3-141	634-M-1	9/8/87	10	HEPA filter	Gas atomization and consolidation of beryllium
35-213	632	12/26/85	<1	HEPA filter	Drilling and milling operations for pieces typically weighing less than 50 grams
55-4	1081	11/25/92	<1	Four HEPA filters in series	Drilling and milling operations for beryllium contaminated with transuranic materials

TA-3 Building 35

A permit application was prepared in November 1988 for the processing of beryllium and its alloys at TA-3 building 35. Planned beryllium activities were not conducted and construction activities were not started. A January 7, 1991 LANL memorandum states that there are no plans for beryllium operations at TA-3 building 35 [Appendix C].

TA-3 Building 39

The beryllium machining shop at TA-3 building 39 [photographs 1, 2, and 3] is the largest shop at LANL, and is used for weapons development. This facility is a dedicated beryllium shop providing milling, saw cutting, grinding, and electrical discharge machining (EDM) operations. Particulate air emissions are controlled by a cyclone separator and a baghouse filter.

The shop operates two Bridgeport mills, two Harding lathes, one HanVendt EDM, one Mazak Qt-20 lathe, one surface grinder, and a marble band saw. Machining operations are performed approximately 40 hours per week processing 20 to 30 pounds per week of beryllium. Hoods over machining operations are vented to a common ventilation system and routed to a cyclone separator to recover large beryllium pieces that are recycled. Small particles are then discharged to an American Wheelabrator baghouse that vents to the atmosphere. The baghouse contains 72 bags and has a design efficiency of 99.9%.

TA-3 Building 102

The shop at TA-3 building 102 is a metal processing facility used to machine beryllium in special cases when the operations cannot be performed

at building 39 because of the size or shape of the material. Particulate air emissions are controlled by a portable High Efficiency Particulate Air (HEPA) filter [photograph 4] and a high velocity baghouse system.

Two beryllium machining projects occurred in 1992 using gram quantities of beryllium. During beryllium machining operations a portable HEPA filter is connected to the ventilation duct work at the machining source. Machine operation emissions are controlled by the HEPA filter and then passed through a high velocity baghouse before venting to the atmosphere. After the beryllium machining is complete, the HEPA filter is removed and wipe tests are performed to ensure no beryllium fibers are present in the ventilation system. The HEPA filters are removed by Environmental Management Group 7 (EM-7) and transported to TA-54 for disposal.

Annual penetration tests are performed on the portable HEPA filters [Appendix D]. The last test was performed on May 24, 1993. Environmental management also performs aerosol challenge tests on the HEPA filters to determine efficiency before they are used.

TA-3 Building 141

The beryllium operations at TA-3 building 141 include: beryllium and beryllium alloy development, gas atomization of beryllium, and consolidation of beryllium for support of weapons development. Air emissions from these operations are controlled by an HEPA filtering system. Emissions from beryllium operations including miscellaneous grinding and cutting operations performed under a hood are tied into a common ventilation system and discharged through the HEPA system.

Beryllium operations in building 141 are performed in a batch mode, approximately two times per week. Approximately 20 pounds of beryllium were processed in 1991, and 10.7 pounds were processed from September 1992 through June 1993.

Beryllium emissions are controlled with a pre-filter and an HEPA filter. The pre-filter containing PVC bags, model YTSP-8, and a Flanders HEPA filter, model No. GG-FF 24x24x11, control beryllium emissions. This installed equipment was not specified on the permit application. The permit application specified a Cambridge Hi-Flow 65 pre-filter and a Cambridge Absolute HEPA filter. The HEPA filters are removed by EM-7 and transported to TA-54 for disposal.

TA-35 Building 213

Beryllium operations are conducted in two rooms in building 213. Beryllium machining operations performed in room C16 are regulated by NMED permit number 632. The beryllium vaporization and deposition activities performed in room D are not regulated.

Precision milling and micro drilling of beryllium parts weighing less than 10 grams are conducted in room C16. Both machining operations reportedly started in 1986 with construction of building 213. The precision milling operations remove several thousandths of an inch of metal for "finishing" of "rough" parts. A microscope is frequently used to observe the milling operations. Micro drilling operations are conducted while the part is submerged in a biodegradable lubricating fluid. Special work permits (SWP), as part of LANL safety procedures, are issued before beryllium materials may be machined in room C16. Beryllium wipe samples are taken in the work area

when the SWP project is completed. Beryllium machining operations in room C16 were last conducted in May 1992.

The micro drilling operations conducted in room C16 were not described on the permit application. However, construction drawings show a position for the drilling operations.

Beryllium emissions are controlled with a pre-filter and an HEPA filter. The pre-filter containing PVC bags, model YTSP-8, and a Flanders HEPA filter, model No. GG-FF 24x24x11, control beryllium emissions. This installed equipment was not specified on the permit application. The permit application specified a Cambridge Hi-Flow 65 pre-filter and a Cambridge Absolute HEPA filter.

TA-55 Building 4

Beryllium operations at TA-55 building 4 are performed on beryllium sources which are in contact with plutonium or have been contaminated with other radioactive materials. All regulated beryllium activities are conducted within gloveboxes [photograph 5]. Each glovebox is maintained under negative pressure which ensures any air leakage will be contained within the glovebox. An HEPA air filter on the glovebox air discharge removes greater than 99% of the radioactive materials and beryllium. Filtered exhaust air from each glovebox is directed through an additional series of three HEPA filters operated in series. LANL personnel stated each HEPA filter removes greater than 99% of the airborne beryllium material.

Registered Beryllium Operations

Five beryllium emission sources are currently registered with NMED. The registrations are summarized in Table 2 and a copy is provided in Appendix E. A discussion of beryllium operations at each registered source inspected follows. Included is a brief description of activities and observations noted.

TA-3 Building 29

Three beryllium operations have been registered in TA-3 building 29. Two operations are ongoing and the third was discontinued 4 years ago. Beryllium operations are conducted in rooms 2136 and 3119.

Beryllium operations in wing 2 room 2136 consist of preparatory operations for metallurgical testing of radioactively contaminated beryllium samples. Approximately two samples, weighing less than 5 grams each, are processed per year.

Beryllium operations in wing 3 room 3119 consist of cutting and weighing of radioactively contaminated beryllium samples. About two samples, generally weighing less than 5 grams each, have been processed per year.

Beryllium operations in rooms 2136 and 3119 are conducted inside a glovebox operated under negative pressure. The glovebox exhaust air is HEPA filtered to remove radioactive material. HEPA filters are also effective in removing airborne beryllium. The filtered exhaust air from the glovebox passes a second HEPA filter prior to discharge.

Table 2

REGISTERED BERYLLIUM SOURCES
Los Alamos National Laboratory
Los Alamos, New Mexico

Location TA-Building	Registration Date	In-service Date	Annual useage* (kilograms)	Control Equipment	Description of Activities
3-29	3/22/93	1950s	<1	HEPA filters	Cutting, wet sanding, and melting of beryllium samples Production of beryllium alloys
3-66	---	1950s	1	Hood	Chemical milling operation No milling operations have been conducted in the last 3 years
3-66	4/15/92	1950s	1	None	Wet sanding/polishing of beryllium specimens, generally, weighing less than 10 grams
3-1819	10/18/90	1960s**	0.002	HEPA for room ventilation	Production of small quantities of beryllium alloys Beryllium containing alloys have not been produced in 2 years
16-450	4/15/92	1960s	60	None	Wet sanding to remove imperfections and dirt Less than 5 kg of beryllium have been used in the last year

* *Based on information provided in Source Registration*
** *This source was relocated to TA-3-1819 in June 1991*

The registered beryllium operation in wing 7 was discontinued 4 years ago.

TA-3 Building 66

Two beryllium operations, electroplating/chemical milling and sanding/polishing, have been registered at TA-3 building 66. The registered beryllium electroplating and chemical milling operations were discontinued nearly 5 years ago. The ongoing beryllium operations at TA-3 building 66 consist of hand sanding/polishing of small parts. Generally, the parts are less than 15 grams in size and all sanding/polishing operations are performed on wetted surfaces. Activities are performed in hoods with the air flow discharged unfiltered to the atmosphere.

TA-3 Building 1819

The registered beryllium activities in TA-3 building 1819 consist of making small quantities (less than 1 gram) of various alloys, often containing beryllium. The resulting alloys are cut and tested for various metallurgical properties, including super-conductivity.

Alloying activities are conducted in one room which has been sealed from the remaining portions of the building. The air from this room passes through an HEPA filter before discharge. There have been no alloying activities since 1991.

The activities conducted in building 1819 were previously conducted in TA-3 building 29. LANL attempted to permit the beryllium activities conducted in building 29; however, the state issued a letter saying a permit was not necessary [Appendix F].

TA-16 Building 450

Two beryllium operations, surface abrading and swedging, are performed at TA-16 building 450. Surface abrading is used to smooth the surface and remove any imperfections from small beryllium parts (gram quantities) used in weapons development. Water is applied to the material being sanded to control any particulate emissions. Less than 5 kilograms of beryllium were processed in the past year.

Swedging is a process used to reshape small (less than 10 grams) beryllium parts. The parts are placed in an oven equipped with a ventilation hood and heated to 400 °C. The part can then be manipulated into the desired shape. No cutting or sanding operations are performed, therefore, no air emissions are created. This operation is performed four to five times per year and is not registered with NMED.

TA-35 Building 87

Beryllium cutting operations were performed at TA-35 building 87. Gram quantities of thin beryllium sheet metal were either cut or punched out and used to cover pinhole microscope apertures. All cutting was performed inside a glovebox to minimize possible emissions. LANL no longer conducts this operation, which was not registered with NMED.

TA-53, MP-8 Division

The MP-8 division performs sandblasting operations to clean beryllium oxide optic windows on Klystron tubes. This operation began in 1972 and was last conducted in 1985. Each window is 19.4 centimeters (cm) in diameter and 1.4 cm thick. Approximately 1 millimeter of the beryllium oxide is displaced

during the cleaning operation. Blasting is performed outside and no containment is used. LANL no longer conducts this operation, therefore, no registration was submitted to NMED.

Radionuclide Emission Sources

Region 6 conducted a complete evaluation of the radioactive emission sources in August 1992, therefore, the NEIC inspection was limited to general discussions regarding these sources. LANL provided information for all known emission sources. The numerous radioactive air emission sources are divided into four classifications based on potential effective dose equivalent (PEDE) in millirem-per-year. The PEDE category, monitoring requirements, and applicable NESHAP regulations are summarized in Table 3. A summary of radioactive stack emissions, including, stack identification, PEDE category, control equipment, and monitoring equipment is provided in Table 4.

Table 3

RADIOACTIVE MONITORING CRITERIA AND PEDE CATEGORIES
Los Alamos National Laboratory
Los Alamos, New Mexico

PEDE (mrem/yr)	Required Monitoring	Applicable Citation	PEDE Category
> 5	Continuous monitoring with real time analysis	40 CFR §§ 61.93(b)(1,2)	1
> 0.1 - ≤ 5	Continuous sampling with periodic analysis	40 CFR §§ 61.93(b)(1,2)	2
> 0.001 - ≤ 0.1	Periodic confirmatory measurements	40 CFR § 61.93(b)	3
≤ 0.001	Controlled by radionuclide inventory limitations	40 CFR § 61.93(b)(3)	4

Table 4

RADIONUCLIDE EMISSIONS SOURCES
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Fan Exhaust Number	PEDE Category	PEDE (mrem)	Control System	Type of monitor/ sampler
TA-53-3	3	1	5.9×10^{15}	HEPA	Filter paper, kanne, γ chamber and silica gel
TA-53-7	2	1	7.8×10^{12}	HEPA	Filter paper, kanne, γ chamber and silica gel
TA-55-4	16	1	2.2×10^{8}	HEPA	Filter paper, alarmed cam, bubbler
TA-55-4	15	1	1.8×10^{8}	HEPA	Filter paper, alarmed cam
TA-50-69	3	1	2.0×10^{5}	HEPA	Filter paper
TA-21-4n	3	1	1.1×10^{4}	HEPA	Filter paper
TA-21-3s	6	1	8.8×10^{3}	HEPA	Filter paper
TA-50-1	17	1	8.2×10^{3}	HEPA	Filter paper
TA-41-1	4	1	6.2×10^{3}	HEPA	Ion chamber, bubbler, filter
TA-21-324	1	1	3.4×10^{3}	HEPA	Filter paper
TA-21-209	1, 10, 12	1	1.1×10^{4}	HEPA	Kanne chamber, bubbler
TA-3-29-2	14	1	8.1×10^{2}	HEPA	Filter paper
TA-3-29-7	32	1	7.6×10^{2}	HEPA	Filter paper
TA-3-29-7	33	1	6.8×10^{2}	HEPA	Filter paper
TA-3-29-5	28	1	6.4×10^{2}	HEPA	Filter paper
TA-3-29-5	29	1	6.1×10^{2}	HEPA	Filter paper
TA-3-29-3	20	1	5.4×10^{2}	Aerosol	Filter paper
TA-3-29-2	15	1	4.6×10^{2}	HEPA	Filter paper
TA-21-155N	5	1	4.4×10^{2}	None	Kanne chamber, bubbler, alarmed
TA-16-205	3	1	4.1×10^{2}	None	Ion chamber, bubbler
TA-3-29-3	19	1	3.8×10^{2}	Aerosol	Filter paper, cam
TA-3-66	8	1	2.4×10^{2}	None	Filter paper
TA-48-1	38	1	8.5×10^{1}	None	Filter paper
TA-3-16	16	1	5.8×10^{1}	None	Kanne chamber, bubbler
TA-33-86	6	1	3.3×10^{1}	None	Kanne chamber, bubbler
TA-41-4	17	1	2.6×10^{1}	None	Ion chamber, bubbler

Table 4 (cont.)

Location	Fan Exhaust Number	PEDE Category	PEDE (mrem)	Control System	Type of monitor/ sampler
TA-3-141	6	1	2.6×10^{1}	None	Filter paper
TA-3-29-2	17	1	2.2×10^{1}	HEPA	Filter paper
TA-3-29-2	18	1	2.1×10^{1}	HEPA	Filter paper
TA-50-1	6	1	1.6×10^{1}	HEPA	Filter paper
TA-50-66	1	1	8.8	HEPA	Filter paper
TA-3-141	10	1	8.7	None	Filter paper
TA-3-29-4	27	1	6.2	None	Filter paper
TA-3-29-4	26	1	6.1	None	Filter paper
TA-3-16	14	1	5.7	None	Kanne chamber, bubbler
TA-3-29-4	24	2	3.8	None	Filter paper
TA-3-29-4	23	2	3.2	None	Filter paper
TA-3-29-5	30	2	2.6	HEPA	Filter paper
TA-3-29-5	31	2	2.5	HEPA	Filter paper
TA-48-1	60	2	1.6	HEPA	Filter paper
TA-3-29-9	45	2	1.4	Aerosol	Filter paper
TA-3-29-9	44	2	1.3	Aerosol	Filter paper
TA-3-29-9	46	2	1.2	Aerosol	Filter paper
TA-3-66	25	2	9.2×10^{-1}	None	Filter paper
TA-3-141	9	2	8.7×10^{-1}	None	Filter paper
TA-3-29-7	34	2	8.5×10^{-1}	HEPA	Filter paper
TA-48-1	15	2	8.3×10^{-1}	None	Filter paper
TA-3-29-7	35	2	4.4×10^{-1}	HEPA	Filter paper
TA-3-66	13	2	3.8×10^{-1}	None	Filter paper
TA-35-7	2	2	3.8×10^{-1}	None	Filter paper
TA-48-1	45	2	2.9×10^{-1}	None	Filter paper
TA-21-313	2	2	2.9×10^{-1}	HEPA	Filter paper
TA-35-7	8	2	2.8×10^{-1}	HEPA	Filter paper
TA-50-1	2	2	2.3×10^{-1}	Aerosol	Filter paper
TA-48-1	4	2	2.2×10^{-1}	None	Filter paper
TA-50-1	25	2	1.9×10^{-1}	HEPA	Filter paper

Open Burning

Open burning operations are used to burn high-explosive-contaminated materials that can not otherwise safely be disposed of. Two open burning facilities, one at TA-11 and one at TA-36, currently have operating air permits issued by NMED. Two additional permit applications were submitted in June 1993 for TA-14 and TA-16. LANL is preparing an open burn permit application for additional open burning operations proposed for TA-11 with a planned submittal date to NMED of September 1993. The permits are summarized in Table 5 and copies are provided in Appendix G. A discussion of open burning at each facility inspected follows. Included is a brief description of activities and observations noted.

TA-11

Open burning operations are performed at TA-11 K-site to test ordnance devices and shipping containers. The containers are placed on a stand in a circular containment area [photograph 6] and ignited remotely. Each burn uses approximately 500 gallons of diesel fuel or JP-4 jet fuel. LANL performs an average of two burns per year at this facility. The last burn occurred in September 1992.

TA-14

Open burning operations at TA-14 Q-site are used to dispose of uncharacterized explosives. Burns occur in a burn cage [photograph 7], contain a maximum of 50 pounds of high-explosive-contaminated combustible waste, and use about one-half gallon of fuel as a starter fluid. The waste consists of small amounts of high explosives, sample containers, paper wipes,

Table 5

OPEN BURNING OPERATIONS
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Division	Air Permit Date	Number of Burns 1992	Amount of Material Burned	Description of Activity
TA-11	WX-11	8/30/91	1	NA*	Fuel fire testing of weapons
TA-11	WX-11	Planned submittal 9/93	20	NA	Burning of depleted uranium and beryllium
TA-14	M-1 Q site	Submitted 6/18/93	4	NA	Burn uncharacterized explosives
TA-16	WX-3	Submitted 6/18/93	NA	49,400 lb.	Flashing of HE contaminated equipment
TA-16	WX-3	Submitted 6/18/93	NA	1,263 gal.	Burning of HE contaminated solvent/oils
TA-16	WX-3	Submitted 6/18/93	NA	6,750 lb.	HE collected from sumps and burned on filter vessels
TA-36	M-8	6/14	---	---	Burning of HE contaminated wood

* *Recordkeeping is in pounds or in number of burns*

and other processing equipment used in explosives development. Burns are limited to one each 24-hour period. The burn cage was used four times in 1992, and three burns occurred from January through July 1993. Ash remaining after the burn is stored in a 55-gallon drum to await analysis before disposal.

TA-16

Four open burning operations occur at TA-16 including: flash burning of high-explosive-contaminated material, burning of solid high explosives, burning of hydraulic oil and solvents contaminated with bulk high explosives, and burning of sludge dried high-explosive particles. The flash burning operation has an NMED air permit; however, the remaining three operations do not require air permits, because they burn almost pure high-explosive material alone or as a mixture, not high-explosive-contaminated waste.

Flash burning is used to decontaminate noncombustible materials contaminated with high explosives. Contaminated materials are placed on a "flash pad" [photograph 8] and ignited with fuel. The flash pads are used approximately one time per month, burn approximately 6,000 pounds of material, and use less than 1 pint of fuel per burn.

Solid high-explosive components are burned in a pneumatically controlled burn tray [photograph 9]. High-explosive materials are placed in a covered burn tray and 1 gallon of fuel is added to aid in the ignition. Approximately 14,000 pounds of solid high-explosive materials were burned in 1992, and 4,232 pounds were burned January through August 1993.

Liquid burn trays [photograph 10] are used to burn solvent solubilized high-explosive materials generated from the weapons analysis and preparation

facilities. Hydraulic oil contaminated with bulk high explosives during the fabrication processes is also burned in these trays. LANL burned 273 gallons of contaminated solvent and 990 gallons of high-explosive-contaminated oil in 1992.

Sludge dried high-explosive particles collected are burned in one of two filter vessels [photograph 11] at TA-16. High-explosive particles generated from cleaning of high-explosive-contaminated machining tools are collected from the sumps and are placed in the sand filter vessels. Water filters through the sand and the high-explosive particles settle out on top of the sand. The vessels are then covered and the high-explosive material is burned. This facility burned 6,750 pounds of high-explosive materials in 1992 and burned 2,500 pounds January through August 1993.

TA-36

Open burning operations at TA-36 are used to reduce the volume of wood waste accumulated during ordnance detonation experiments. Wood tables are used as test stands [photograph 12] for the ordnance materials and may be contaminated with high explosive fragments. Wood waste is accumulated in piles [photograph 13] and is burned four to five times per year. Each burn is ignited using 5 to 10 gallons of kerosene or diesel fuel. NMED and county personnel are notified 5 days in advance of any expected burn operations.

Toxic Air Pollutants

Toxic air pollutants (TAPS) are subject to the requirements of NMAQR 752, Registration of Existing Toxic Air Pollution Sources. All stationary sources with a potential emission rate of TAPS greater than the specified value

must be registered with the NMED. LANL submitted a registration for one compound, lithium hydride, in 1991.

Based on the 1990 air emissions inventory, seven TAPS used at LANL exceeded the screening levels outlined in NMAQR 752 and should have been registered or permitted with the state [Table 6]. The seven operations involving the TAPS have been discontinued, but should have been registered at the time of their use. LANL environmental personnel have no system in place to determine when a TAP is being used in excess of the screening level.

Table 6

TOXIC AIR POLLUTANTS*
Los Alamos National Laboratory
Los Alamos, New Mexico

Technical Area	Compound	Threshold Level (lb/hr)	Estimated Emissions (lb/hr)
TA-3	Sulfuric acid	.0667	2.0
TA-21	Osmium tetroxide	1.33×10^{-4}	.002
TA-21	Phosgene	.0267	.055
TA-43	Mineral oil mist	.333	3.37
TA-48	Sulfuric acid	.0667	1.533
TA-55	Ammonia	1.20	1.330
TA-55	Phosgene	.0267	.500

* *Based on 1990 emissions inventory*

Asphalt Plant

Johnson Controls, a LANL contractor, operates an asphalt plant at TA-3 building 63 that produces asphalt used for road and parking lot paving and repair. The plant, originally constructed in 1960, operates in a batch mode and runs approximately 2 hours per day. The plant produced 3,723 tons of asphalt in 1992 and has produced 2,279 tons through August 4, 1993.

A performance test for particulates was most recently conducted in August 1993. Three runs were performed and indicated particulate levels less than .04 grams per dry standard cubic foot. NMED also conducts monthly visual opacity readings at the plant.

Aggregate is heated and dried using natural gas and is then added to the asphalt to produce a paving mixture. Particulate emissions created during this process are controlled by a cyclone separator and a water spray scrubber.

Boilers

LANL operates two power plants and one steam plant to produce electricity and steam and hot water heat [Table 7]. The power plants are located at TA-3 and TA-21, and the steam plant is located at TA-16. Each plant operates three boilers using natural gas as the primary fuel and No. 2 fuel oil as a backup. Because the boilers operate primarily on natural gas, there are no particulate emission controls or emissions monitoring for these stacks. Facility personnel indicated that the boilers operate on fuel oil approximately two times per month for 15 to 30 minutes for training purposes. Natural gas consumption and fuel oil usage is summarized in Table 7. Smaller fuel burning boilers (less than 50 x 10^6 Btu per hour) are located throughout the facility to heat individual buildings.

Table 7

BOILERS
Los Alamos National Laboratory
Los Alamos, New Mexico

Location	Number of Boilers	Installation Date	Rated Heat Capacities (Btu/hr)	Manufacturer	Fuel	1992 Natural Gas Usage (ft^3)	1992 Fuel Oil Usage (gallons)
TA-3	3	1951	188×10^6	(2)-Edgemoore Iron Works (1)-Union Iron Works	Natural gas No. 2 fuel oil	921×10^6	10,000
TA-16	3	1950	84×10^6	Union Iron Works	Natural gas No. 2 fuel oil	320×10^6	3,000
TA-21	3	1984	17×10^6	Industrial Boiler	Natural gas No. 2 fuel oil	81×10^6	1,000

Volatile Organic Compound Emissions

During 1990, the Environmental Protection Group at Los Alamos initiated a program to develop an inventory of the nonradioactive air emissions. The inventory results [Appendix H] were based on the returned responses to 1,100 questionnaires sent to laboratory group leaders and contractors. Information from more than 700 materials regulated under New Mexico AQCR 702, AQCR 752, or the 1990 Federal Clean Air Act Amendments (CAAA) were reported on the returned questionnaires. No "de minimis" threshold was used in compiling the inventory and compounds that contained regulated materials as constituents (e.g., WD-40, paints, etc.) were also included.

Based on the survey, LANL released in excess of 38,000 pounds of air toxic emissions during 1990. The emissions can be divided into the following categories: 35,000 pounds of organic (mostly volatile compounds), 2,000 pounds of acid gases, and nearly 800 pounds of metals. These totals may not accurately reflect current emissions because the inventory has not been updated since 1990. Painting and surface cleaning operations have changed which may lower VOC emissions. A list of chemicals with annual emissions exceeding 100 pounds is provided in Table 8.

Painting operations at LANL account for approximately 45%, or 16,000 pounds, of the total VOC emissions. To reduce this source of VOCs, LANL is testing the use of water based paints. Surface cleaning with various organic solvents is also a significant source of VOC emissions. Various operations at LANL are experimenting with the use of household cleaners (e.g., Fantastic, Formula 409, etc.) in place of volatile organic solvents. Additionally, the organic solvents in parts degreasers are being replaced with "Citraclean."

Table 8

LANL AIR TOXIC EMISSIONS
Los Alamos National Laboratory
Los Alamos, New Mexico

Chemical	Annual* Total (pounds)	Chemical	Annual* Total (pounds)
Toluene	5,474	Wood dust	1,003
Acetone	4,881	Nitrogen oxide	693
Methyl ethyl ketone	4,110	Stoddard solvent	583
Hapten	4,075	Kerosene	573
Xylene (o-,m-, and p-isomers)	3,884	Hydrogen fluoride	534
Methylene chloride	2,433	Trichloroethylene	462
1,1,2 - Trichloroethane	2,044	Propane sultone	450
Ammonia	1,760	2-butoxyethanol	270
Sulfur dioxide	1,534	Aluminum welding dust	248
Nitric acid	1,457	Nitric oxide	250
Hydrogen chloride	1,407	Heavy metals	242
Naphtha	1,351	Tungsten	240
Methyl alcohol	1,298	Ethyl acetate	195
Isopropyl alcohol	1,188	Hexane	169
Acetic acid	1,184	Ethylene	158
Chloroform	1,173	Nickel metal	121
Welding dust	1,127	Formaldehyde	108

* *Based on LANL 1990 Nonradioactive Air Emission Inventory*

Asbestos Removal Program

LANL conducted an asbestos survey in 1986 identifying over 76,000 square feet of friable asbestos present in working areas within buildings at LANL. Friable asbestos containing materials (ACM) were also exposed to the

atmosphere at several outside areas at LANL. Aboveground steam lines are insulated with ACM, and were damaged in several locations exposing the asbestos to the atmosphere. All asbestos removals, encapsulations, and emergency repairs are completed by a contractor, Johnson Controls, Inc. (JCI).

During the NEIC inspection, several small asbestos removals and encapsulations were completed. An inspection of a small removal area in TA-16 building 540 was conducted on August 10, 1993. JCI was removing approximately 3 linear feet of ACM. Following is a discussion of the removal procedures and the various areas inspected.

Asbestos Removal Project

The small project in building 540 involved removing and disposing 3 linear feet of asbestos insulation. The removal was conducted in a glove bag taped around the affected piping. The work area was roped off by yellow taping and marked with asbestos warning signs. A two-man team in tyvex suits and half-face respirators removed the ACM from the piping. Before workers left the work area, they removed the exposed clothing and placed it in a plastic bag. The bags were then bagged again and labeled.

The asbestos material was wetted, removed and then dropped into the glove bag. The exposed ends of the asbestos insulation were sealed with encapsulant before the glove bag was removed. The bag was then bagged again and labeled with the generator's name, the date, and the facility from which the material was removed. The asbestos waste was then taken to an asbestos dumpster located at TA-3 building 22 before transport to the disposal site.

Asbestos Roll-Off Dumpsters

The asbestos dumpsters used to store nonradioactive asbestos waste generated by JCI, prior to off-site disposal, are located at TA-54 Area J. Three roll-off dumpsters are stored in a section of Area J with boundary markings identifying it as an asbestos storage area. The outside of the dumpsters was marked "asbestos," and the material inside was double-bagged and labeled.

Asbestos material considered to be radioactive is disposed of at TA-54 Area G. Radioactive asbestos is placed in a pit and covered with dirt. The material placed in the pit is double bagged and labeled as "asbestos/rad waste." Boundary markings indicate that radioactive asbestos is stored in the area.

Asbestos Removal Records

Removal notices, Notices of Intent to Remove and Dispose of Asbestos, and annual removal notices from January 1991 to August 1993 were reviewed. Small abatement jobs (less than 160 linear feet) required for routine maintenance and repairs are covered on a blanket notification submitted to NMED annually. JCI is responsible for all asbestos removals, encapsulations, and emergency repairs. JCI employs 30 certified asbestos workers, 6 asbestos inspectors, and 22 workers with contractor/supervisor training. The work performed by JCI is supervised and inspected by LANL personnel holding asbestos supervisor certification.

Quality control, project documentation, and air monitoring is provided by LANL's Health Services Department (HS-5). Clearance samples and personnel monitoring samples are analyzed by HS-5. They also act as a receiving point for all samples collected to be analyzed by an off-site laboratory. Samples are analyzed by Assaigai Analytical Laboratories of

Albuquerque, New Mexico. Records are kept for any additional in-house air monitoring that is performed.

Asbestos wastes generated by JCI are taken to TA-54. Nonradioactive asbestos is stored in Area J until it is transported to Chemical Waste Management in Kettleman City, California, a state approved landfill. The double-bagged asbestos waste is transported to the landfill by Chemical Waste Management. Radioactive asbestos wastes are taken to TA-54 Area G and placed in Pit 31. All waste shipment records are kept by Environmental Management (EM-7).

SUMMARY OF FINDINGS

LANL air contaminant emissions are regulated by NMAQR regulations and NMED permits. In addition several sources are subject to the NESHAP requirements. The following areas of noncompliance were identified during the NEIC investigation.

AREAS OF NONCOMPLIANCE

NMAQR Permit No. 634-M-1	Pollution control equipment identified at TA-3 building 141 beryllium operations is not the same as the pollution control equipment outlined in the permit application for these beryllium operations.
NMAQR 702	LANL failed to permit a beryllium drilling operation at TA-35 building 213. One beryllium operation was identified in the permit application submitted to NMED for this building and two operations are performed.
NMAQR Permit No. 632	Pollution control equipment identified at TA-35 building 213 beryllium operations is not the same as the pollution control equipment outlined in the permit application for the beryllium operations.
NMAQR 752	LANL did not register seven operations emitting toxic air pollutants (TAPS) that were used in excess of the screening levels. The TAPS include: • Sulfuric acid (at two locations) • Osmium tetroxide • Phosgene (at two locations) • Mineral oil mist • Ammonia

AREAS OF CONCERN

During the on-site inspection and document review, the following areas of concern were noted.

- All regulated beryllium operations at LANL may not yet be identified. The major machining operations have likely been identified, but the smaller operations may have been overlooked. Various correspondence from EM-8 has been relayed to laboratory group leaders requesting information on beryllium operations. Information requests have been sent since 1986; however, beryllium operations continue to be identified. Alleged violations for beryllium permitting have been identified and are outlined in the Areas of Noncompliance section.

- Emissions data for nonradioactive sources may be inaccurate. Emission estimates are based on a 1990 survey. New activities using various toxic and/or volatile compounds have been started since 1990. Additionally, many activities have been discontinued or undergone major changes since 1990 which may alter the emission estimates.

- A significant quantity of VOCs are emitted from painting operations within LANL. The laboratory is exploring the use of water-based paints to reduce this emission source and should be encouraged to pursue this and other waste minimization activities.

- LANL does not have a complete inventory of all emission sources. For example a listing of all degreasing and painting operations is not available. Additionally, a listing of all pollution control equipment for each stack or discharge exhaust is not available. This type of information will be needed to complete an operating permit application, as required in the CAAA.

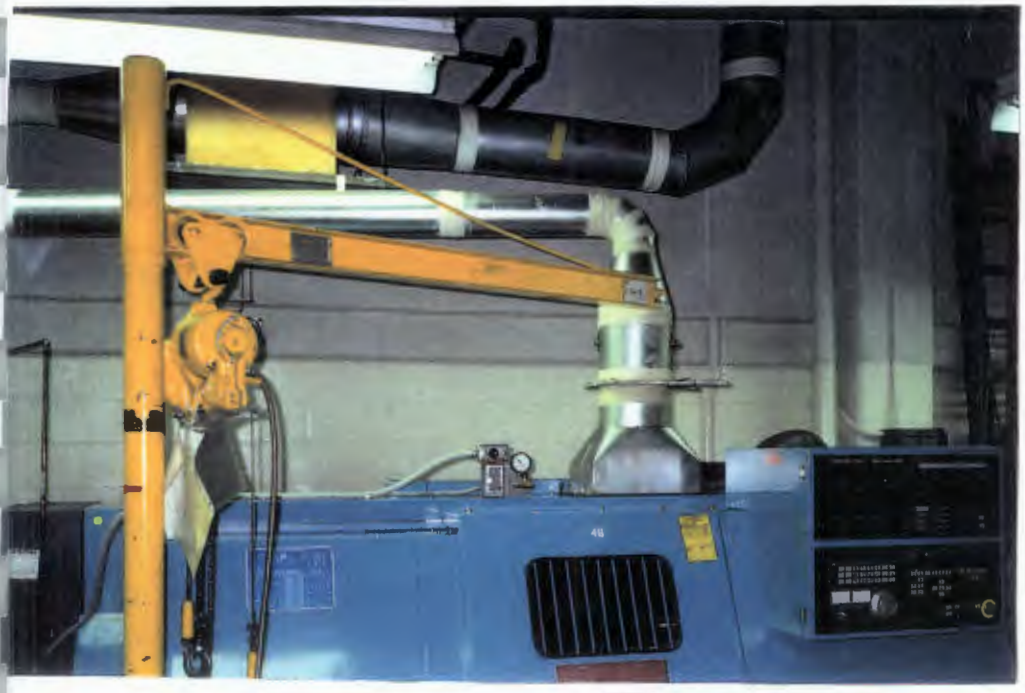
- Friable asbestos containing materials (ACM) identified by LANL are exposed to the atmosphere at several areas. The steam lines are insulated with ACM, and are damaged in several locations exposing the asbestos to the atmosphere.

APPENDICES

A	Photographs
B	Beryllium Permit Applications, Permits, and Source Tests
C	January 7, 1991 Correspondence regarding T-3-35 Beryllium Operations
D	Penetration Tests
E	Beryllium Source Registrations
F	Movement of Beryllium Activities from TA-3-29 to TA-3-1819
G	Open Burning Permits
H	1990 Non-radioactive Air Emission Inventory

APPENDIX A

PHOTOGRAPHS



PHOTOGRAPH #1
BERYLLIUM MACHINE SHC
TA-3-39

PHOTOGRAPH #2
BERYLLIUM MACHINE SHOP
TA-3-39

PHOTOGRAPH #3
BERYLLIUM MACHINE SHOP
TA-3-39

PHOTOGRAPH #4
PORTABLE HEPA FILTER
TA-3-102

PHOTOGRAPH #5
BERYLLIUM OPERATIONS
TA-55-4

PHOTOGRAPH #6
OPEN BURNING OPERATIONS
TA-11, K-SITE

PHOTOGRAPH #7
OPEN BURNING OPERATIONS
TA-14, Q-SITE

PHOTOGRAPH #8
FLASH BURNING AREA
TA-16

PHOTOGRAPH #9
SOLID HE BURN TRAY
TA-16

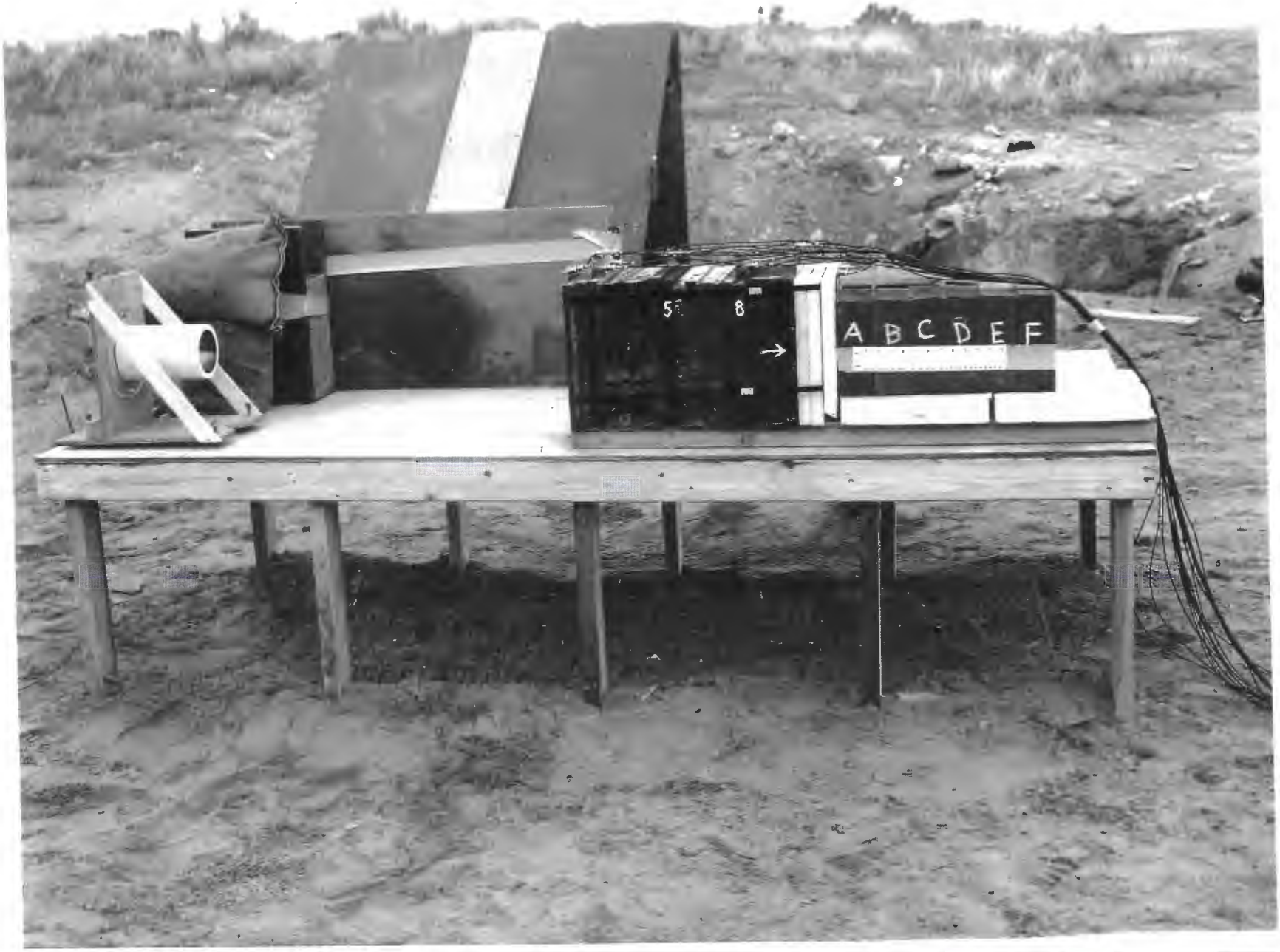
PHOTOGRAPH #10
LIQUID BURN TRAYS
TA-16

PHOTOGRAPH #11
BURN FILTER VESSEL
TA-16

PHOTOGRAPH #13
WOOD WASTE PILE
TA-36

03D 004306

PHOTOGRAPH #12
WOOD TEST STANDS
TA-36



APPENDIX B

BERYLLIUM PERMIT APPLICATIONS, PERMITS, AND SOURCE TESTS

PERMIT 632

TONEY ANAYA
GOVERNOR

DENISE D FOR
DIRECTOR

HEALTH & ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 827-0070

December 26, 1985

CERTIFIED MAIL NO. P 176 061 913
RETURN RECEIPT REQUESTED

Mr. Harold E. Valencia
Area Manager
Dept. of Energy
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Dear Mr. Valencia:

This letter constitutes Air Quality Permit Number 632 which is issued to the Los Alamos National Laboratory pursuant to Section 74-2-7 NMSA and Air Quality Control Regulation 702, to construct and operate a beryllium machine shop in TA-35 Building 213 near Los Alamos, New Mexico. The facility is be be constructed and operated in accordance with the application dated October 11, 1985 and is subject to the following conditions:

1. Beryllium emissions to the atmosphere shall not exceed 4×10^{-7} pounds per hour (4×10^{-7} tons per year).

2. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Division, for a minimum of two years.

The Division has performed an analysis to verify the emissions from the proposed machine shop and has performed dispersion modeling using emission estimates from the facility to determine the impact on the ambient air. Based on the analysis and the control measures described in your application, the Division has determined that the provisions of the Air Quality Control Act, Air Quality Control Regulation 751, and the ambient air quality standards will be met. However, in order to assure this, conditions have been placed on the permit. The Air Quality Control Act allows the Division to place reasonable restrictions other

EQUAL OPPORTUNITY EMPLOYER

than those relating to emission rates. The reasons for these conditions are explained below:

Condition 1 regarding the emissions from the beryllium machine shop corresponds to the emission limit specified in the application. The Air Quality Control Act allows for placement of an emission limit and requires that such a limit be only as restrictive as the more stringent of the following: 1) the extent necessary to meet the requirements of the Air Quality Control Act and the Federal Act: or 2) the emission rate specified in the permit application. The emission rate specified in the permit application has been determined to be more stringent in this case.

Condition 2 corresponds to the reporting and record keeping requirements contained in AQCR 751 which incorporates the National Emission Standards for Hazardous Air Pollutants (NESHAPS), by reference.

Section 74-2-7.K NMSA 1978 provides that if the Division issues a permit with conditions, and the applicant is dissatisfied with the action taken by the Division, the applicant may request a hearing before the Environmental Improvement Board. The request must be made in writing to the Director of the Environmental Improvement Division within thirty days after receipt of the permit.

Additionally, there are requirements other than those contained in the permit that should be noted. Air Quality Control Regulation 702 requires the following:

Section M provides that the Division may cancel a permit if the construction is not commenced within one year from the date of issuance or, if during the construction, work is suspended for a period of one year.

Section P requires the permitted source to notify the Division in writing of the:

1. anticipated date of initial startup of a source not more than sixty days nor less than thirty days prior to the date, and

2. actual date of initial startup of a source within fifteen days after the startup date.

AQCR 751 requires that each owner or operator to test emissions from the new source within 90 days of startup.

A performance test is required for beryllium and shall be performed in accordance with EPA Reference Method 103 or 104 as outlined in 40 CFR Part 61 Appendix B. The permittee should arrange a pretest meeting with the Division at least two weeks prior to the date of testing and should advise the Division of any variations to the procedures. The results should be submitted to the Division within forty-five days after the completion of testing.

The permit and conditions apply in the event of any change in control or ownership of the facility. In the event of any such change in control or ownership, the permittee should notify the succeeding owner of the permit and conditions. The permittee should arrange a pretest meeting with the Division at least two weeks prior to the date of testing and should advise the Division of any variations to the procedures. The results should be submitted to the Division within forty-five (45) days after the completion of testing.

If you have any questions regarding this permit please contact David Duran or A. S. Shankar.

Sincerely,

J. David Duran
Acting Bureau Chief

DD:lo

xc: Tito Madrid, District Manager, District II
Gerald Silva, Health Program Manager, Espanola
Bruce Nicholson, Program Manager, Modeling and Analysis
Jack Divita, EPA Region VI, Dallas

Ref:

EID-...K QUALITY BUREAU
NEW SOURCE REVIEW UNIT
P.O. BOX 968
SANTA FE, NM 87504-0968
TELEPHONE: 505-9840020

Revised: 2/80

FOR EID USE O
Application No.
App. Rec'd. Date:
Date App. Complete:
Reviewed by:
Approved/Disapproved:
Date:
AQCR: County:
Date St. Operation:
Date Perf. Test/Insp:

APPLICATION FOR PERMIT AND CERTIFICATE OF REGISTRATION

GENERAL FORM

FOR

SOURCES LOCATED WITHIN THE STATE OF NEW MEXICO [1]

Please answer all questions applicable to your specific business, operation, and products.
Use the abbreviation "N.A." for "not applicable" wherever appropriate.
Submittal of process flow sheets, equipment descriptions, and other information may be required to complete this application. [2]

SECTION I - GENERAL DATA

1. Name of Company: Los Alamos National Laboratory 2. Date Submitted: 10-11-85
3. Company Address: Los Alamos, New Mexico Phone: 667-5105
   Person to Contact: Harold E. Valencia Title: DOE/LAAO Manager Phone: 667-5105
4. Name, Address and location of new plant or modification: TA-35, BLDG. 213
   Is U.S.G.S. quadrangular map or equivalent attached? [3] Yes
5. Describe briefly the type and capacity of the plant and nature of modifications (if applicable) and products: [4]
   Beryllium (Be) machining operation producing small quantities of Be parts which are classified Secret Restricted Data.
   Date of Anticipated Start of Construction: January 2, 1986
6. Class of land at plant site (private, State, Federal, Indian, etc.): Federal
7. Is this permanent? Yes If not, how long is it expected to be occupied? N/A Date of Anticipated Startup: February 15, 1986
8. Normal operating schedule: 4 hours per day, 3 days per week, 4 weeks per month, 12 months per year.
9. Specify maximum operating periods: 8 hrs/day, 5 days/week, 4 weeks/mo., 12 months/yr.
10. Specify percent annual production by quarters: Dec. - Feb. 15, Mar. - May 20, June - Aug. 30, Sep. - Nov. 35

Notes: [1] Submitted in accordance with Air Quality Control Regulation No. 702, Permits, or Regulation No. 703, Registration.
[2] Notification of the need for other additional information required to complete this application will be given to the applicant by the Air Quality Bureau within 10 days after the receipt of the application. Filing of the application will not be considered to be complete until the date of submittal of such additional information. The granting or denial of the permit will be made within 30 days after this completion date.
[3] Regulation No. 702, Section D, Item 5 requires that this application be accompanied by a U. S. Dept. of the Interior Geological Survey quadrangular map or equivalent map showing the exact location of the proposed construction or modification.
[4] Include site plan showing location of all stacks or other emission points and property or fence line; for portable or movable equipment include serial numbers or other [illegible]

SEC - FUEL USAGE N.A.

Unit No. [1]	Type of Fuel Burning Equipment [2]	Equipment Manufacturer	Rated Capacity Million BTU/Hr. [3]	Fuel Type [5]	FUEL DATA [4], [9] Amount Per Year [6]	Heating Value [7]	Percent Sulfur [8]	Percent Ash [8]

Notes: [1] Give a different number to represent each unit; give corresponding data opposite the same number in Sections 3 through 9.
[2] Boiler, oven, furnace, gas engine, gas turbine, etc. Include model number, configuration, etc., attach separate sheets if necessary.
[3] Give maximum rate as well as normal rate, if different.
[4] If auxiliary fuel or different fuel used "on standby", also give data for that fuel.
[5] Natural gas; bituminous coal; No. 6 fuel oil; refinery gas; etc. Include condition of fuel (pulverized, slurry, etc. if applicable).
[6] Million cubic feet of gas; tons of coal; gallons of fuel oil; pounds of LPG; etc.
[7] Higher heating value; Btu/lb, Btu/gal or Btu/MCF (MCF = 1000 std. cu. ft.)
[8] Sulfur and ash contents should be maximum percentages by weight. Sulfur and ash contents are not required if sweet natural gas is used as the fuel.
[9] Attach process flow sheet, including material balance for the combustion plant, if available.

SECTION 3 - MATERIALS PROCESSED AND PRODUCED

A. RAW MATERIALS PROCESSED

Unit No. [1]	Type	Composition [2]	Condition [2]	Quantity [6] (Specify Units)
1	Semi-finished Beryllium	Pure 100% Be	Solid Be parts	Classified Secret
	(Be) parts			

B. MATERIALS PRODUCED (DO NOT INCLUDE EMISSIONS AND PRODUCTS LISTED IN SECTIONS 4, 8, AND 9)

1	Finished (Be) parts	Pure 100% Be	Solid Be parts	Classified Secret

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Give each major component with weight percentages and chemical compositions if known.
[3] Give typical particle size distribution for aggregates, pumice dust, etc. and average moisture content if known

SECTION 4 - UNIT EMISSIONS (PRIOR TO AIR POLLUTION CONTROL EQUIPMENT, OR TO ATMOSPHERE, IF UNCONTROLLED)

Unit No. [1]	Process or Operation [2]	Quantity of Gases Discharged to Air Pollution Control Equipment [3]	ESTIMATES OF AIR POLLUTANTS						Basis of Estimates [7]
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 [4]		
			Type [5]	Quantity [6]	Type [5]	Quantity [6]	Type [5]	Quantity [6]	
1	Be Machining	To stack (See Sec. 6)	Be	2.75×10^{-3} lb/hr 2.86×10^{-3} T/yr		lb/hr T/yr		lb/hr T/yr	Process Material Balance
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	

Notes: [1] Give a different number to each unit corresponding to unit numbers in Sections 2 through 9.
[2] Smelter furnace, asphalt plant drier, iron-melting cupola, cement manufacture-dry process, solvent cleaner, etc.
[3] Gas flow rate in actual cubic feet per minute, if applicable. State temperature (°F), pressure, (psia) and percent moisture (if applicable). Enter "see stack data" if discharge goes directly to the stack.
[5] Particulate matter (give chemical description), Sulfur Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Oxides, etc.
[6] Quantities at maximum production rates. T = tons (2000 lb.)
[4] If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
[7] From process material balances, field tests by plant or equipment manufacturer, EPA emission factors (AP-42), other.

SECTION 5 - AIR POLLUTION CONTROL EQUIPMENT, EMISSIONS TO ATMOSPHERE[1]

Also attach process flow sheets and equipment layout and assembly drawings necessary to describe all air pollution control equipment.

Unit No. [2]	Air Pollution Control Equipment		EMISSIONS TO ATMOSPHERE [3]						Air Pollution Control Equipment Collection Efficiency	
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 [4]			
	Type [4]	Manufacturer and Model No.	Type [5]	Quantity [6]	Type [5]	Quantity [6]	Type [5]	Quantity [6]	% by Weight	How Determined [7]
1	Pre-Filter	Cambridge Hi-Flow 65	Be	4×10^{-7} lb/hr 4×10^{-7} T/yr		lb/hr T/yr		lb/hr T/yr	48%	Manufacturer's Rating
	HEPA	Cambridge Absolute		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	99.97%	Manufacturer's Rating
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		

Notes: [1] Attach additional sheets as needed, to list all control equipment.
[2] Corresponding to numbers in Sections 2 through 9.
[3] Cyclone, scrubber, electrostatic precipitator, baghouse, etc.
[5] Estimated emissions after gases have passed through control equipment.
[5] Particulate matter, etc. (See Note 4, Section 4)
[6] Quantities at maximum production rates. T = tons (2000 lbs.)
[4] If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
[7] Field test results, manufacturers rating, etc.

Section 5 - Continued

Capital Costs (Optional):
Approximate expected capital investement of new or modified air pollution control equipment: $ 90K
Estimated yearly operation and maintenance costs for air pollution control equipment: $ 2K/yr.

Section 6 - Stack Data - Include drawings or sketches (plan view and elevations) of any buildings or equipment in close proximity to stacks.

Unit No.	Stack Height, Ft.[1]	Inside Diameter, Ft.	Exit Gas Conditions[2]			Sampling Ports		
			Temperature °F	Velocity Ft./Sec.	Moisture % by Volume	Number	Size	Location[3]
1	71	1	70	38.3	1.28	2	1/2" NPT	2 Ports at 90° 10 Diam. From Any Disturbance

Notes: [1] Height above ground level.
[2] If conditions are not at actual stack exit, specify location for which estimates are made.
[3] Example: 2 ports at 90°, 25' from top.

What provisions are made for accessibility to stack sampling ports? Ports are located in the fan room with portable scaffolding provided.

Section 7 - Emission Measurement Equipment

Unit No.	Pollutant	Type of Instrument[1]	Manufacturer - Model No.	Range[2]	Sensitivity	Accuracy
	N/A	N/A				

Notes: [1] Ultra Violet Photometric Analyzer, NDIR Photometer, Opacity Meter, EPA Sampling Train, etc.
[2] 0-1000 ppm, 0-50 μg/m³, 0-100% opacity, etc.

SECTION [illegible] HAZARDOUS AIR POLLUTANTS[1] OTHER TOXIC CHEMICALS, AND ODORS

A. Des[illegible] any hazardous air pollutants and toxic chemicals used or emit[illegible] plant processes.[2]

Unit[3]	Description of Chemical[4]	Quantity Emitted to Atmosphere[5]	How, Where Emitted[6]
1	Beryllium	4×10^{-7} tons/yr	See Sections 4-6

Notes: [1] Asbestos, beryllium, mercury, vinyl chloride, benzene, radionuclides, any others specified by federal EPA.
[2] List other chemicals considered harmful in small amounts or concentrations and not covered in Sections 4 & 5. (E.g., Arsenic and cadmium cpds.)
[3] Give unit number from Section 4 if previously listed; if not, describe source of toxic emissions.
[4] Give trade name or common name and chemical composition if known.
[5] Give in lb. per hr., and tons (2000 lb) per year.
[6] If emitted in separate stack, give stack conditions; if part of another stack flow, specify which one.

B. Describe sources and characteristics of any odors emitted from plant processes: N.A.

SECTION 9 - WASTE PRODUCT DISPOSAL (SOLID AND LIQUID WASTES, AND AUXILIARY INCINERATION EMISSIONS NOT COVERED IN SECTIONS 4 OR 5)

A. Auxiliary Incineration Operation: N.A.
Normal on-site combustion operating schedule: _____ hours per day, _____ days per week, _____ weeks per year.
Seasonal or peak combustion operating periods (specify): _____

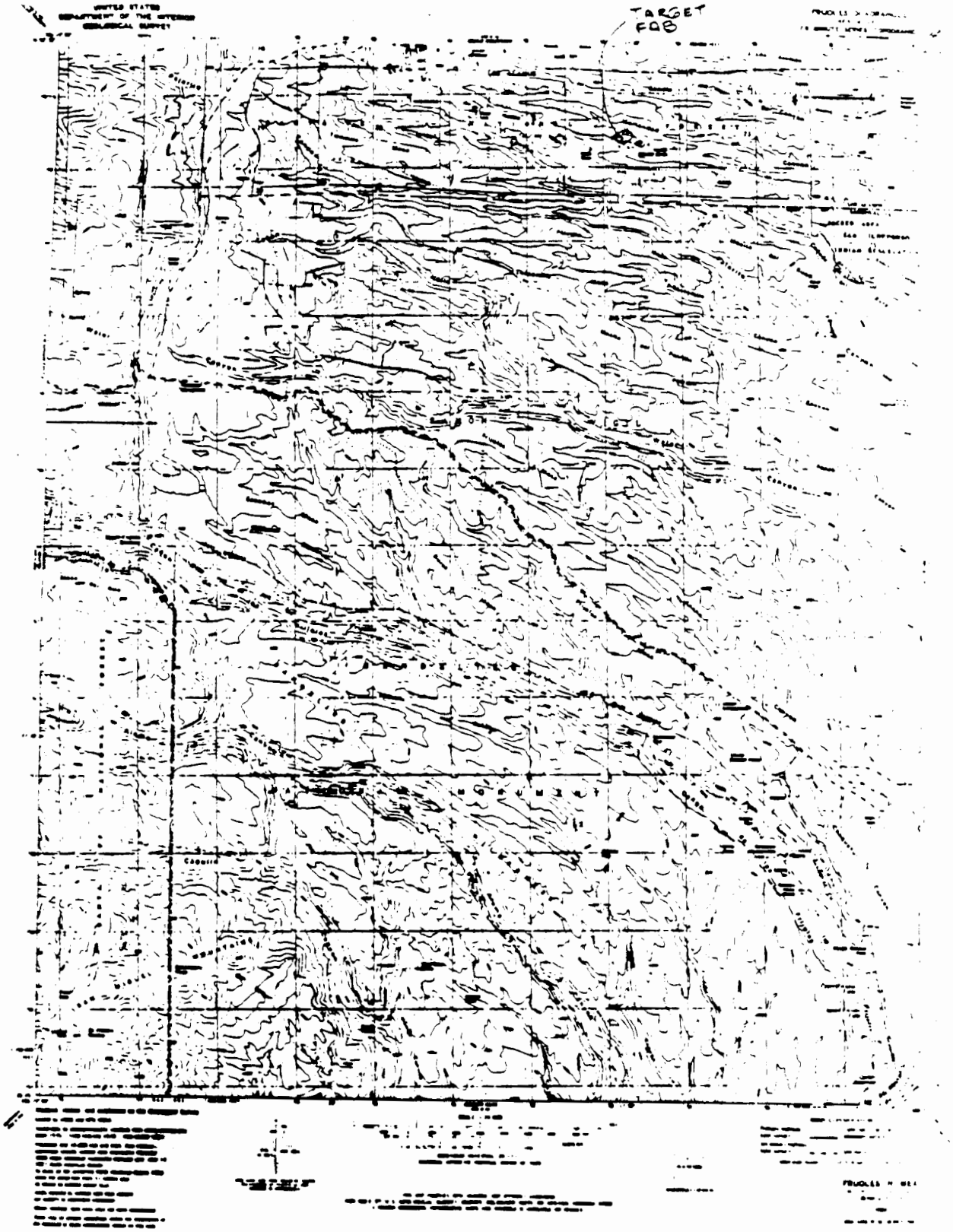
B. Waste Products or Emissions

Unit No.[1]	Waste Material: Type[2]	Waste Material: Amount[3]	Method of Disposal[4]	Incinerator Capacity lb. per Hr.	Auxiliary Fuel Used[5]	Type and Efficiency of Air Cleaning Equipment[6]	Estimate of Air Pollutants, if any: Type[7]	Estimate of Air Pollutants, if any: Quantity[3] per Year
1	Pre-filter HEPA Filt.	-- /hr. 5-6 lb/yr.	Direct Burial (Hazardous Landfill)	N/A	N/A	N/A	None	N/ A /hr. /yr.
	Cleaning Waste	/hr. Trace Amount/yr.	Direct Burial (Hazardous Landfill)					/hr. /yr.
		/hr. /yr.						/hr. /yr.

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Waste paper, wood chips, rubbish, garbage, acids, oils, etc.
[3] Pounds, tons, or gallons.
[4] Incinerator, single chamber; incinerator, double chamber; sanitary landfill; etc.
[5] Give type and quantity used in incinerator or other burner.
[6] Give general type (cyclone, scrubber, etc.) if any, weight efficiency.
[7] Give major pollutants (ash, smoke, SO_2, etc.).

SECTION 10 - CERTIFICATION

I, the undersigned, a responsible officer or authorized representative of the applicant company, certify that, to the best of my knowledge, the information stated on this application, together with associated drawings, specifications and other data, give a true and complete representation of the planned new plant or modification to an existing plant with respect to air pollution sources and control equipment. I also understand that any significant omissions, errors, or misrepresentations in these data will be cause for revocation of part or all of this permit.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
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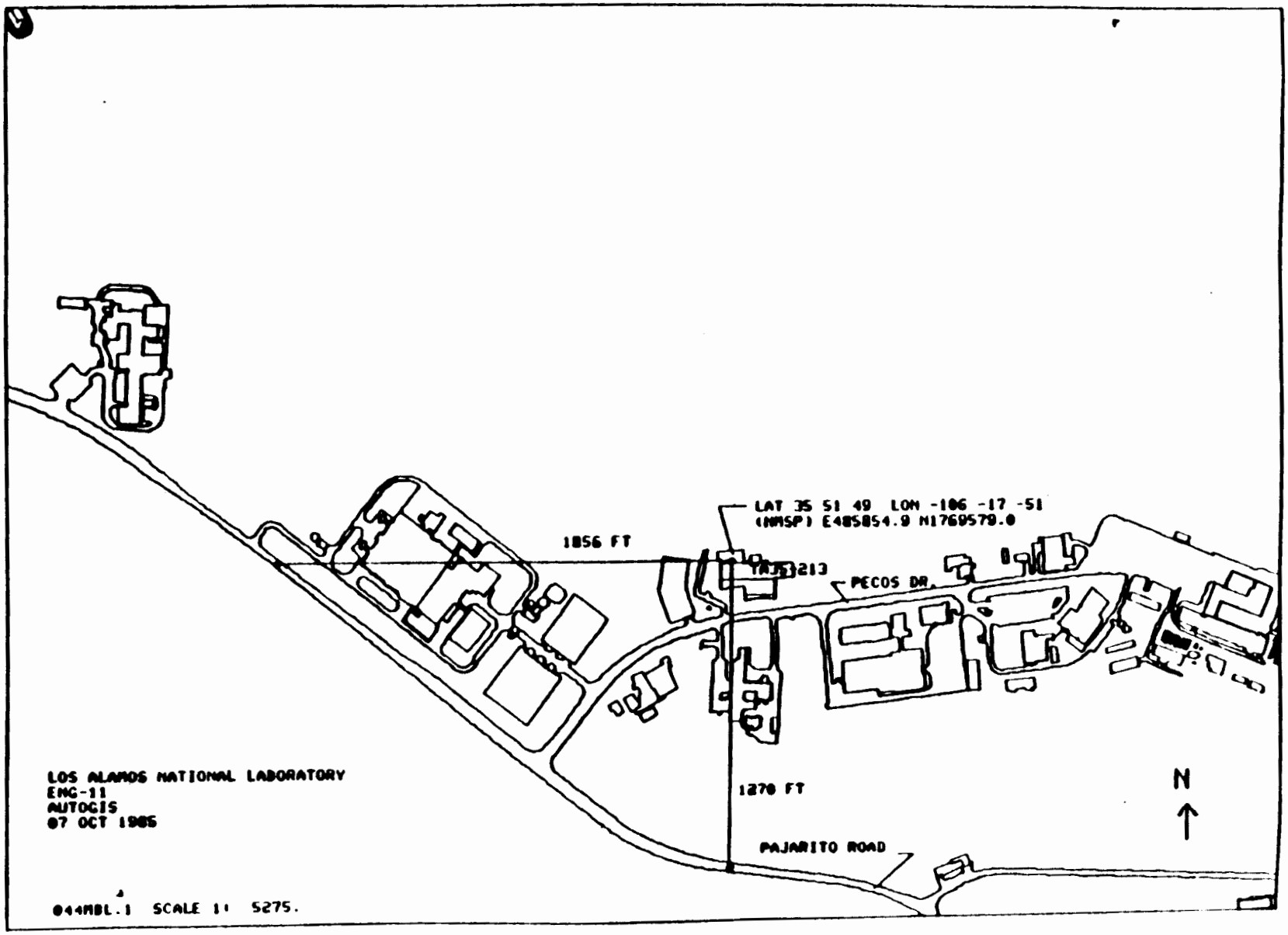
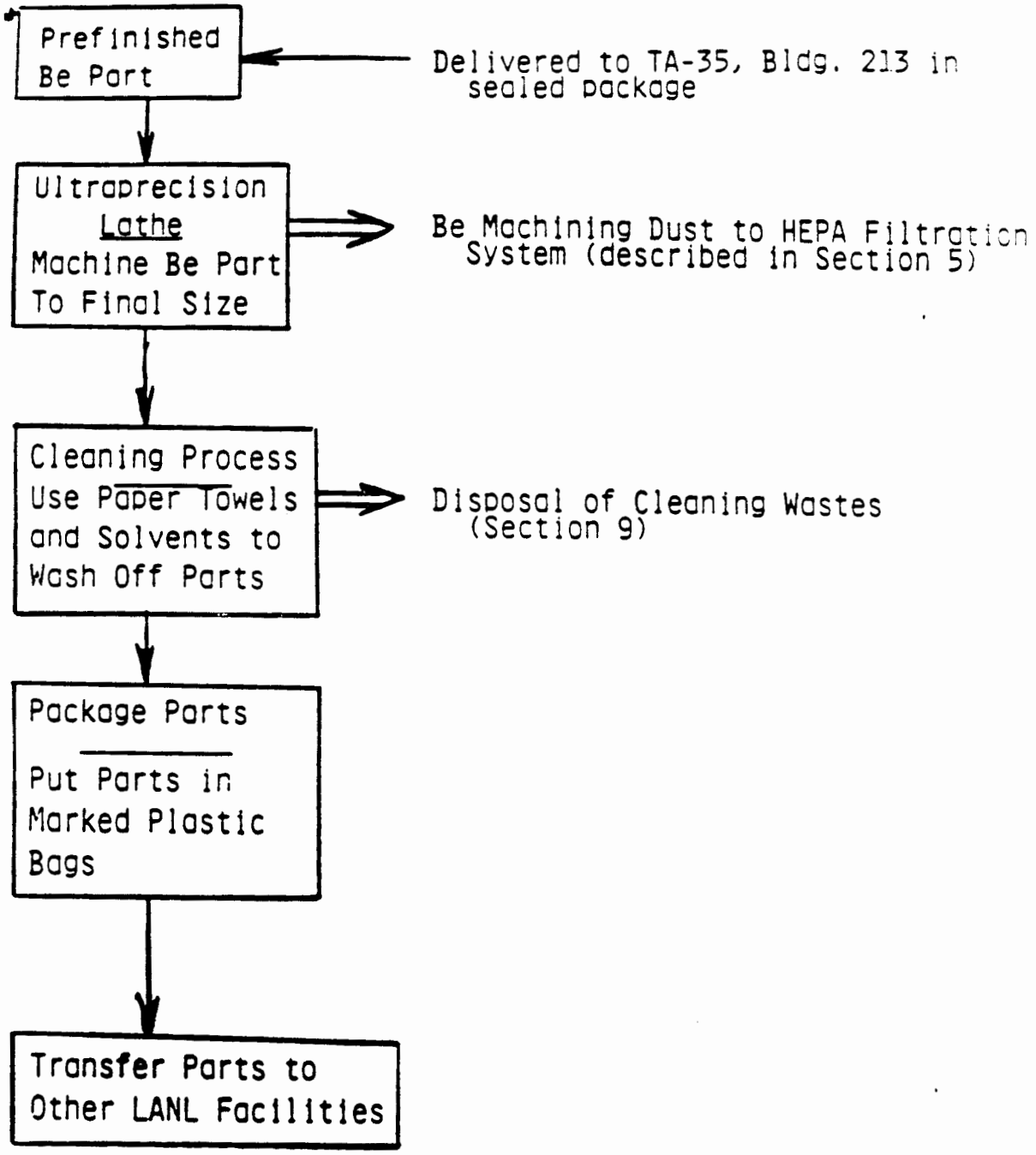
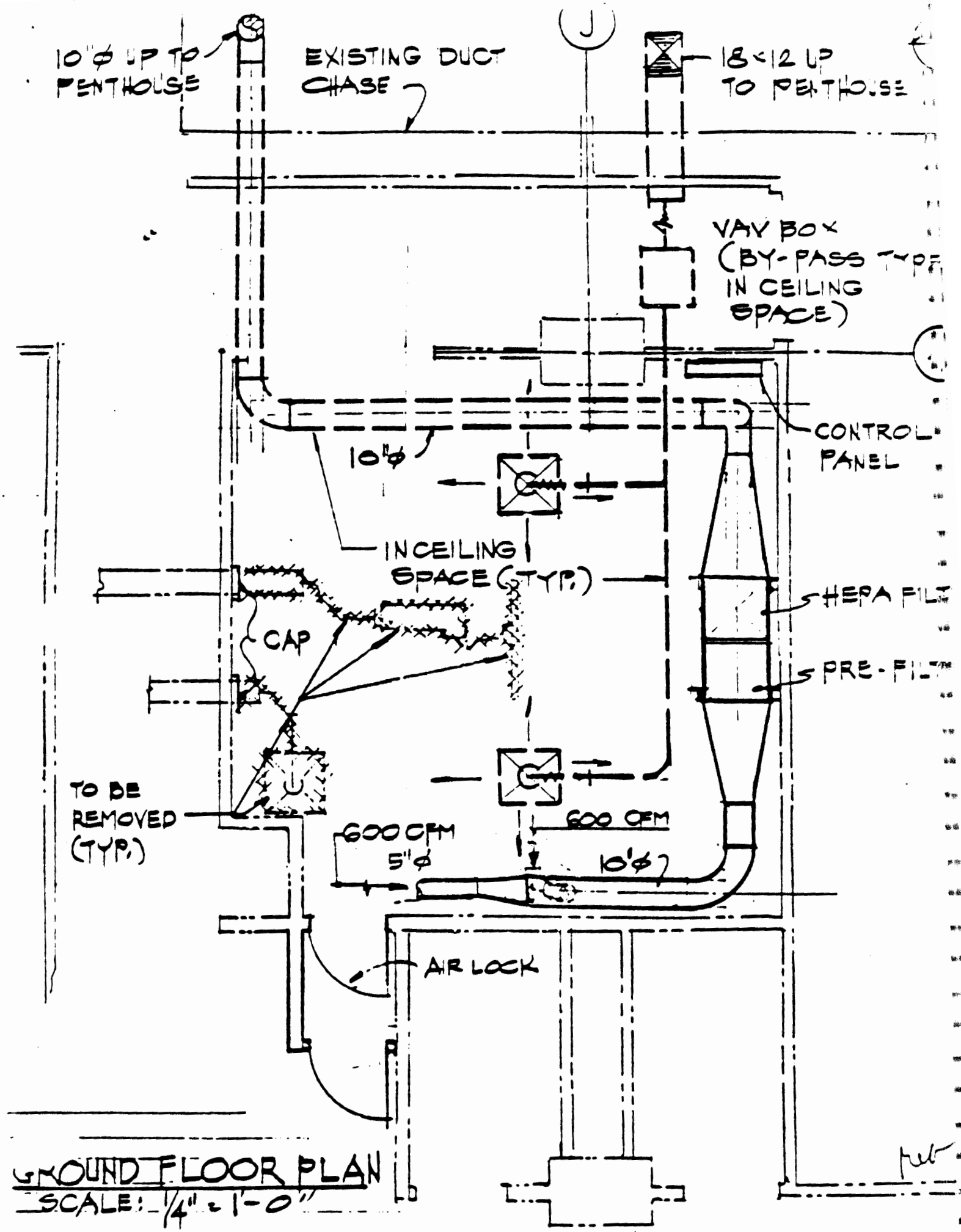

LAT 35 51 49 LON -106 -17 -51
(NMSP) E485854.9 N1769579.0
1856 FT
TA53213
PECOS DR.
1270 FT
PAJARITO ROAD
N
LOS ALAMOS NATIONAL LABORATORY
ENG-11
AUTOGIS
07 OCT 1985
044MBL.1 SCALE 1: 5275.

PROCESS FLOW SHEET - BERYLLIUM MACHINING
at TA-35, Building TSL 213





GROUND FLOOR PLAN
SCALE: 1/4" = 1'-0"

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO Leroy Wampler, MEC-6, and Richard Mah, MST-7 DATE September 4, 1985

FROM David Nochumson, HSE-8 MAIL STOP TELEPHONE K490/667-0813

SYMBOL HSE8-85-1056

SUBJECT **PERMITTING THE NEW BERYLLIUM MACHINING OPERATION TO BE LOCATED AT THE TARGET FABRICATION FACILITY**

As discussed during the meeting of August 28, 1985, New Mexico Air Quality Control Regulation (AQCR) 702 requires the permitting of all sources that emit any hazardous air pollutants. Non-radionuclide hazardous air pollutants currently regulated include asbestos, benzene, beryllium, inorganic arsenic, mercury and vinyl chloride.

As discussed, the Laboratory must obtain a permit from the New Mexico environmental Improvement Division (NMEID) for the new beryllium machining operation to be located at the Target Fabrication Facility, TA-35-TSL213. As required under AQCR 702, the permit must be filed with the NMEID not less than 60 days prior to the commencement of installation of the new beryllium operation. Within 60 days after achieving the maximum production rate but not later than 180 days after initial start-up of the operation, a test of the emissions at the maximum production rate must be performed.

Please fill out the enclosed application form (see Exhibit I). Instructions for filling out the form are attached (see Exhibit II).

Feel free to contact me if you have any questions. Thank you for your cooperation.

DN:cel

cy: A. Drypolcher, HSE-8, MS E518

KRAMER & ASSOCIATES

ALBUQUERQUE, NEW MEXICO

EMISSION SAMPLING FOR BERYLLIUM PARTICULATES
AT
LOS ALAMOS NATIONAL LABORATORY

TA 35 SM 213
LOS ALAMOS, NEW MEXICO

by
Kramer & Associates

September, 1986

Introduction

Exhaust emissions from the beryllium machining area at TA-35 SM-213 were sampled by Kramer & Associates (125 Eubank NE, Albuquerque, NM 87123) on September 9, 1986, and analysed for total particulate beryllium. The following individuals were among those present during the sampling:

1. Bill Ristau and Gary Kramer - Kramer & Associates
2. Mr. David Nocumson - Los Alamos National Laboratory
3. Mr. Jim Romero - New Mexico EID

Emissions from the machining operation are passed through a filter prior to discharge through a circular stack to the atmosphere. Sampling locations are illustrated in Figure 1.

Methods and Procedures

All sampling and analytical procedures used followed those set forth in Methods 103 and 104 respectively of the Code of Federal Regulations (CFR)-40, Parts 61, Appendix B, July, 1984. One of three points on a single traverse was sampled for 120 minutes through a 0.319" nozzle during each test run. The sampling train used was a MISCO Model 7200 Source Sampler which is identical in operation to that shown in the CFR-40, Method 5 (see Figure 2). Probes, nozzles, and associated glassware upstream from the filter were cleaned with acetone which was collected in a jar with lid for transport to the KA laboratory in Albuquerque for analysis. Jars were emptied and rinsed with acetone into beakers for evaporation. Filters were placed in the appropriate beakers after the acetone was evaporated, and the entire sample dissolved in concentrated nitric acid according to the analytical procedures in Method 104 of the CFR-40. Analyses for beryllium was conducted by atomic absorption spectroscopy. All samples were in the custody of Gary Kramer at all times.

Results and Discussion

Test data, and calculated results are summarized in Table 1. Original data are included in Appendix 1; equipment calibration data, and computer program information are listed in Appendix 2.

Greater than 80 DSCF of sample were collected for all samples during a minimum of two hours actual sampling time. Beryllium machining was occuring continuously during the entire two-hour sampling period. The average emission was $<2 \times 10^{-8}$ pounds per hour which is less than the maximum allowable of 4×10^{-7} pounds per hour.

Gary R. Kramer

Gary R. Kramer, PE

TABLE 1

STACK SAMPLING DATA SUMMARY

LOS ALAMOS NATIONAL LABS TA-35 SM-210

SAMPLING DATA	TEST #1	TEST #2	TEST #3
ACTUAL METERED CUBIC FEET	125.014	125.298	111.827
BAR. PRESSURE (IN HG)	22.88	22.88	22.88
AVG GAS METER,TEMP. (F)	68.93	70.68	69.12
ML WATER COLLECTED	23.5	29.1	27.8
BERYLLIUM COLLECTED (MG)	2E-05	<1E-05	<1E-05
CARBON DIOXIDE (%)	0	0	0
OXYGEN IN STACK (%)	20.9	20.9	20.9
NITROGEN IN STACK (%)	78.1	78.1	78.1
STACK PRESSURE (IN HG)	22.88	22.88	22.88
AVE STACK TEMPERATURE (F)	73.12	73.12	70
S-PITOT CORRECTION FACTOR	.848	.848	.848
AVE STK VEL PRES (IN H2O)	.4898	.4795	.4472
AREA OF STACK (SQ. FT)	.7854	.7854	.7854
SAMPLING TIME (MINUTES)	120	120	120
NOZZLE DIAMETER (INCHES)	.319	.319	.319
ORIF DEL P (IN H2O)	2.543	2.5	2.1
CALCULATED RESULTS			
CORRECTED MET VOL (DSCF)	96.21	96.09	85.9
VOL H2O COLLECTED (SCF)	1.1	1.36	1.3
PERCENT H2O IN STACK (%)	1.1	1.3	1.4
MOLE WT STACK GAS (WET)	28.83	28.81	28.8
MOLE WT STACK GAS (DRY)	28.95	28.95	28.95
MOLE FRAC DRY STACK GAS	.989	.987	.986
AVG STACK VELOCITY (FPM)	1915	1875	1744
AVG STACK FLOW (DSCFM)	1130	1104	1032
AVG STACK FLOW (ACFM)	1487	1453	1350
ISOKINETIC RATIO (%)	100.7	102.9	98.4
BERYLLIUM EMISSION(LB/HR)	3E-08	<1.5E-08	<1.5E-08

FIGURE 1

TA-35 SM-213

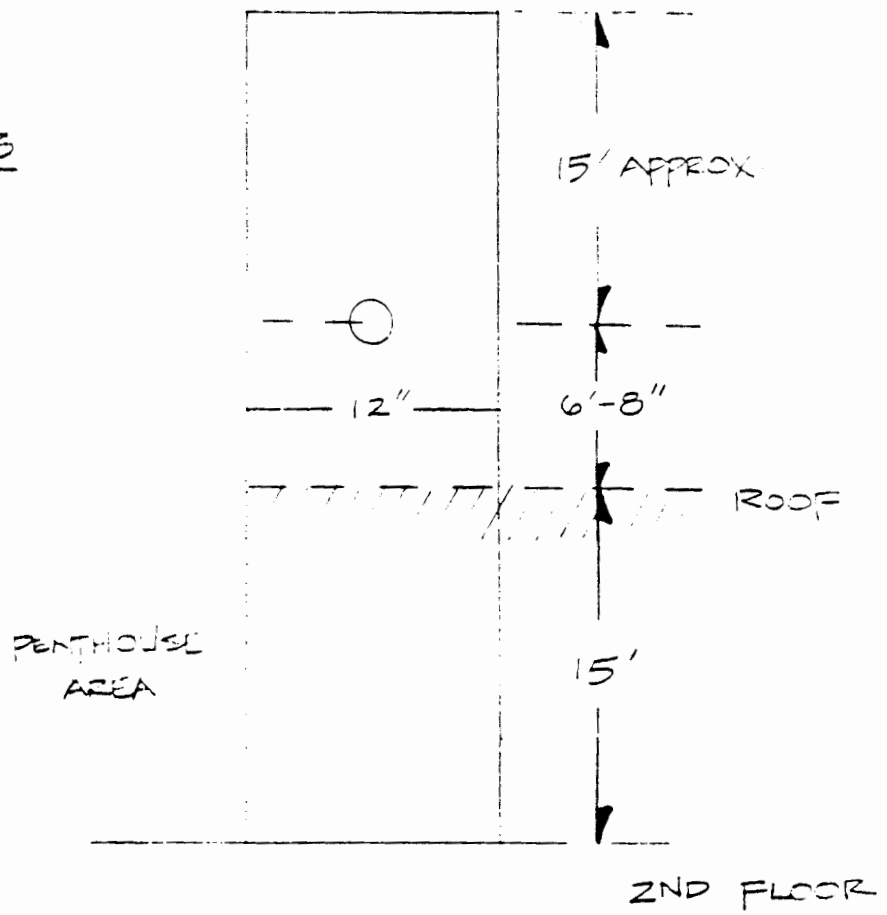


FIGURE 1

SAMPLING LOCATION SCHEMATIC
TA-35 SM-213 BERYLLIUM SOURCE
LOS ALAMOS NATIONAL LABORATORY

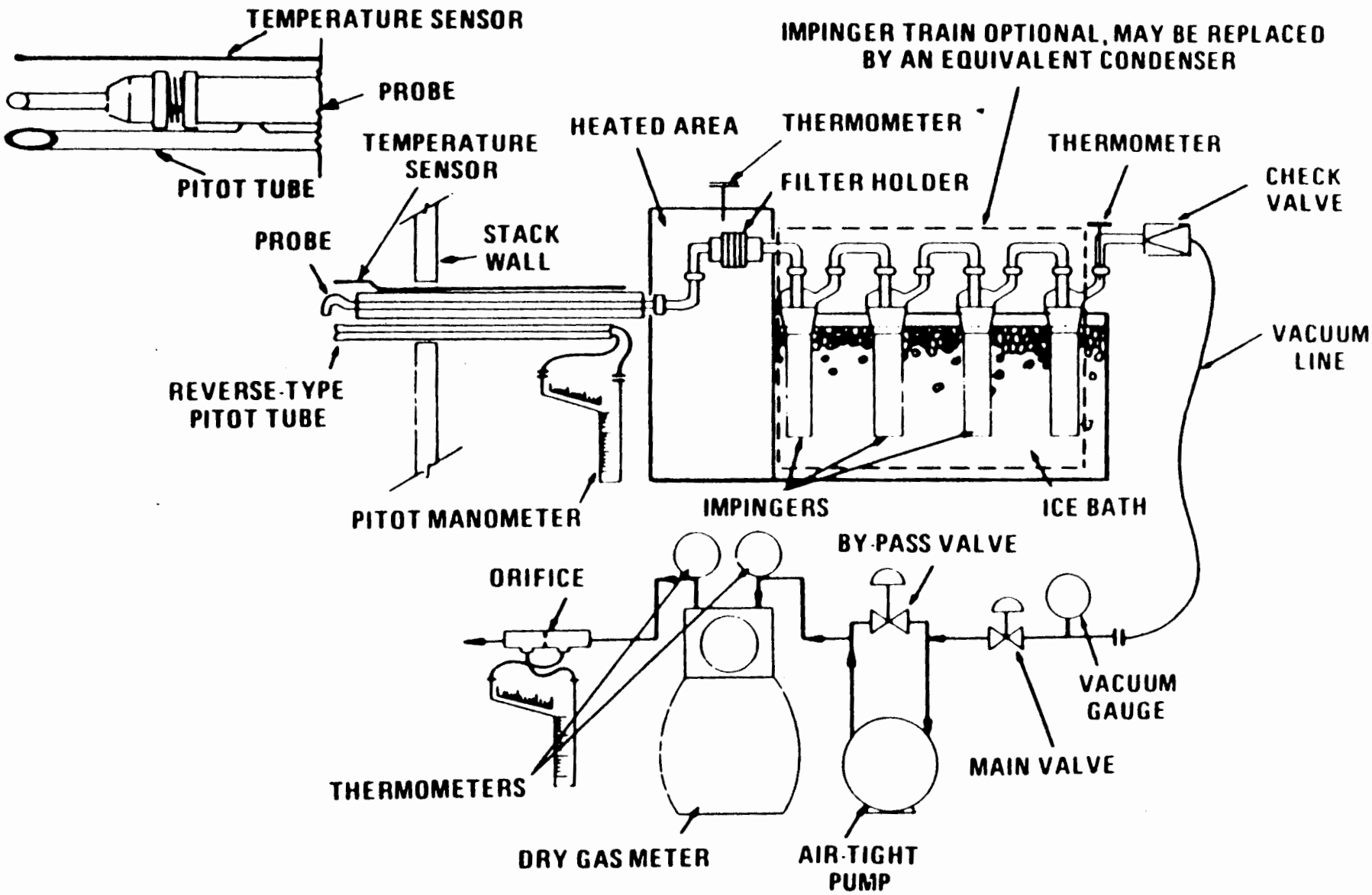


Figure 2 Particulate-sampling train.

PARTICULATES SAMPLING DATA

Plant Name and Location LOS A[redacted] ~~TK~~35 SM 213 Run No. 1

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1	0900	437.380	0.24	2.50	2.50	55	55	3½	150	55	80	—
3"	0915	452.450	0.24	2.55	2.55	63	55	3½	150	55	75	
	0930	467.800	0.24	2.55	2.55	72	60	5	150	55	70	
	0945	483.300	0.24	2.55	2.55	75	60	5	150	55	70	
	1000	498.500	0.24	2.55	2.55	82	68	5	150	55	70	
	1015	514.700	0.24	2.55	2.55	80	70	5	150	55	70	
	1030	530.650	0.24	2.55	2.55	82	70	5	150	55	75	
	1045	546.500	0.24	2.55	2.55	82	74	5	150	55	75	
	1100	562.394										
		125.014	$\sqrt{\Delta P}$=	2.54	2.54	73	64	5	150	55	73.1	
			0.49									
						528.5					533.1	

kramer & associates

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 35 - SM-213

Run No. 2 Date 9/9/86 Time 1134 Ambient Temp. °F 65

Bar. Press., in. Hg. 22.88 Stack Location MACHINING FILTER DSCHG

Stack Diameter, in. 12" Stack Pressure, in Hg 22.88

Plant Operator SAUER P_s/P_m 1.00

Processing Rate

Test Equipment I.D. MISCO 7249

Filter No. 30 Acetone Jar No. 2 Acetone Bkr No. 2

Probe Tip Diameter, in. 0.319 Assumed Moisture, % 1

Probe Length, Ft. 3' Cp 0.848 Δ H@ 1.68

Calculator Setting ΔP=0.10 ΔH=1.05

Orsat Analysis Data				Moisture Content	
CO_2	AIR			Impinger #1	
$CO_2 + O_2$				Impinger #2	
$CO_2 + O_2 + CO$				Impinger #3	
				Total initial H_2O	0
				Net Impinger H_2O	0
				Net H_2O in Silica Gel	29.1
				Total H_2O Collected	29.1

Leak Test

Initial 0.002 @ 11" Hg

Final 0.004 @ 11" Hg

APPENDIX 1

ORIGINAL DATA

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 35 - 213

Run No. 1 Date 9/9/86 Time 0900 Ambient Temp. °F 60

Bar. Press., in. Hg. 22.88 Stack Location MACHINING FILTER DSCHG

Stack Diameter, in. 12 Stack Pressure, in Hg 22.88

Plant Operator SAMER P_s/P_m 1.00

Processing Rate

Test Equipment I.D. MISCO 7249

Filter No. 37 Acetone Jar No. 1 Acetone Bkr No. 1

Probe Tip Diameter, in. 0.319 Assumed Moisture, % 1

Probe Length, Ft. 3' Cp 0.848 Δ H@ 1.68

Calculator Setting

Orsat Analysis Data		
CO_2	AIR	0
$CO_2 + O_2$		20.9 = O_2
$CO_2 + O_2 + CO$		79.1 = N_2

Moisture Content	
Impinger #1	—
Impinger #2	
Impinger #3	
Total initial H_2O	0
Net Impinger H_2O	0
Net H_2O in Silica Gel	23.5
Total H_2O Collected	23.5

Leak Test

Initial 0.003 @ 15" Hg

Final 0.004 @ 11" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA 35 SM 213 Run No. 2

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1134 2	0	562.526	0.23	2.5	2.5	63	63	2	100	55	75	
6"	15	578.000	0.23	2.5	2.5	76	70	2	190	55	75	
	30	593.600	0.23	2.5	2.5	78	70	2	150	55	75	
	45	608.950	0.23	2.5	2.5	75	70	2	170	55	75	
	60	624.700	0.23	2.5	2.5	78	69	2	170	55	75	
	75	640.500	0.23	2.5	2.5	76	68	2	150	55	70	
	90	656.300	0.23	2.5	2.5	70	65	2	150	55	70	
	105	672.400	0.23	2.5	2.5	75	65	2	140	55	70	
	120	687.824										
		125.298										

kramer & associates

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 35 SM 213

Run No. 3 Date 9/9/86 Time 1405 Ambient Temp. °F 65

Bar. Press.,in. Hg. 22.88 Stack Location MACHINING FILTER DSCHG

Stack Diameter, in. 12 Stack Pressure, in Hg 22.88

Plant Operator SALZER P_s/P_m 1.00

Processing Rate

Test Equipment I.D. MISCO 7249

Filter No. 29 Acetone Jar No. 3 Acetone Bkr No. 3

Probe Tip Diameter, in. 0.319 Assumed Moisture, % 1

Probe Length, Ft. 3 Cp 0.848 Δ H@ 1.68

Calculator Setting ΔP=0.1 ΔH=1.05

Orsat Analysis Data			
CO_2	AIR		
CO_2+ O_2			
CO_2+ O_2+ CO			

Moisture Content	
Impinger #1	2
Impinger #2	–
Impinger #3	–
Total initial H_2O	0
Net Impinger H_2O	2.0
Net H_2O in Silica Gel	25.8
Total H_2O Collected	27.8

Leak Test

Initial 0.005 @ 11" Hg

Final 0.004 @ 5" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA 35 SM 213 Run No. 3

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1404 3	0	688.975	0.20	2.1	2.1	60	60	1	150	50	70	
3"	15	702.000	0.20	2.1	2.1	70	63	1	140	50	70	
	30	715.850	0.20	2.1	2.1	70	64	1	135	50	70	
	45	729.760	0.20	2.1	2.1	74	69	1	130	50	70	
	60	743.900	0.20	2.1	2.1	74	70	1	130	50	70	
	75	758.200	0.20	2.1	2.1	72	70	1	130	50	70	
	90	772.300	0.20	2.1	2.1	75	70	1	130	50	70	
	105	786.500	0.20	2.1	2.1	75	70	1	130	50	70	
	120	800.802										
		111.827										

kramer & associates

ACETONE WASH AND FILTER WEIGHT RECORDS

Facility LOS ALAMOS NAT. LABS TA 35- SM 213

Testing Dates 9/9/86

Date of Tare Weighing ATOMIC ABSORPTION Weighed By WTR

Date of Final Weighing METHOD 104 Weighed by

I.D. No.	MG/L BE AA. DATA ~~Tare Wt.~~	ML SAMPLE ~~Final Wt (1)~~	Final Wt (2)	Net Wt., mg
1	0.002	10		2×10^{-5}
2	<0.001	10		$<1 \times 10^{-5}$
3	<0.001	10		$<1 \times 10^{-5}$
Blank	<0.001	10		—
STD=0.0025	0.002	10		—
STD=0.005	0.005	10		—

APPENDIX 2

CALIBRATION DATA AND COMPUTER PROGRAMS

DRY METER AND ORIFICE CALIBRATION DATA

Date 9/8/86 Location EID - AIR QUALITY Barometric Pressure, P_b 23.51 in Hg

Control Module Serial No. MISCO 7249 Dry Gas Meter No. 83

Orifice Setting ΔH	Metered Gas Volume, Ft^3		Meter Temperature, ^oF		Metering Time Minutes t	Accuracy Ratio G *	Orifice Coefficient $\Delta H_@$ *
	Wet Test V_w	Dry V_d	Wet Test T_w	Dry(ave) T_d			
0.50	5.000	4.952	64.5	61	10.617	1.0014	1.605
1.00	5.000	4.984	64.5	65	7.733	1.002	1.689
1.50	10.000	10.046	64.5	72	12.75	1.005	1.700
2.00	9.000	9.157	64.5	77	9.917	1.000	1.677
2.50	10.000	10.278	64.5	81	9.917	0.996	1.686

$$* \; G = \frac{V_w \, P_b \, (T_d + 460)}{V_d (P_b + \frac{\Delta H}{13.6})(T_w + 460)}$$

$$H_@ = \frac{0.0317 \, \Delta H}{P_b (T_d + 460)} \cdot \left(\frac{(T_w + 460)t}{V_w} \right)^2$$

G = ratio of accuracy of wet test meter to dry test meter

$\Delta H_@$ = orifice pressure differential that gives 0.75 cfm of air at 70^oF and 29.92 inches Hg

Grame & Associates

PITOT TUBE CALIBRATION SHEET

Pitot Tube No. JOY Pitot Length 3' Calibration Date 2/6/84

Wind Tunnel Location UNM WIND TUNNEL Calibrated By GRK

Nozzle Size: 1/8" SMALL 3/16"

P_L	P_S	C_P
0.18	0.25	0.840
0.36	0.495	0.844
0.81	1.1	0.849
1.3	1.75	0.853
0.645	0.86	0.857

AVE : 0.849

Nozzle Size: 1/4", 1/8" (LARGE)

P_L	P_S	C_P
0.205	0.280	0.847
0.41	0.56	0.847
0.86	1.20	0.838
0.65	0.87	0.856

AVE: 0.847

Nozzle Size: 3/8"

P_L	P_S	C_P
0.21	0.29	0.842
0.47	0.64	0.848
0.865	1.20	0.840
1.4	1.9	0.850

AVE: 0.845

Nozzle Size: 1/2"

P_L	P_S	C_P
0.22	0.305	0.841
0.41	0.55	0.855
0.60	0.80	0.857
1.4	1.9	0.850

AVE : 0.851

Nomenclature: P_L = Velocity pressure (inches water) measured with Standard Pitot

P_S = Velocity pressure (inches water) measured with S Pitot .

C_P = S pitot correction factor = $0.99(P_L/P_S)^{1/2}$

THERMISTOR CALIBRATION DATA

TEMPERATURE DEGREES C

Reference	Meter In	Meter Out	Impinger	Oven	Probe
3.3	3.3	3.3	1.6	--	4.0
26.0	25.5	26.0	26.6	24.5	23.5
96.0	94.5	94.5	94.0	98.0	95.0

READY.

NL TA-33 SM-213 COMPUTER PROGRAM

READY.

```
5 FOR I=1TO2
10 READ RN(I),H2O(I),CUFT(I),CO(I),O2(I),MG(I),R(I)
20 READ PTS(I),BP(I),SP(I),CP(I),AR(I),TPD(I),TM(I)
26 A=0:B=0:C=0:D=0:E=0
27 FOR Z=1 TO PT(I) STEP1
28 READ DP,DH,T,TT,SK
29 A=A+SQR(DP):B=B+DH:C=C+T:D=D+TT:E=E+SK
35 NEXT Z
40 PA(I)=INT(10000*A/PTS(I))/10000:HA(I)=INT(1000*B/PTS(I))/1000
42 TA(I)=INT(100*(C+D)/(2*PTS(I)))/100:SAT(I)=INT(100*E/PTS(I))/100
45 VMSTD(I)=INT(1764.7*CUFT(I)*(BP(I)+HA(I)/13.6)/(TA(I)+460))/100
50 VW(I)=INT(4.707*H2O(I))/100
55 BWO(I)=INT(1000*VW(I)/(VW(I)+VMSTD(I)))/10
57 N2(I)=99-CO(I)-O2(I)
60 MW(I)=INT((44*CO2(I)+40+32*O2(I)+28*(99-CO2(I)-O2(I)))*(1-BW(I)/100)+18*BWO
))/100
62 DMW(I)=INT(44*CO2(I)+40+32*O2(I)+28*(99-CO2(I)-O2(I)))/100
65 VSA(I)=INT(60*85.49*CP(I)*PA(I)*(SQR((SAT(I)+460)/(MW(I)*SP(I)))))
70 NUM(I)=17.316*VMSTD(I)*(SAT(I)+460)*60
7    EN(I)=VSA(I)*(100-BWO(I))*.01*SP(I)*TPD(I)*TPD(I)*TM(I)
     SO(I)=INT(10*NUM(I)/DEN(I))/10
75 OSA(I)=INT(10.6283*VSA(I)*(100-BWO(I))*AREA(I)*SP(I)/(60*(SAT(I)+460)))
77 F(I)=1-BWO(I)/100
80 CS(I)=0.0154*MGMS(I)/VMSTD(I)
85 G(I)=INT(1000000000*CS(I)*OSA(I)*.0001428*60)/1000000000
86 AC(I)=INT(VSA(I)*AR(I)*((100-BWO(I))/100))
90 NEXT I
99 DATA 1,23.5,125.014,0,20.9,0.00002,0
100 DATA 8 ,22.88,22.88,.848,.7854,.319,120
101 DATA .24,2.50,55,55,80
102 DATA .24,2.55,63,55,75
103 DATA .24,2.55,72,60,70
104 DATA .24,2.55,75,60,70
105 DATA .24,2.55,82,68,70
106 DATA .24,2.55,80,70,70
107 DATA .24,2.55,82,70,75
108 DATA .24,2.55,82,74,75
199 DATA 2,29.1,125.298,0,20.9,0.00001,0
200 DATA 8 ,22.88,22.88,.848,.7854,.319,120
201 DATA .23,2.5,63,63,75
202 DATA .23,2.5,76,70,75
203 DATA .23,2.5,79,70,75
204 DATA .23,2.5,75,70,75
205 DATA .23,2.5,78,65,75
206 DATA .23,2.5,76,68,70
    DATA .23,2.5,70,65,70
    DATA .23,2.5,75,65,70
299 DATA 3,27.8,111.827,0,20.9,0.00001,0
300 DATA 8 ,22.88,22.88,.848,.7854,.319,120
301 DATA .20,2.1,60,60,70
302 DATA .20,2.1,70,67,70
303 DATA .20,2.1,70,64,70
```

PERMIT 634-M-1

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

VALENCIA
DISPOSITION

CERTIFIED
P 331 632 712
MAIL

September 8, 1987

CERTIFIED MAIL NO. P 331 632 712
RETURN RECEIPT REQUESTED

Mr. Harold E. Valencia
Area Manager
Dept. of Energy
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Air Quality Permit No. 634-M-1

Dear Mr. Valencia:

Air Quality Permit No. 634-M-1 is issued to the Los Alamos National Laboratory pursuant to Section 74-2-7 NMSA 1978 and Air Quality Regulation 702 and 751, to modify a beryllium processing operation near Los Alamos, New Mexico. This permit supercedes Permit No. 634 which was issued on March 19, 1986. The facility shall be modified and operated in accordance with the application dated April 9, 1987 and is subject to the following conditions:

1. Modification and Operation

   The facility shall be modified and operated such that the estimated process rate does not exceed a maximum of 2.0 pounds of beryllium for any one hour and the overall estimated emissions do not exceed those specified in the application of 3.0 X 10-6 pounds per hour (2.0 X 10-7 tons per year). Any future physical changes or changes in the method of operation may constitute a modification and should be preceded by the submittal of a permit application for our review.

2. Compliance

   Compliance with this application will be based on LANL's adherence to New Mexico Air Quality Control Regulation No. 751 (AQCR 751) and the federal National Emission Standards for Hazardous Air Pollutants, (NESHAPS), 40 CFR 61 Subpart A, General Provisions, and Subpart C, National Emission Standard for Beryllium.

The Division has evaluated the application and the estimated emissions from the proposed operation and has performed dispersion modeling to determine compliance with the applicable ambient air quality standards. Based on this analysis, the Division has determined that the provisions of the Air Quality Control Act, Air Quality Control Regulation 751, 40 CFR 61, Subpart A and C, and the ambient air quality standards will be met. However, in order to assure

this, conditions have been placed on the permit. The reasons for these conditions are explained below:

Condition 1, Modification and Operation, has been placed in the permit to allow the Division to track modifications to the facility. Estimated, actual emissions have been based on the type and quantity of materials processed, as specified in Section 3 of the application, and on the control equipment specified in Section 5 of the application.

Condition 2, Compliance, has been placed in the permit because the Division has determined that New Mexico AQCR 751 and the federal NESHAPS does apply. 40 CFR 61, Subpart A and Subpart C applies to facilities that process beryllium. Compliance will be based on the successful completion of performance tests as required in 40 CFR 60.33 and with maintaining proper records to demonstrate continued operation in accordance with the permit. Record keeping will be considered adequate to meet the requirements of NESHAPS under two conditions:

1) that some type of documentation be made available, upon request by the EID, that demonstrates that the pre-filters and HEPA filters operate at their estimated control efficiency. This can consist of periodic testing, log book entries of filter changes or maintenance, or any evidence that will demonstrate that care and maintenance of the filter system does exist.

2) that some type of documentation be made available, upon request by the EID, that demonstrates that the quantity of beryllium processed does not exceed 2.0 pounds for any one hour during the year. This can be based on records related to the beryllium inventory or quantities used during defined periods of time.

Section 74-2-7.K NMSA provides that if the Division issues a permit with conditions, and the applicant is dissatisfied with the action taken by the Division, the applicant may request a hearing before the Environmental Improvement Board. The request must be made in writing to the Director of the Environmental Improvement Division within thirty days after receipt of the permit.

Additionally, there are other requirements that should be noted. Air Quality Control Regulation 702 requires the following:

Section M provides that the Division may cancel a permit if the construction is not commenced within one year from the date of issuance or if, during the construction, work is suspended for a total of one year.

Section P provides that the owner or operator shall notify the Department in writing of the:

1. anticipated date of initial startup of the source not more than sixty days nor less than thirty days prior to the date; and

2. actual date of initial startup of the source within fifteen days after the startup date.

Section 40 CFR 61.33 requires that a performance test be conducted within 90 days of startup of the modification. The performance test is required for beryllium and shall be performed in accordance with EPA Reference Methods 103 or 104 as outlined in 40 CFR 61 Appendix B. The permittee should arrange a pretest meeting with the Division at least 30 days prior to the date of testing and should advise the Division of any variations to the procedures. All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test. All determinations shall be reported to the Division by a registered letter dispatched before the close of the next business day following such determination. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Division upon request. These records should reflect the most recent two year period.

The permit and conditions apply in the event of any change in control or ownership of the facility. In the event of any such change in control or ownership, the permittee should notify the succeeding owner of the permit and conditions.

If you have any questions regarding this permit please contact Bob Kirkpatrick or Jim Shively.

Sincerely,

Cubia L. Clayton
Bureau Chief
Air Quality Bureau

CLC:BN:JS:lb

xc: Neil Weber, District II Manager, Santa Fe
Gerald Silva, Health Program Manager, Espanola
- Barbara Hargis, Program Manager, Enforcement
Diane Sales, U.S. EPA Region VI, Dallas

Return to:

EID-AIR QUALITY BUREAU
NEW SOURCE REVIEW UNIT
P.O. BOX 968
SANTA FE, NM 87504-0968
TELEPHONE: 505- 827-0070

Revised: 2/80

FOR EID USE ONLY
Application No.
App. Rec'd. Date:
Date App. Complete:
Reviewed by:
Approved/Disapproved:
Date:
ACQR: County:
Date St. Operation:
Date Perf. Test/Insp:

APPLICATION FOR PERMIT AND CERTIFICATE OF REGISTRATION

GENERAL FORM

FOR

SOURCES LOCATED WITHIN THE STATE OF NEW MEXICO [1]

Please answer all questions applicable to your specific business, operation, and products.
Use the abbreviation "N.A." for "not applicable" wherever appropriate.
Submittal of process flow sheets, equipment descriptions, and other information may be required to complete this application. [2]

SECTION 1 - GENERAL DATA

1. Name of Company: Los Alamos National Laboratory 2. Date Submitted: 1/27/87
3. Company Address: P.O. Box 1663, Los Alamos, New Mexico Phone:
   Person to Contact: Title: Phone:
4. Name, Address and location of new plant or modification: TA-3, Bldg. 141, Rooms 136A, 139, 141
   Is U.S.G.S. quadrangular map or equivalent attached? [3] Yes
5. Describe briefly the type and capacity of the plant and nature of modifications (if applicable) and products: [4] Research and development processing of beryllium (Be) and its alloys, e.g. Be alloys containing 0-5 wt% Cu or Ni or Co 0-1 wt Ti or Zr or Cr, 0-Zo wt% Al or Ag. The material will be produced in the form of pellets, powders, ribbons, flakes and consolidated parts.
   Date of Anticipated Start of Construction:
6. Class of land at plantsite (private, State, Federal, Indian, etc.): Federal
7. Is this permanent? Yes If not, how long is it expected to be occupied? N/A Date of Anticipated Startup: 5/2/87
8. Normal operating schedule: 5 hours per day, 4 days per week, 4 weeks per month, 12 months per year.
9. Specify maximum operating periods: 8 hrs/day, 5 days/week, 4 weeks/month and 12 months/year
10. Specify percent annual production by quarters: Dec. - Feb. 25, Mar. - May 25, June - Aug. 25, Sep. - Nov. 25

Notes: [1] Submitted in accordance with Air Quality Control Regulation No. 702, Permits, or Regulation No. 703, Registration.
[2] Notification of the need for other additional information required to complete this application will be given to the applicant by the Air Quality Bureau within 10 days after the receipt of the application. Filing of the application will not be considered to be complete until the date of submittal of such additional information. The granting or denial of the permit will be made within 30 days after this completion date.
[3] Regulation No. 702, Section D, Item 5 requires that this application be accompanied by a U. S. Dept. of the Interior Geological Survey quadrangular map or equivalent map showing the exact location of the proposed construction or modification.
[4] Include site plan showing location of all stacks or other emission points and property or fence line; for portable or movable equipment include serial number or other positive identification of this particular set of equipment.

SECTION 2 - FUEL USAGE

N/A

Unit No. [1]	Type of Fuel Burning Equipment [2]	Equipment Manufacturer	Rated Capacity Million BTU/Hr. [3]	Fuel Type [5]	FUEL DATA [4], [5] Amount Per Year [6]	Heating Value [7]	Percent Sulfur [8]	Percent Ash [8]

Notes: [1] Give a different number to represent each unit; give corresponding data opposite the same number in Sections 3 through 9.
[2] Boiler, oven, furnace, gas engine, gas turbine, etc. Include model number, configuration, etc., attach separate sheets if necessary.
[3] Give maximum rate as well as normal rate, if different.
[4] If auxiliary fuel or different fuel used "on standby", also give data for that fuel.
[5] Natural gas; bituminous coal; No. 6 fuel oil; refinery gas; etc. Include condition of fuel (pulverized, slurry, etc. if applicable).
[6] Million cubic feet of gas; tons of coal; gallons of fuel oil; pounds of LPG; etc.
[7] Higher heating value; Btu/lb, Btu/gal or Btu/MCF (MCF = 1000 std. cu. ft.)
[8] Sulfur and ash contents should be maximum percentages by weight. Sulfur and ash contents are not required if sweet natural gas is used as the fuel.
[9] Attach process flow sheet, including material balance for the combustion plant, if available.

SECTION 3 - MATERIALS PROCESSED AND PRODUCED

A. RAW MATERIALS PROCESSED

Unit No. [1]	Type	Composition [2]	Condition [3]	Quantity [4] (Specify Units)
2	Pellets and Powders	Be(0-5 wt% Cu or Ni or Co)	Pellets and Powders	2 lb/hr max. rate
		Be(0-1 wt% Ti or Zr or Cr)		
		Be(0-20 wt% Al or Ag)		
		Al(0-20 wt% Be) Cu(0-5 wt% Be)		

B. MATERIALS PRODUCED (DO NOT INCLUDE EMISSIONS AND PRODUCTS LISTED IN SECTIONS 4, 8, AND 9)

2	Pellets, powders, ribbon	Be and Be alloys	Particulates and solid	2 lb/hr max. rate
	flakes, finished parts	same as above	parts	

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Give each major component with weight percentages and chemical compositions if known.
[3] Give typical particle size distribution for aggregates, pumice dust, etc. and average moisture content if known.
[4] Pounds or tons per hour, gallons per minute, or standard cubic feet per second. Attach process flow sheets, including

SECTION 4 - UNIT EMISSIONS (PRIOR TO AIR POLLUTION CONTROL EQUIPMENT, OR TO ATMOSPHERE, IF UNCONTROLLED)

Unit No.[1]	Process or Operation [2]	Quantity of Gases Discharged to Air Pollution Control Equipment [3]	ESTIMATES OF AIR POLLUTANTS						Basis of Estimates[7]
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 [7]		
			Type[4]	Quantity[5]	Type[4]	Quantity[5]	Type[4]	Quantity[5]	
2	Materials Processing	See stock Data	Be + Be alloys	2x10-3 lb/hr 12x10-4 T/yr lb/hr T/yr		lb/hr T/yr lb/hr T/yr		lb/hr T/yr lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	

Notes:
[1] Give a different number to each unit corresponding to unit numbers in Sections 2 through 9.
[2] Smelter furnace, asphalt plant drier, iron-melting cupola, cement manufacture-dry process, solvent cleaner, etc.
[3] Gas flow rate in actual cubic feet per minute, if applicable. State temperature (°F), pressure, (psia) and percent moisture (if applicable). Enter "see stack data" if discharge goes directly to the stack.
[4] Particulate matter (give chemical description), Sulfur Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Oxides, etc.
[5] Quantities at maximum production rates. T = tons (2000 lb.)
[6] If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
[7] From process material balances, field tests by plant or equipment manufacturer, EPA emission factors (AP-42), other.

SECTION 5 - AIR POLLUTION CONTROL EQUIPMENT, EMISSIONS TO ATMOSPHERE[1]

Also attach process flow sheets and equipment layout and assembly drawings necessary to describe all air pollution control equipment.

Unit No.[2]	Air Pollution Control Equipment		EMISSIONS TO ATMOSPHERE[4]						Air Pollution Control Equipment Collection Efficiency	
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 [7]			
	Type[3]	Manufacturer and Model No.	Type[5]	Quantity[6]	Type[5]	Quantity[6]	Type[5]	Quantity[6]	% by Weight	How Determined[8]
2	Pre-Filter	Cambridge Hi-Flow 65	Be and Be alloys	lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	48	Manufacturer's Rating
	HEPA	Cambridge Absolute		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	99.9%	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		

Notes:
[1] Attach additional sheets as needed, to list all control equipment.
[2] Corresponding to numbers in Sections 2 through 9.
[3] Cyclone, scrubber, electrostatic precipitator, baghouse, etc.
[4] Estimated emissions after gases have passed through control equipment.
[5] Particulate matter, etc. (See Note 4, Section 4)
[6] Quantities at maximum production rates. T = tons (2000 lbs.)
[7] If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
[8] Field test results, manufacturers rating, etc.

SECTION 8 - HAZARDOUS AIR POLLUTANTS[1] OTHER TOXIC CHEMICALS, AND ODORS

A. Describe any hazardous air pollutants and toxic chemicals used or emitted in plant processes.[2]

Unit[3]	Description of Chemicals[4]	Quantity Emitted to Atmosphere [5]	How, Where Emitted [6]
2	Be and Be Alloys		See Sections 4-6

Notes: [1] Asbestos, beryllium, mercury, vinyl chloride, benzene, radionuclides, any others specified by federal EPA.
[2] List other chemicals considered harmful in small amounts or concentrations and not covered in Sections 4 & 5. (E.g., Arsenic and cadmium cpds.)
[3] Give unit number from Section 4 if previously listed; if not, describe source of toxic emissions.
[4] Give trade name or common name and chemical composition if known.
[5] Give in lb. per hr., and tons (2000 lb) per year.
[6] If emitted in separate stack, give stack conditions; if part of another stack flow, specify which one.

B. Describe sources and characteristics of any odors emitted from plant processes: N/A

SECTION 9 - WASTE PRODUCT DISPOSAL (SOLID AND LIQUID WASTES, AND AUXILIARY INCINERATION EMISSIONS NOT COVERED IN SECTIONS 4 OR 50

A. Auxiliary Incineration Operation:
Normal on-site combustion operating schedule: _____ hours per day, _____ days per week, _____ weeks per year.
Seasonal or peak combustion operating periods (specify): _____

B. Waste Products or Emissions

Unit No.[1]	Waste Material: Type[2]	Waste Material: Amount[3]	Method of Disposal[4]	Incinerator Capacity Lb. per Hr.	Auxiliary Fuel[5] Used	Type and Efficiency of Air Cleaning Equipment [6]	Estimate of Air Pollutants, if any: Type[7]	Estimate of Air Pollutants, if any: Quantity per Year [3]
2	Pre-Filter HEPA-Filter	/hr. /yr.	Direct Buried at TA-54, Area G	N/A	N/A	N/A	N/A	N/A /hr. N/A /yr.
	Cleaning Waste	0.2 lb/hr. 24 lb /yr.	"	"	"	"	"	N/A /hr. N/A /yr.
		/hr. /yr.						/hr. /yr.

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Waste paper, wood chips, rubbish, garbage, acids, oils, etc.
[3] Pounds, tons, or gallons.
[4] Incinerator, single chamber; incinerator, double chamber; sanitary landfill; etc.
[5] Give type and quantity used in incinerator or other burner.
[6] Give general type (cyclone, scrubber, etc.) if any, weight efficiency.
[7] Give major pollutants (ash, smoke, SO_2, etc.).

Section 5 - Continued

Capital Costs (Optional):
Approximate expected capital investement of new or modified air pollution control equipment: $_____
Estimated yearly operation and maintenance costs for air pollution control equipment: $_____

Section 6 - Stack Data - Include drawings or sketches (plan view and elevations) of any buildings or equipment in close proximity to stacks.

Unit No.	Stack Height, Ft.[1]	Inside Diameter, Ft.	Exit Gas Conditions[2]			Sampling Ports		
			Temperature °F	Velocity Ft./Sec.	Moisture % by Volume	Number	Size	Location[3]
2	33	2.5	70	35	1	2	3" NPT	2 ports at 90 degrees; 3 diameters downstream from any distrubance

Notes: [1] Height above ground level.
[2] If conditions are not at actual stack exit, specify location for which estimates are made.
[3] Example: 2 ports at 90°, 25' from top.

What provisions are made for accessibility to stack sampling ports? Ports will be accessible from a platform built around the stack.

Section 7 - Emission Measurement Equipment N/A

Unit No.	Pollutant	Type of Instrument[1]	Manufacturer - Model No.	Range[2]	Sensitivity	Accuracy

Notes: [1] Ultra Violet Photometric Analyzer, NDIR Photometer, Opacity Meter, EPA Sampling Train, etc.
[2] 0-1000 ppm, 0-50 $\mu g/m^3$, 0-100% opacity, etc.

SECTION 10: CERTIFICATION:

I, Harold E. Valencia, upon oath or affirmation, hereby certify that the information and data submitted in this application are completely true and as accurate as possible, to the best of my personal knowledge and professional expertise and experience. All professional and otherwise appropriate studies and analyses have been undertaken as necessary to assure the validity and completeness of this information. I am aware that under the Section 30-25-1 of the New Mexico Statutes Annotated, perjury consists of making a false statement under oath or affirmation, material to the issue or matter involved in the course of any judicial, administrative or other official proceeding, knowing such statement to be untrue. I am aware that the submission of this form is an integral part of an official administrative proceeding of the Air Quality Bureau of the Environmental Improvement Division or its Administrative Successor, which is an official agency of the State of New Mexico. I am also aware that the information and data submitted hereby are all material to the matter for which this form is submitted. I am aware that perjury is a Felony under the law of this state.

Signed this _____ day of _____ , 19____ , upon my oath or affirmation, before a notary of the State of New Mexico,

_____ , _____
SIGNATURE DATE

Harold E. Valencia
PRINTED NAME

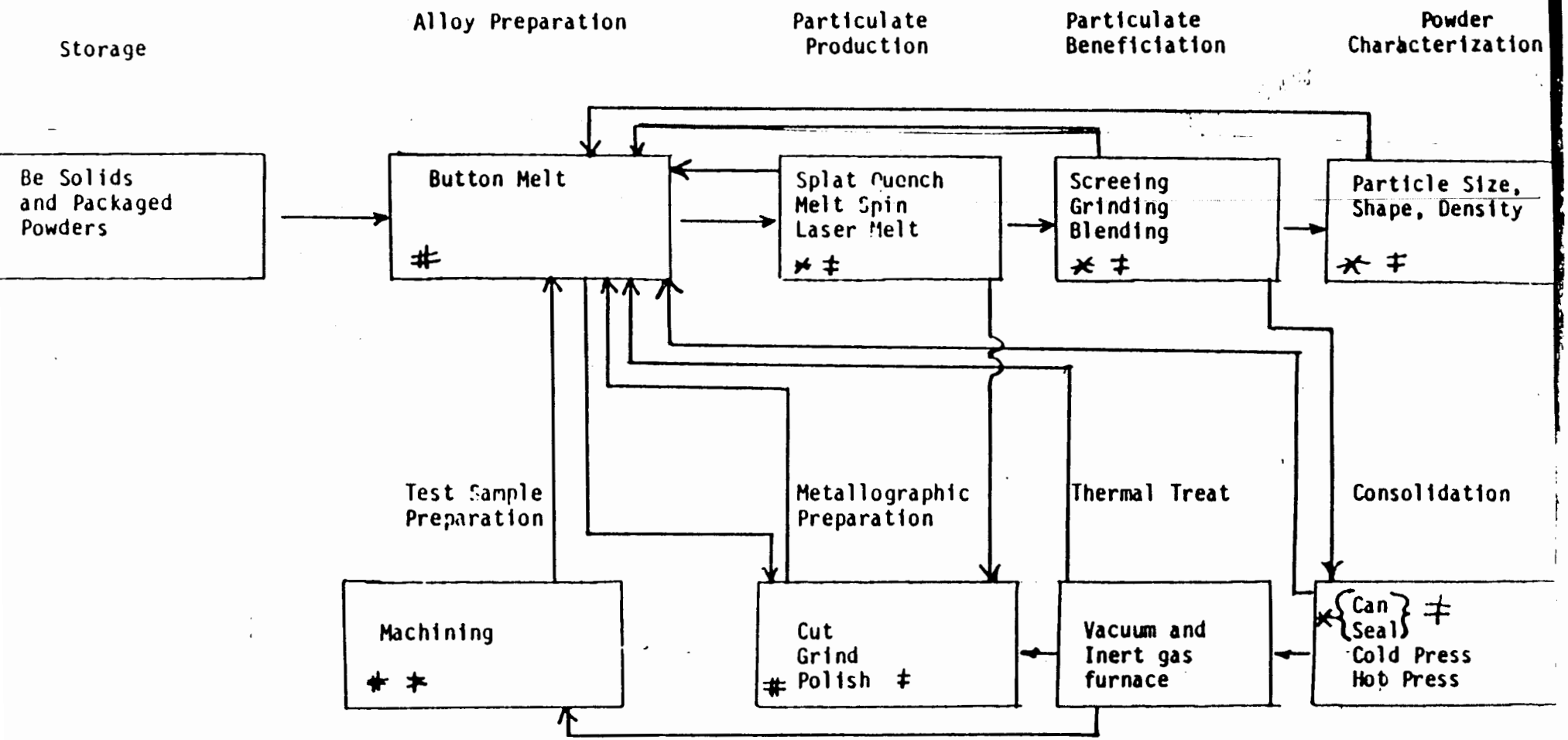
The aforesigned, after presentation to me of full and satisfactory identification, and upon his expression to me of his or her awareness that this document was to be signed upon his or her oath or affirmation, did then set his or her hand to this document before me this _____ day of _____ , 19 ____ , to which end I have set my seal below as a Notary of the State of New Mexico.

My authorization as a Notary of the State of New Mexico expires on the _____ day of _____ , 19____.

_____ , _____
NOTARY'S SIGNATURE Date

_____
NOTARY'S PRINTED NAME

Be and Be Alloy Processing Flow Sheet-Unit



* Dry Box Operations
# Operations with hooded ventialtion

‡Wastes recycled or sent to hazardous landfill for burial
**Vented to air pollution control equipment (all operations)

EMISSIONS SAMPLING FOR BERYLLIUM PARTICULATES
AT
LOS ALAMOS NATIONAL LABORATORY
MST-6 BERYLLIUM PROCESSING AREA: TA-3 SM 141

LOS ALAMOS, NEW MEXICO

by

Kramer & Associates

January, 1988

CERTIFICATION

The following report has been reviewed and approved to accurately represent the sampling and analyses actually performed. The results reported are accurate to the best of our knowledge.

W T Restar

Test Team Leader

Gary R. Kramer

Gary R. Kramer, PE

INTRODUCTION

Exhaust emissions from the MST-6 Beryllium processing area were sampled by Kramer & Associates (121 C Eubank NE, Albuquerque, NM 87123) on January 12 and 13, 1988, and analysed for total particulate beryllium. The following individuals were among those present during the sampling:

1. Bill Ristau and Steve Thomas - Kramer & Associates
2. David Duran - New Mexico EID
3. David Nocumson - LANL ASE-8
4. Paul Stanak - LANL MST-6
5. Richard Castro - LANL MST-6
6. Steve Woodruff - LANL MST-6
7. Avedon Gallegos - DOE

Emissions from the beryllium processing area are passed through a HEPA filter prior to discharge through a circular stack to the atmosphere. Sampling locations on the stack are illustrated in Figure 1.

METHODS AND PROCEDURES

All sampling procedures followed those set forth in Method 103 - Beryllium Screening Method; Code of Federal Regulations CFR-40, Part 61, Appendix B, July 1, 1986. Analyses of collected samples were made according to the procedures in Method 104 of the CFR-40 referenced above.

One traverse point was sampled for 210 minutes through a 0.215" nozzle for each run. A different sampling point was used for each run (see Figure 1) as precribed in Method 103. The samoling train used was a MISCO Model 7200 (Method 5) Source Sampler which is identical in operation to the one shown schematically in the CFR-40 (see Figure 3). All filters used were Millipore Type AA (#SO90061A6) with a matched glass fiber backup filter (Millipore #SO90062A6). Probes, nozzles, and associated glassware upstream from the filter were cleaned with acetone which was collected in a jar with lid for transport to the KA Laboratory in Albuquerque, NM for analyses. Jars were emptied and rinsed with acetone into tared beakers for evaporation. Filters were added to wash residue and the entire sample was treated with concentrated nitric acid according to Method 104. Beryllium analyses were made by Atomic Absorption Spectrophotometry. All samples were in the custody of Bill Ristau at all times.

RESULTS AND DISCUSSION

Test data and calculated results are summarized in Table 1. Original data are included in Appendix 1; equipment calibrations and computer programs are listed in Appendix 2.

Beryllium was processed continuously during the entire 3-1/2 hour sampling period. Samples were collected at 0.85 cfm with an isokinetic ratio of 93.9% to 95.1%. Average beryllium emissions were 3.9x10-8 pounds per hour.

TABLE 1

STACK SAMPLING DATA SUMMARY

MST-6 BERYLLIUM PROCESSING

LOS ALAMOS NATIONAL LABORATORY

SAMPLING DATA	TEST #1	TEST #2	TEST #3
ACTUAL METERED CUBIC FEET	226.255	226.165	239.225
BAROMETRIC PRESSURE, (IN HG)	22.7	22.8	22.8
AVERAGE GAS METER TEMPERATURE (F)	48.92	44.71	48.92
MILLILITERS WATER COLLECTED	6	6	6
MILLIGRAMS PARTICULATES COLLECTED	.000002	.000004	.000003
CARBON DIOXIDE IN STACK GAS, %	0	0	0
OXYGEN IN STACK GAS, %	20.9	20.9	20.9
NITROGEN IN STACK GAS, %	78.1	78.1	78.1
STATIC PRESSURE IN STACK (IN HG)	22.7	22.8	22.8
AVERAGE STACK TEMPERATURE, (F)	75	74.28	75
S-PITOT CORRECTION FACTOR	.85	.85	.85
AVG SQUARE ROOT VEL PRES (IN H2O)	1.2247	1.2247	1.3038
AREA OF STACK, (SQ.FT)	4.91	4.91	4.91
SAMPLING TIME, (MINUTES)	210	210	210
NOZZLE DIAMETER, (INCHES)	.215	.215	.215
AVG ORIFICE DELTA P, (IN H2O)	3.028	3.1	3.5

CALCULATED RESULTS			
CORRECTED METER VOLUME (DSCF)	179.83	182.09	191.26
VOLUME H2O COLLECTED (SCF)	.28	.28	.28
PERCENT H2O IN STACK GAS	.1	.1	.1
MOLE WT STACK GAS (WET)	28.94	28.94	28.94
MOLE WT STACK GAS (DRY)	28.95	28.95	28.95
MOLE FRACTION DRY STACK GAS	.998	.998	.998
AVG STACK VELOCITY, (FPM)	4818	4804	5118
AVG STACK FLOW (DSCFM)	17762	17812	18951
AVG STACK FLOW (ACFM)	23632	23564	25104
ISOKINETIC RATIO, %	94.2	95.1	93.9
PARTICULATE EMISSION, (GR/DSCF)	1.71E-10	3.38E-10	2.41E-10
PARTICULATE EMISSION, (LBS/HR)	2.6E-08	5.15E-08	3.91E-08
BERYLLIUM PROCESSING RATE, (GM/HR)	28.5	31.4	25.7

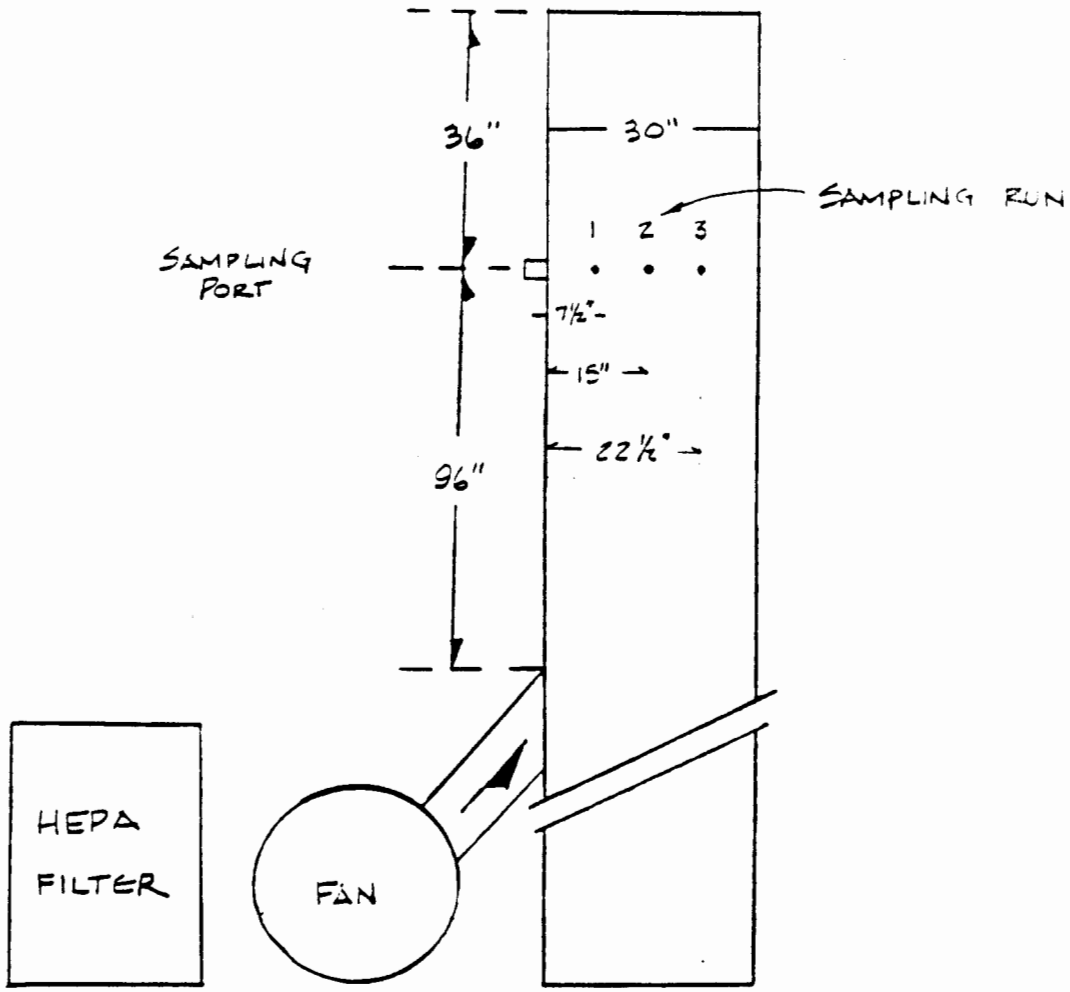


FIGURE 1

SAMPLING LOCATION SCHEMATIC

MST-6 (SM141) BERYLLIUM PROCESSING AREA

TA-3

LOS ALAMOS NATIONAL LABORATORY

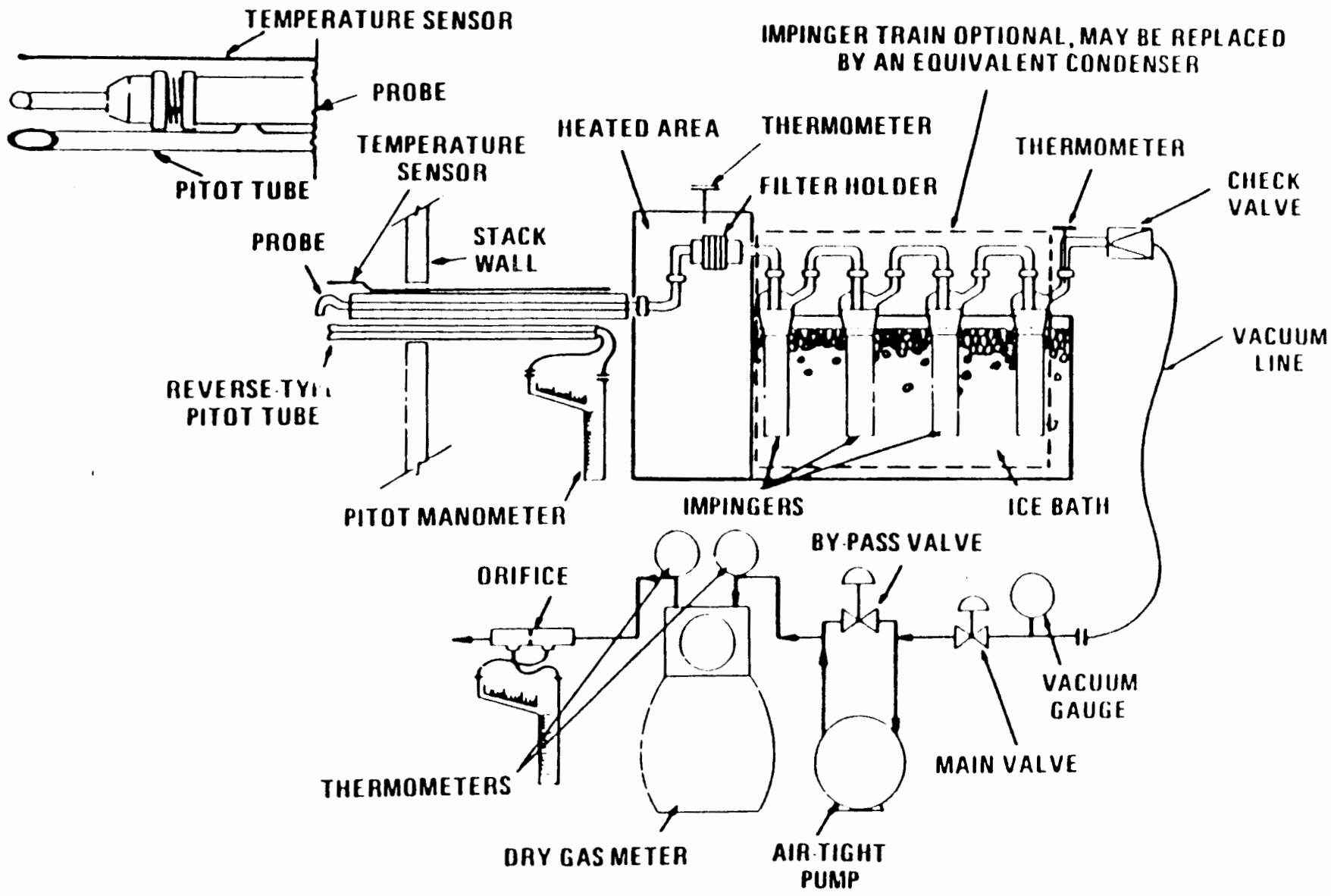


FIGURE 2 SAMPLING TRAIN SCHEMATIC

APPENDIX 1

ORIGINAL DATA

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location MST-6 Be Processing

Run No. 1 Date 1/12/88 Time 10 30 Ambient Temp. °F 35

Bar. Press., in. Hg. 22.70 Stack Location HEPA FILTER DSCH

Stack Diameter, in. 30" 4.91 FT² AREA Stack Pressure, in Hg 22.70

Plant Operator _____ P_s/P_m 1.00

Processing Rate 100 gm / 3 1/2 hr

Test Equipment I.D. Micro 7249

Filter No. 8 Acetone Jar No. 1 Acetone Bkr No. 1

Probe Tip Diameter, in. ~~0.250~~ 2.5 Assumed Moisture, % 2

Probe Length, Ft. 3 1/2 Cp 0.850 Δ H@ 1.68

Calculator Setting ΔP 10 ΔH ~~[illegible]~~ 2.0

Orsat Analysis Data

CO_2	—	AIR —	
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Leak Test

Initial 0.003 @ 7"

Final 0.013 @ 4"

Moisture Content

Impinger #1 _____

Impinger #2 _____

Impinger #3 148

Total initial H_2O 200

Net Impinger H_2O -52

Net H_2O in Silica Gel 35

Total H_2O Collected SEE 3RD RUN

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS MST-6 Run No. 1

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1	1047	102.545	1.5	3.0	3.0	35	35	1	150	30	75	
	1117	134.400	1.5	3.0	3.0	55	40	1	200	40	75	
	1147	166.800	1.5	3.1	3.1	60	40	1	200	40	75	
	1217	200.600	1.5	3.1	3.1	60	45	1	200	40	75	
	1247	231.800	1.5	3.0	3.0	60	45	1	200	40	75	
	1317	263.000	1.5	3.0	3.0	60	45	1	200	40	75	
	1347	296.600	1.5	3.0	3.0	60	45	1	200	40	75	
	1417	328.800										
											535	
		226.255				55.7	42.1					
			$\sqrt{\Delta P_{AV}}$: 1.225		3.03	5099						

kramer & associates

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location MST-6 3E PROCESSING

Run No. 2 Date 1/13/00 Time 0909 Ambient Temp. °F 30

Bar. Press., in. Hg. 22.80 Stack Location ~~HEPA FILTER DSCHG~~

Stack Diameter, in. 30" Stack Pressure, in Hg 22.80

Plant Operator _____ P_s/P_m 1.00

Processing Rate 1109m / 3½ HR

Test Equipment I.D. MISCO 7249

Filter No. 7 Acetone Jar No. 2 Acetone Bkr No. 2

Probe Tip Diameter, in. 0.215 Assumed Moisture, % 2

Probe Length, Ft. 3½ Cp 0.85 Δ H@ 1.68

Calculator Setting ΔD=1.5 ΔH=3.1

Orsat Analysis Data			
CO_2	— AIR —		
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Moisture Content	
Impinger #1	
Impinger #2	
Impinger #3	156
Total initial H_2O	200
Net Impinger H_2O	
Net H_2O in Silica Gel	35
Total H_2O Collected	SEE RUN 3

Leak Test

Initial 0.009 @ 5

Final 0.009 @ 4

PARTICULATES SAMPLING DATA

Plant Name and Location MST-6 Run No. 2

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1	809	359.100	1.5	3.1	3.1	18	18	1	150	40	75	
2	839	359.600	1.5	3.1	3.1	45	30	1	190	40	75	
3	909	392.940	1.5	3.1	3.1	55	40	2	200	40	75	
4	939	426.120	1.5	3.1	3.1	60	45	2	210	40	75	
5	1009	457.900	1.5	3.1	3.1	60	45	2	200	40	70	
6	1039	490.20	1.5	3.1	3.1	60	45	1	200	40	75	
7	1109	522.30	1.5	3.1	3.1	60	45	1	200	40	75	
	1159	555.265										

kramer & associates

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location MST-6 BE PROCESSING

Run No. 3 Date 1/13/80 Time 1300 Ambient Temp. °F 30

Bar. Press., in. Hg. 22.80 Stack Location HEPA FILTER DSCHG

Stack Diameter, in. 30 Stack Pressure, in Hg 22.80

Plant Operator _____ P_s/P_m 1.60

Processing Rate 90 gm / 3 1/2 hr

Test Equipment I.D. Misco 7249

Filter No. 5 Acetone Jar No. 3 Acetone Bkr No. 3

Probe Tip Diameter, in. 0.215 Assumed Moisture, % 1

Probe Length, Ft. 3 1/2 Cp 0.850 Δ H@ 1.68

Calculator Setting ΔP=1.5 ΔH=3.1

Orsat Analysis Data

CO_2			
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Leak Test

Initial 0.012 @ 8"

Final 0.015 @ 4"

Moisture Content

Impinger #1	
Impinger #2	
Impinger #3	147
Total initial H_2O	200
Net Impinger H_2O	-53
Net H_2O in Silica Gel	59
Total H_2O Collected	6

PARTICULATES SAMPLING DATA

Plant Name and Location MST -6 Run No. 3

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1	1304	555.700	1.7	3.5	3.5	30	30	1	120	40	75	
2	1334	587.900	1.7	3.5	3.5	55	40	3	180	90	75	
3	1404	621.600	1.7	3.5	3.5	60	40	3	180	90	75	
4	1434	655.500	1.7	3.5	3.5	60	40	4	180	90	75	
5	1504	690.420	1.7	3.5	3.5	65	45	4	190	90	75	
6	1534	724.810	1.7	3.5	3.5	65	45	4	190	90	75	
	1604	759.3	1.7	3.5	3.5	65	45	4	190	90	75	
	1634	794.925										

kramer & associates

ACETONE WASH AND FILTER WEIGHT RECORDS

Facility LOS ALAMOS NATIONAL LABS TA-3 SM-141 (MST-6)

Testing Dates 1/12 - 1/13 1988

Date of Tare Weighing ATOMIC ABSORPTION Weighed By WTR

Date of Final Weighing METHOD 104 Weighed by

I.D. No.	MG/L BE	ML SAMPLE		Net Wt., mg
1	0.0002	10		2×10^{-6}
2	0.0004	10		4×10^{-6}
3	0.0003	10		3×10^{-6}
BLANK	<0.0002	10	BLANK	—
5	0.0026	10	STD: 0.002	—
6	0.0055	10	STD: 0.005	—

APPENDIX 2

CALIBRATION DATA AND COMPUTER PROGRAMS

DRY METER AND ORIFICE CALIBRATION DATA

Date 1/14/88 Location N.M. EID Barometric Pressure, P_b 23.50 in Hg

Control Module Serial No. 7249 Dry Gas Meter No. 83

Orifice Setting ΔH	Metered Gas Volume, Ft^3		Meter Temperature, ^oF		Metering Time Minutes t	Accuracy Ratio G *	Orifice Coefficient $\Delta H_@$ *
	Wet Test V_w	Dry V_d	Wet Test T_w	Dry(ave) T_d			
0.5	4.855	5.001	75.0	84	10.54	0.986	1.67
1.0	10.230	10.063	75.5	74.7	15.47	1.018	1.66
1.5	9.800	10.002	75.5	85.5	12.38	0.995	1.69
2.0	9.965	10.004	75.5	80.0	10.84	0.999	1.695
2.5	9.865	10.007	75.0	86.0	9.61	0.998	1.68
3.0	9.885	10.003	75.5	83	9.08	0.993	1.80
3.5	9.840	10.005	75.6	86	8.47	0.993	1.83

$$* \; G = \frac{V_w P_b (T_d + 460)}{V_d (P_b + \frac{\Delta H}{13.6})(T_w + 460)}$$

$$H_@ = \frac{0.0317 \, \Delta H}{P_b (T_d + 460)} \cdot \left(\frac{(T_w + 460)t}{V_w} \right)^2$$

G = ratio of accuracy of wet test meter to dry test meter

$\Delta H_@$ = orifice pressure differential that gives 0.75 cfm of air at 70^oF and 29.92 inches Hg

Kramer & Associates

PITOT TUBE CALIBRATION SHEET

Pitot Tube No. JOY Pitot Length 3' Calibration Date 2/6/84

Wind Tunnel Location UNM WIND TUNNEL Calibrated By GRK

Nozzle Size: 1/8" SMALL 3/16"

P_L	P_S	C_P
0.18	0.25	0.840
0.36	0.445	0.844
0.81	1.1	0.849
1.3	1.75	0.853
0.645	0.86	0.857

AVE : 0.849

Nozzle Size: 1/4", 1/8" (LARGE)

P_L	P_S	C_P
0.205	0.280	0.847
0.41	0.56	0.847
0.86	1.20	0.838
0.65	0.87	0.856

AVE: 0.847

Nozzle Size: 3/8"

P_L	P_S	C_P
0.21	0.29	0.842
0.47	0.64	0.848
0.865	1.20	0.840
1.4	1.9	0.850

AVE: 0.845

Nozzle Size: 1/2"

P_L	P_S	C_P
0.22	0.305	0.841
0.41	0.55	0.855
0.60	0.80	0.857
1.4	1.9	0.850

AVE : 0.851

Nomenclature: P_L = Velocity pressure (inches water) measured with Standard Pitot

P_S = Velocity pressure (inches water) measured with S Pitot .

C_p = S pitot correction factor = $0.99(P_L/P_S)^{1/2}$

THERMISTOR CALIBRATION DATA

TEMPERATURE DEGREES C

	Meter				
Reference	In	Out	Impinger	Oven	Probe
3.3	3.3	3.3	1.6	--	4.0
26.0	25.5	26.0	26.6	24.5	23.5
96.0	94.5	94.5	94.0	98.0	95.0

COMPUTER PROGRAM LISTING

```
2 REM
3 REM ********  K R A M E R   &   A S S O C I A T E S  ***********
4 REM
6 REM *** PARTICULATES SAMPLING DATA ANALYSIS PROGRAM ***
8 REM
10 REM ---------------------------------------------------------------
12 REM ***NOMENCLATURE: RN(I)  = RUN NUMBER                          *
14 REM                  H2O(I) = ML OF WATER COLLECTED               *
16 REM                 CUFT(I) = CUBIC FEET OF GAS SAMPLE            *
18 REM                  CO2(I) = % CARBON DIOXIDE IN STACK GAS       *
20 REM                   O2(I) = % OXYGEN IN STACK GAS               *
22 REM                   MG(I) = MILLIGRAMS PARTICULATE COLLECTED    *
24 REM                  TON(I) = PRODUCTION RATE DURING TEST, TONS/HR *
26 REM ---------------------------------------------------------------
28 REM
30 FOR I = 1 TO Z  STEP 1
32 READ RN(I), H2O(I), CUFT(I), CO2(I), O2(I), MG(I), TON(I)
34 REM
36 REM ----------------------------------------------------------
38 REM ** NOMENCLATURE: PTS(I) = TOTAL NUMBER OF SAMPLING POINTS   *
40 REM                   BP(I) = BAROMETRIC PRESSURE, IN. HG       *
42 REM                   SP(I) = STACK STATIC PRESSURE, IN. HG     *
44 REM                   CP(I) = ORIFICE COEFFICIENT               *
46 REM                 AREA(I) = STACK CROSS SECTIONAL AREA, SQ FT *
48 REM                  TPD(I) = NOZZLE DIAMETER, INCHES           *
50 REM                 TIME(I) = SAMPLING TIME, MINUTES            *
52 REM ----------------------------------------------------------
54 REM
56 REM
58 READ PTS(I), BP(I), SP(I), CP(I), AREA(I), TPD(I), TIME(I)
60 REM
62 REM *********** CALCULATE AVERAGES OF SAMPLING DATA **************
64 REM
66 A=0:B=0:C=0:D=0:E=0
68 FOR Z=1 TO PTS(I)
70 REM
72 REM ---------------------------------------------------------------
74 REM ** NOMENCLATURE: DELP = VELOCITY PRESSURE AT A SAMPLING POINT, IN
76 REM                  DELH = ORIFICE DELTA P, IN. H2O
78 REM                   TMI = DRY GAS METER INLET TEMP. F:  (AVG. IS ATM)
80 REM                   TMO = DRY GAS METER OUTLET TEMPERATURE, F
82 REM                  STKT = STACK TEMPERATURE, DEG. F
84 REM ---------------------------------------------------------------
86 READ DELP, DELH, TMI, TMO, STKT
90 REM
92 A=A+SQR(DELP): B=B+DELH: C=C+TMI: D=D+TMO: E=E+STKT
94 NEXT Z
96 REM
98 REM *** A( ) REFERS TO "AVERAGE" PARAMETER IN 74-82 ABOVE ****
100 ADELP(I) = INT(10000*A/PTS(I))/10000
105 ADELH(I) = INT(1000*B/PTS(I))/1000
110 ATM(I) = INT(100*(C+D)/(2*PTS(I)))/100
115 ASTKT(I) = INT(100*E/PTS(I))/100
120 REM
122 REM
124 REM ---------------------------------------------------------------
126 REM ** NOMENCLATURE: VMSTD = DRY STD CUBIC FEET OF GAS SAMPLE
```

```
130 REM                    [illegible] = PERCENT WATER IN STACK GAS
132 REM                     N2 = PERCENT NITROGEN IN STACK GAS
134 REM                     MW = MOLECULAR WEIGHT OF STACK GAS
136 REM                    DMW = DRY MOLECULAR WEIGHT OF STACK GAS
138 REM                    VSA = AVERAGE STACK GAS VELOCITY, FPM
140 REM                    QSA = AVERAGE STACK GAS FLOW, DSCFM
142 REM                    ISO = ISOKINETIC RATIO, %
144 REM ------------------------------------------------------------------
146 REM
148 VMSTD(I) = INT(1764.7*CUFT(I)*(BP(I)+ADELH(I)/13.6)/(ATM(I)+460))/100
150 REM
155 VW(I) = INT(4.707*H2O(I))/100
157 REM
160 BWO(I) = INT(1000*VW(I)/(VW(I)+VMSTD(I)))/10
161 REM
162 REM ***STACK GASES ARE SUPERSATURED WITH WATER.  SATURATION VALUES AS
          IN STATEMENT 163 ARE USED IN THE CALCULATIONS.***
164 REM
165 N2(I) = 99 - CO2(I) - O2(I)
168 REM
170 MW(I) = INT((44*CO2(I)+40+32*O2(I)+28*N2(I))*(1-BWO(I)/100)+18*BWO(I))
172 REM
175 DMW(I) = INT(44*CO2(I)+40+32*O2(I)+28*N2(I))/100
177 REM
180 VSA(I) = INT(60*85.49*CP(I)*ADELP(I)*(SQR((ASTKT(I)+460)/(MW(I)*SP(I))
182 REM
185 QSA(I) = INT(10.6283*VSA(I)*(100-BWO(I))*AREA(I)*SP(I)/(60*(ASTKT(I)+4
187 REM ------------------------------------------------------------------
188 REM  ** NOMENCLATURE: F = MOLE FRACTION DRY STACK GASES                *
190 REM                  CS = PARTICULATE EMISSIONS IN GRAINS PER DSCF     *
192 REM                   G = PARTICULATE EMISSIONS IN LBS PER HOUR        *
194 REM               ACTQ = ACTUAL STACK FLOW, CFM                        *
196 REM ------------------------------------------------------------------
197 REM
200 REM
202 REM
205 F(I) = INT(1000*(1 - BWO(I)/100))/1000
207 REM
210 NUM(I) = 17.316*VMSTD(I)*(ASTKT(I)+460)*60
215 DEN(I) = VSA(I)*(100-BWO(I))*.01*SP(I)*TPD(I)*TPD(I)*TIME(I)
225 ISO(I) = INT(10*NUM(I)/DEN(I))/10
230 ACTQ(I) = INT(VSA(I)*AREA(I)*((100-BWO(I))/100))
232 CS(I) = INT(1E+12*.0154*MG(I)/VMSTD(I))/1E+12
234 G(I) = INT(1E+10*CS(I)*QSA(I)*.0001428*60)/1E+10
235 REM
240 NEXT I
999 DATA 1,  6,226.255,  0,20.9,0.000002,28.5
1000 DATA  7,22.70,22.70,0.850,4.91,.215,210
1001 DATA 1.3,3.0,35,35,75
1002 DATA 1.5,3.0,55,40,75
1003 DATA 1.3,3.1,60,40,75
1004 DATA 1.5,3.1,60,45,75
1005 DATA 1.5,3.0,60,45,75
1006 DATA 1.5,3.0,60,45,75
1007 DATA 1.5,3.0,60,45,75
1500 REM ****************** END OF RUN #1 DATA ******************
1501 REM
1550 REM
1590 REM ******** RUN #2 DATA ********
1999 DATA 2,  6,226.165,0  ,20.9,0.000002,31.4
2000 DATA  7,22.80,22.80,0.85 ,4.91,.215,210
2001 DATA 1.5,3.1,18,18,75
2002 DATA 1.5,3.1,45,30,75
2003 DATA 1.5,3.1,55,40,75
2004 DATA 1.5,3.1,60,45,75
```

```
2[illegible] DATA [illegible]
2510 REM ******************* END OF RUN #2 DATA *******************
2511 REM
2550 REM
2570 REM ******** RUN #3 DATA ********
2999 DATA 3.  6,279.225,0  ,20.9,0.000002,25.7
3000 DATA  7,22.80,22.80,0.85 ,4.91,.215,210
3001 DATA 1.7,3.5,30,30,75
3002 DATA 1.7,3.5,55,40,75
3003 DATA 1.7,3.5,60,40,75
3004 DATA 1.7,3.5,50,40,75
3005 DATA 1.7,3.5,61,45,75
3006 DATA 1.7,3.5,63,45,75
3007 DATA 1.7,3.5,65,45,75
3500 REM ******************* END OF RUN #3 DATA *******************
3525 REM
3550 PRINT I30(1),I30(2),I30(3) :STOP
3550 REM
3575 REM ********  PRINTING COMMANDS  ********
3585 REM
3600 LPRINT CHR$(27)"G"CHR$(14)"                    TABLE  1 "
3605 LPRINT CHR$(10)CHR$(14)"        STACK SAMPLING DATA SUMMARY"
3610 LPRINT CHR$(10)CHR$(14)"        MST-6  BERYLLIUM PROCESSING"
3612 LPRINT CHR$(10)CHR$(14)"      LOS ALAMOS  NATIONAL LABORATORY"
3615 LPRINT CHR$ (10)
3621 LPRINT CHR$(10)
3625 LPRINT CHR$(10);TAB(7)"SAMPLING DATA";TAB(36)"TEST #1        TEST #2
 TEST #3"
3627 LPRINT TAB(7)"---------------";TAB(36)"-------        -------
"
3630 LPRINT CHR$(10)
3635 LPRINT "ACTUAL METERED CUBIC FEET            ";CUFT(1);TAB(50);CUFT(2);
);CUFT(3)
3640 LPRINT "BAROMETRIC PRESSURE, (IN HG)         ";BP(1);TAB(50);BP(2);TAB
(3)
3645 LPRINT "AVERAGE GAS METER TEMPERATURE (F)    ";ATM(1);TAB(50);ATM(2);"
ATM(3)
3650 LPRINT "MILLILITERS WATER COLLECTED          ";H2O(1);TAB(50);H2O(2);"
H2O(3)
3655 LPRINT "MILLIGRAMS PARTICULATES COLLECTED    ";MG(1);TAB(50);MG(2);TAB
(3)
3660 LPRINT "CARBON DIOXIDE IN STACK GAS, %       ";CO2(1);TAB(50);CO2(2);"
CO2(3)
3665 LPRINT "OXYGEN IN STACK GAS, %               ";O2(1);TAB(50);O2(2);TAB
(3)
3670 LPRINT "NITROGEN IN STACK GAS, %             ";N2(1);TAB(50);N2(2);TAB
(3)
3675 LPRINT "STATIC PRESSURE IN STACK  (IN HG)    ";SP(1);TAB(50);SP(2);TAB
(3)
3680 LPRINT "AVERAGE STACK TEMPERATURE,  F)       ";ASTMT(1);TAB(50);ASTMT(2
);ASTMT(3)
3685 LPRINT "S-PITOT CORRECTION FACTOR            ";CP(1);TAB(50);CP(2);TAB
(3)
3690 LPRINT "AVG SQUARE ROOT VEL PRES (IN H2O)    ";ADELP(1);TAB(50);ADELP(
2);ADELP(3)
3695 LPRINT "AREA OF STACK, (SQ.FT)               ";AREA(1);TAB(50);AREA(2)
);AREA(3)
3700 LPRINT "SAMPLING TIME, (MINUTES)             ";TIME(1);TAB(50);TIME(2)
);TIME(3)
3705 LPRINT "NOZZLE DIAMETER, (INCHES)            ";TPD(1);TAB(50);TPD(2);"
TPD(3)
3710 LPRINT "AVG ORIFICE DELTA P, (IN H2O)        ";ADELH(1);TAB(50);ADELH(
2);ADELH(3)
3715 LPRINT CHR$(10)CHR$(10);TAB(3)"CALCULATED RESULTS"
3720 LPRINT TAB(3)"----------------" ;CHR$(10)
```

```
3690 LPRINT "VOLUME H2O COLLECTED (SCF)            ";VW(1);TAB(50);VW(2);TAB(
(3)
3715 LPRINT "PERCENT H2O IN STACK GAS              ";BWO(1);TAB(50);BWO(2);TA
BWO(3)
3740 LPRINT "MOLE WT STACK GAS (WET)               ";MW(1);TAB(50);MW(2);TAB(
(3)
3745 LPRINT "MOLE WT STACK GAS (DRY)               ";DMW(1);TAB(50);DMW(2);TA
DMW(3)
3750 LPRINT "MOLE FRACTION DRY STACK GAS           ";F(1);TAB(50);F(2);TAB(50
3755 LPRINT "AVG STACK VELOCITY, (FPM)             ";VSA(1);TAB(50);VSA(2);TA
VSA(3)
3760 LPRINT "AVG STACK FLOW (DSCFM)                ";QSA(1);TAB(50);QSA(2);TA
QSA(3)
3765 LPRINT "AVG STACK FLOW (ACFM)                 ";ACTQ(1);TAB(50);ACTQ(2);
TAB(
3770 LPRINT "ISOKINETIC RATIO, %                   ";ISO(1);TAB(50);ISO(2);TA
ISO(3)
3775 LPRINT "PARTICULATE EMISSION  (GR/DSCF)       ";CS(1);TAB(50);CS(2);TAB(
(3)
3780 LPRINT "PARTICULATE EMISSION, (LBS/HR)        ";G(1);TAB(50);G(2);TAB(50
3790 LPRINT "BERYLLIUM PROCESSING RATE, (GM/HR)    ";TON(1);TAB(50);TON(2);TA
TON(3)
3800 FOR Y=1 TO 5
3810 LPRINT CHR$(10)
3820 NEXT Y
3830 LPRINT "------------------------------------ KRAMER & ASSOCIATES ----------------
-----------"
4000 REM
4010 REM
4020 REM
4030 REM
4040 REM ------------------------------------------------------------------------
         ------------------------------------------------------------------------
4050 REM ******************* PROCEDURE TO RUN ANALYSIS  ******************
4060 REM       RUN #1: ENTER DATA FOR READ STATEMENT #32 IN DATA STATEMENT
                       ENTER DATA FOR READ STATEMENT #58 IN DATA STATEMENT
                       ENTER DATA FOR READ STATEMENT #86 IN DATA STATEMENTS
4070 REM
4080 REM       RUN #2: ENTER DATA FOR READ STATEMENT #32 IN DATA STATEMENT
                       ENTER DATA FOR READ STATEMENT #58 IN DATA STATEMENT
                       ENTER DATA FOR READ STATEMENT #86 IN DATA STATEMENTS
4090 REM
4100 REM       RUN #3: ENTER DATA FOR READ STATEMENT #32 IN DATA STATEMENT
                       ENTER DATA FOR READ STATEMENT #58 IN DATA STATEMENT
                       ENTER DATA FOR READ STATEMENT #86 IN DATA STATEMENTS
4200 REM ------------------------------------------------------------------------
         ------------------------------------------------------------------------
4500 END
```

PERMIT 635

GAUGHOS

GOVERNOR

DENSE D FO
DIRECTOR

Rec'd
3-27-86

Sh 4

HEALTH & ENVIRONMENT Department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION

P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 827-0070

March 19, 1986

CERTIFIED MAIL NO. P 176 081 927
RETURN RECEIPT REQUESTED

Mr. Harold E. Valencia
Area Manager
Dept. of Energy
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Dear Mr. Valencia:

This letter constitutes Air Quality Permit Number 635 which is issued to the Los Alamos National Laboratory pursuant to Section 74-2-7 NMSA and Air Quality Control Regulation 702, to modify a beryllium machine shop in TA-3, Building 39 near Los Alamos, New Mexico. The facility is be be modified and operated in accordance with the application dated November 7, 1985 and is subject to the following conditions:

1. Beryllium emissions to the atmosphere shall not exceed 4×10^{-6} pounds per hour (4×10^{-6} tons per year).

2. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Division, for a minimum of two years.

The Division has performed an analysis to verify the emissions from the machine shop and has performed dispersion modeling using emission estimates from the facility to determine the impact on the ambient air. Based on the analysis and the control measures described in your application, the Division has determined that the provisions of the Air Quality Control Act, Air Quality Control Regulation 751, and the ambient air quality standards will be met. However, in order to assure this, conditions have been placed on the permit. The Air Quality Control Act

allows the Division to place reasonable restrictions other than those relating to emission rates. The reasons for these conditions are explained below:

Condition 1 regarding the emissions from the beryllium processing operation corresponds to the emission limit specified in the application. The Air Quality Control Act allows for placement of an emission limit and requires that such a limit be only as restrictive as the more stringent of the following: 1) the extent necessary to meet the requirements of the Air Quality Control Act and the Federal Act: or 2) the emission rate specified in the permit application. The emission rate specified in the permit application has been determined to be more stringent in this case.

Condition 2 corresponds to the reporting and record keeping requirements contained in AQCR 751 which incorporates the National Emission Standards for Hazardous Air Pollutants (NESHAPS), by reference.

Section 74-2-7.K NMSA 1978 provides that if the Division issues a permit with conditions, and the applicant is dissatisfied with the action taken by the Division, the applicant may request a hearing before the Environmental Improvement Board. The request must be made in writing to the Director of the Environmental Improvement Division within thirty days after receipt of the permit.

There are additional requirements contained in Air Quality Control Regulation 702 that should be noted:

Section M provides that the Division may cancel a permit if the construction is not commenced within one year from the date of issuance or, if during the construction, work is suspended for a period of one year.

Section P requires the permitted source to notify the Division in writing of the:

1. anticipated date of initial startup of a source not more than sixty days nor less than thirty days prior to the date, and

2. actual date of initial startup of a source within fifteen days after the startup date.

AQCR 751 requires each owner or operator to test emissions from the new source within 90 days of startup.

A performance test is required for beryllium and shall be performed in accordance with EPA Reference Method 103 or 104 as outlined in 40 CFR Part 61 Appendix B. The permittee should arrange a pretest meeting with the Division at least two weeks prior to the date of testing and should advise the Division of any variations to the procedures. The results should be submitted to the Division within forty-five days after the completion of testing.

The permit and conditions apply in the event of any change in control or ownership of the facility. In the event of any such change in control or ownership, the permittee should notify the succeeding owner of the permit and conditions.

If you have any questions regarding this permit please contact Bob Kirkpatrick or Jim Shively.

Sincerely,

J. David Duran
Acting Bureau Chief

JDD:lo

xc: Tito Madrid, District Manager, District II
Gerald Silva, Health Program Manager, Espanola
Bruce Nicholson, Program Manager, Modeling and Analysis
Jack Divita, EPA Region VI, Dallas

to:

ED-AIR QUALITY BUREAU
NEW SOURCE REVIEW UNIT
P.O. BOX 968
SANTA FE, NM 87504-0968
TELEPHONE: 505-9840020

Revised: 2/80

FOR EID U. ..Y
Application No.
App. Rec'd. Date:
Date App. Complete:
Reviewed by:
Approved/Disapproved:
Date:
AQCR: County:
Date St. Operation:
Date Perf. Test/Insp:

APPLICATION FOR PERMIT AND CERTIFICATE OF REGISTRATION

GENERAL FORM

FOR

SOURCES LOCATED WITHIN THE STATE OF NEW MEXICO [1]

Please answer all questions applicable to your specific business, operation, and products.
Use the abbreviation "N.A." for "not applicable" wherever appropriate.
Submittal of process flow sheets, equipment descriptions, and other information may be required to complete this application. [2]

SECTION I - GENERAL DATA

1. Name of Company: Los Alamos National Laboratory 2. Date Submitted: November 7, 1985

3. Company Address: Los Alamos, New Mexico Phone: 667-5105

Person to Contact: Harold E. Valencia Title: DOE/LAAO Manager Phone: 667-5105

4. Name, Address and location of new plant or modification: see attachment A

Is U.S.G.S. quadrangular map or equivalent attached? [3] Yes

5. Describe briefly the type and capacity of the plant and nature of modifications (if applicable) and products: [4]

see attachment A

Date of Anticipated Start of Construction: see attachment A

6. Class of land at plant site (private, State, Federal, Indian, etc.): Federal

7. Is this permanent? Yes If not, how long is it expected to be occupied? N.A. Date of Anticipated Startup: see attachment A

8. Normal operating schedule: (1) 8-10 hours per day, (2) intermittent (1) 5 days per week, (2) intermittent (1) 4 weeks per month, (2) intermittent (1) 12 months per year, (2) intermittent

9. Specify maximum operating periods: Shops 4 and 13 will occasionally operate 12 hrs/day.

10. Specify percent annual production by quarters: Dec. - Feb. 25, Mar. - May 25, June - Aug. 25, Sep. - Nov. 25

Notes: (1) Submitted in accordance with Air Quality Control Regulation No. 702, Permits, or Regulation No. 703, Registration.
(2) Notification of the need for other additional information required to complete this application will be given to the applicant by the Air Quality Bureau within 10 days after the receipt of the application. Filing of the application will not be considered to be complete until the date of submittal of such additional information. The granting or denial of the permit will be made within 30 days after this completion date.
(3) Regulation No. 702, Section D, Item 5 requires that this application be accompanied by a U. S. Dept. of the Interior Geological Survey quadrangular map or equivalent map showing the exact location of the proposed construction or modification.
(4) Include site plan showing location of all stacks or other emission points and property or fence line; for portable [illegible]

ON 2 - FUEL USAGE N.A.

Unit No. [1]	Type of Fuel Burning Equipment [2]	Equipment Manufacturer	Rated Capacity Million BTU/Hr. [3]	Fuel Type [5]	FUEL DATA [4], [9] Amount Per Year [6]	Heating Value [7]	Percent Sulfur [8]	Percent Ash [8]

Notes: [1] Give a different number to represent each unit; give corresponding data opposite the same number in Sections 3 through 9.
[2] Boiler, oven, furnace, gas engine, gas turbine, etc. Include model number, configuration, etc., attach separate sheets if necessary.
[3] Give maximum rate as well as normal rate, if different.
[4] If auxiliary fuel or different fuel used "on standby", also give data for that fuel.
[5] Natural gas; bituminous coal; No. 6 fuel oil; refinery gas; etc. Include condition of fuel (pulverized, slurry, etc. if applicable).
[6] Million cubic feet of gas; tons of coal; gallons of fuel oil; pounds of LPG; etc.
[7] Higher heating value; Btu/lb, Btu/gal or Btu/MCF (MCF = 1000 std. cu. ft.)
[8] Sulfur and ash contents should be maximum percentages by weight. Sulfur and ash contents are not required if sweet natural gas is used as the fuel.
[9] Attach process flow sheet, including material balance for the combustion plant, if available.

SECTION 3 - MATERIALS PROCESSED AND PRODUCED

A. RAW MATERIALS PROCESSED

Unit No. [1]	Type	Composition [2]	Condition [3]	Quantity [4] (Specify Units)
1	Semi-finished Be parts	Mainly pure Be; 20% Be and copper; and, 2-3% BeO	Solid Be parts	Classified Secret
2	"	Pure Be and radioactive Be	"	"

B. MATERIALS PRODUCED (DO NOT INCLUDE EMISSIONS AND PRODUCTS LISTED IN SECTIONS 4, 8, AND 9)

1	Finished Be parts	same as A	Solid Be parts	Classified Secret
2	"	"	"	"

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Give each major component with weight percentages and chemical compositions if known.
[3] Give typical particle size distribution for aggregates, pumice dust, etc. and average moisture content if known.

Section 4 - UNIT EMISSIONS (PRIOR TO AIR POLLUTION CONTROL EQUIPMENT, OR TO ATMOSPHERE, IF UNCONTROLLED)

Unit No. (1)	Process or Operation (2)	Quantity of Gases Discharged to Air Pollution Control Equipment	ESTIMATES OF AIR POLLUTANTS						Basis of Estimates (7)
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 (3)		
			Type (4)	Quantity (5)	Type (4)	Quantity (5)	Type (4)	Quantity (5)	
1	Be Machining	see stack data	Be	11×10^{-3} lb/hr 11.4×10^{-3} T/yr		lb/hr T/yr		lb/hr T/yr	Process Material Balances
2	"	"	"	1.4×10^{-3} lb/hr 2.4×10^{-4} T/yr		lb/hr T/yr		lb/hr T/yr	"
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	

Notes:
(1) Give a different number to each unit corresponding to unit numbers in Sections 2 through 9.
(2) Smelter furnace, asphalt plant drier, iron-melting cupola, cement manufacture-dry process, solvent cleaner, etc.
(3) Gas flow rate in actual cubic feet per minute, if applicable. State temperature (°F), pressure, (psia) and percent moisture (if applicable). Enter "see stack data" if discharge goes directly to the stack.
(4) Particulate matter (give chemical description), Sulfur Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Oxides, etc.
(5) Quantities at maximum production rates. T = tons (2000 lb.)
(6) If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(7) From process material balances, field tests by plant or equipment manufacturer, EPA emission factors (AP-42), other.

Section 5 - AIR POLLUTION CONTROL EQUIPMENT, EMISSIONS TO ATMOSPHERE (1)

Also attach process flow sheets and equipment layout and assembly drawings necessary to describe all air pollution control equipment.

Unit No. (2)	Air Pollution Control Equipment		EMISSIONS TO ATMOSPHERE (5)						Air Pollution Control Equipment Collection Efficiency	
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 (7)			
	Type (3)	Manufacturer and Model No.	Type (4)	Quantity (6)	Type (4)	Quantity (6)	Type (4)	Quantity (6)	% by Weight	How Determined (8)
1	Dynamic dry precipitator	American Air Filter	Be	4×10^{-6} lb/hr 4×10^{-6} T/yr		lb/hr T/yr		lb/hr T/yr	65	Manufacturer's Rating
	Baghouse	American Wheelabrator Corp.		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	99.9	"
2	HEPA	Flanders Size Z820	"	4×10^{-7} lb/hr 7×10^{-8} T/yr		lb/hr T/yr		lb/hr T/yr	99.97	"
3	Cyclones	Carter Day and Bin-o-matic		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		

Notes:
(1) Attach additional sheets as needed, to list all control equipment.
(2) Corresponding to numbers in Sections 2 through 9.
(3) Cyclone, scrubber, electrostatic precipitator, baghouse, etc.
(4) Estimated emissions after gases have passed through control equipment.
(5) Particulate matter, etc. (See Note 4, Section 4)
(6) Quantities at maximum production rates. T = tons (2000 lbs.)
(7) If more than 1 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(8) Field test results, manufacturers rating, etc.

N 5 - CONTINUED

Capital Costs (Optional):
Approximate expected capital investement of new or modified air pollution control equipment: $ --
Estimated yearly operation and maintenance costs for air pollution control equipment: $ --

SECTION 6 - STACK DATA - Include drawings or sketches (plan view and elevations) of any buildings or equipment in close proximity to stacks.

Unit No.	Stack Height, Ft.[1]	Inside Diameter, Ft.	EXIT GAS CONDITIONS[2]			SAMPLING PORTS		
			Temperature °F	Velocity Ft./Sec.	Moisture % by Volume	Number	Size	Location[3]
1	54	.917	70	37.5	1	None	N.A.	N.A.
2	45.	3	70	19.3	1	"	"	"

Notes: [1] Height above ground level.
[2] If conditions are not at actual stack exit, specify location for which estimates are made.
[3] Example: 2 ports at 90°, 25' from top.

What provisions are made for accessibility to stack sampling ports? N.A.

SECTION 7 - EMISSION MEASUREMENT EQUIPMENT N.A.

Unit No.	Pollutant	Type of Instrument[1]	Manufacturer - Model No.	Range[2]	Sensitivity	Accuracy

Notes: [1] Ultra Violet Photometric Analyzer, NDIR Photometer, Opacity Meter, EPA Sampling Train, etc.
[2] 0-1000 ppm, 0-50 $\mu g/m^3$, 0-100% opacity, etc.

SECTION 8 - HAZARDOUS AIR POLLUTANTS[1] OTHER TOXIC CHEMICALS, AND [illegible]

A. [illegible] the any hazardous air pollutants and toxic chemicals used or [illegible]ed in plant processes.[2]

Unit[3]	Description of Chemicals[4]	Quantity Emitted to Atmosphere[5]	How, Where Emitted[6]
1	Be	4×10^{-6} tons/yr	See Sections 4-6
2	"	4×10^{-7} tons/yr	"

Notes: [1] Asbestos, beryllium, mercury, vinyl chloride, benzene, radionuclides, any others specified by federal EPA.
[2] List other chemicals considered harmful in small amounts of concentrations and not covered in Sections 4 & 5. (E.g., Arsenic and cadmium cpds.)
[3] Give unit number from Section 4 if previously listed; if not, describe source of toxic emissions.
[4] Give trade name or common name and chemical composition if known.
[5] Give in lb. per hr., and tons (2000 lb) per year.
[6] If emitted in separate stack, give stack conditions; if part of another stack flow, specify which one.

B. Describe sources and characteristics of any odors emitted from plant processes: N.A.

SECTION 9 - WASTE PRODUCT DISPOSAL (SOLID AND LIQUID WASTES, AND AUXILIARY INCINERATION EMISSIONS NOT COVERED IN SECTIONS 4 OR 5)

A. Auxiliary Incineration Operations: N.A.
Normal on-site combustion operating schedule: _____ hours per day, _____ days per week, _____ weeks per year.
Seasonal or peak combustion operating periods (specify): _____

B. Waste Products or Emissions

Unit No.[1]	Waste Material Type[2]	Waste Material Amount[3]	Method of Disposal[4]	Incinerator Capacity lb. per Hr.	Auxiliary Fuel Used[5]	Type and Efficiency of Air Cleaning Equipment[6]	Estimate of Air Pollutants, if any Type[7]	Quantity per Year[6]
1	Be Waste	see attachment A /hr. /yr.	see attachment A	N.A.	N.A.	N.A.	N.A.	N.A. /hr. " /yr.
2	"	see attachment A /hr. /yr.	"	"	"	"	"	" /hr. " /yr.
		/hr. /yr.						/hr. /yr.

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Waste paper, wood chips, rubbish, garbage, acids, oils, etc.
[3] Pounds, tons, or gallons.
[4] Incinerator, single chamber; incinerator, double chamber; sanitary landfill; etc.
[5] Give type and quantity used in incinerator or other burner.
[6] Give general type (cyclone, scrubber, etc.) if any, weight efficiency.
[7] Give major pollutants (ash, smoke, SO_2, etc.).

SECTION 10 - CERTIFICATION

I, the undersigned, a responsible officer or authorized representative of the applicant company, certify that, to the best of my knowledge, the information stated on this application, together with associated drawings, specifications and other data, give a true and complete representation of the planned new plant or modifications to an existing plant with respect to air pollution sources and control equipment. I also understand that any significant omissions, errors, or misrepresentations in these data will be cause for revocation of part or all of this permit.

NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION/AIR QUALITY BUREAU/ PERMIT APPLICATION/ATTACHMENT A

Section 1 - General Data

4. Mechanical Fabrication Division (MFD) beryllium (Be) operations located at: (1) [illegible], Room 15, Shop 4, operated by MFD-1; and, (2) [illegible], Shop 13, Room 113, also operated by MFD-1. The numbering, (1) and (2), will be used to refer to these 2 operations throughout this permit application.

5. Be machining operations producing small quantities of Be parts which are classified Secret Restricted Data. (1) Shop 4: Be is machined on 3 lathes, 2 mills, a pneumolathe, 2 surface grinders, a saw, a jig bore, and an electical discharge machine. This operation is to be modified. New machines are to be added and the shop layout is to be modified. (2) Shop 13: Be machined intermittently on lathes, horizontal boring mill, CNC lathe 921, and saws. Be machining took place during approximately 30 days in 1984.

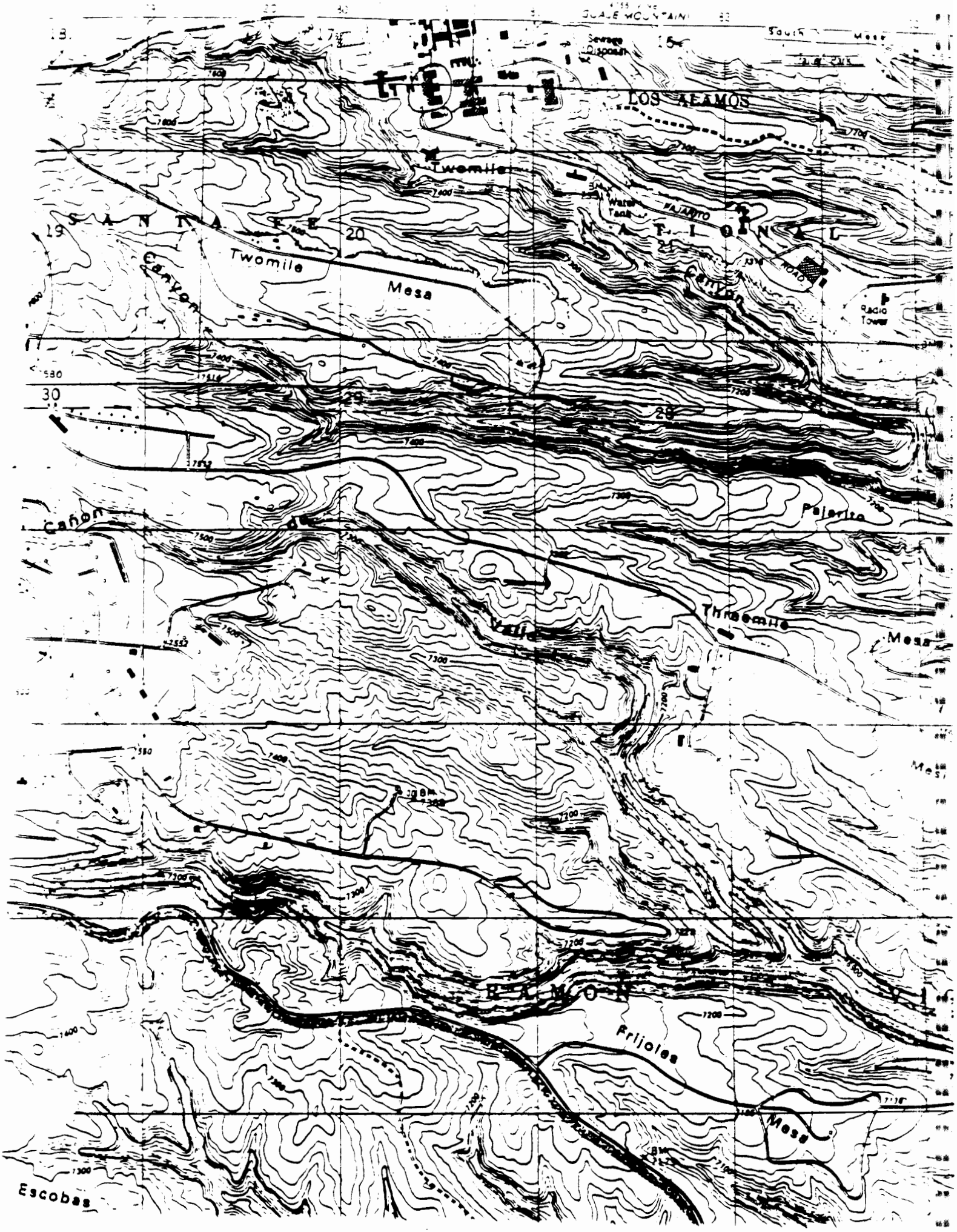
Date of Anticipated Start of Construction: This applies only to Shop 4 which is to be modified (see above). Construction is to begin upon receipt of an approved permit.

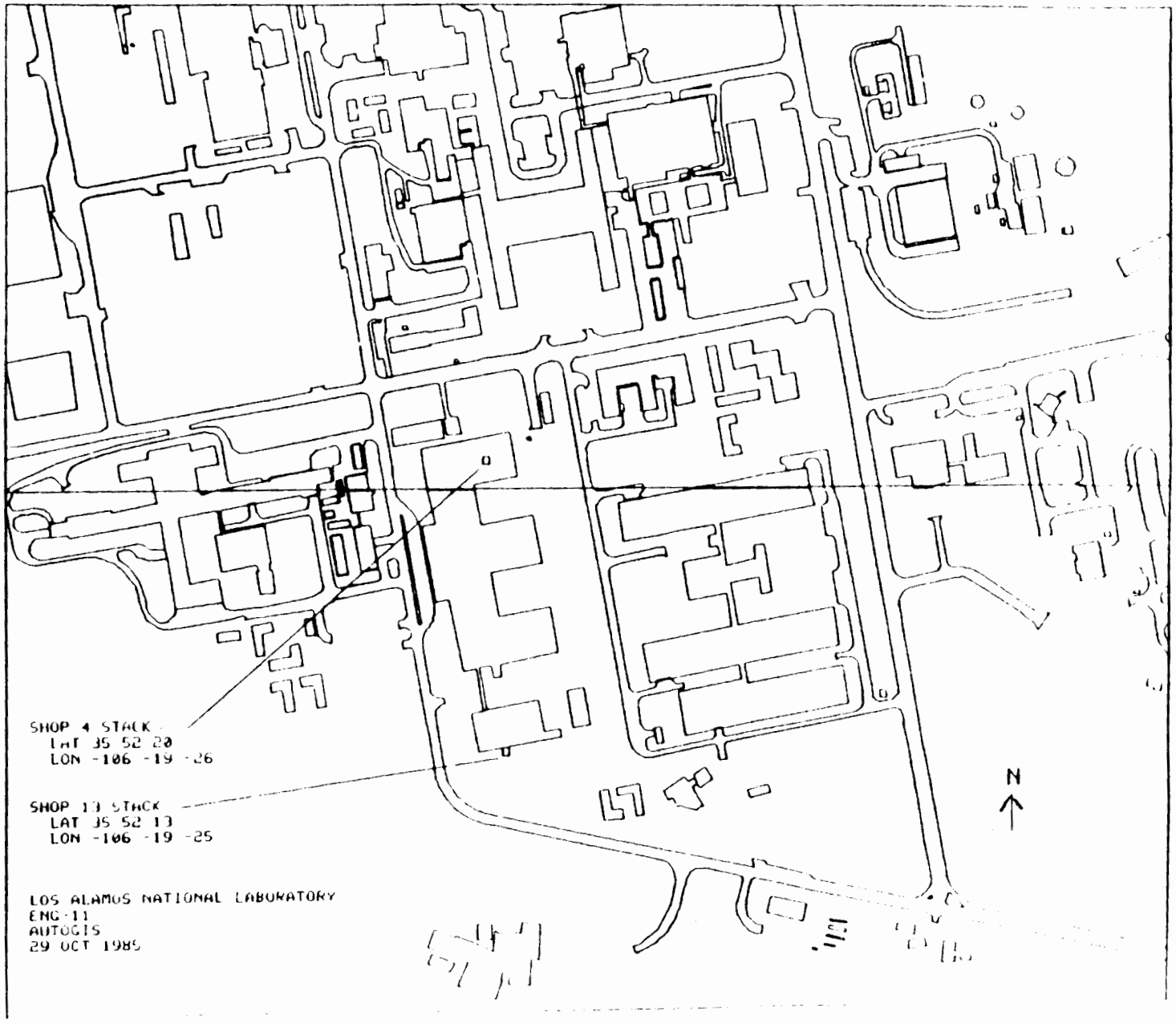
7. Date of anticipated start-up: (1) Shop 4: Be operation original start-up date was in 1953. Start-up of modified operation to begin approximately 10 days after receipt of an approved permit. (2) Shop 13: 1976.

Section 9 - Waste Product Disposal/B. Waste Products or Emissions

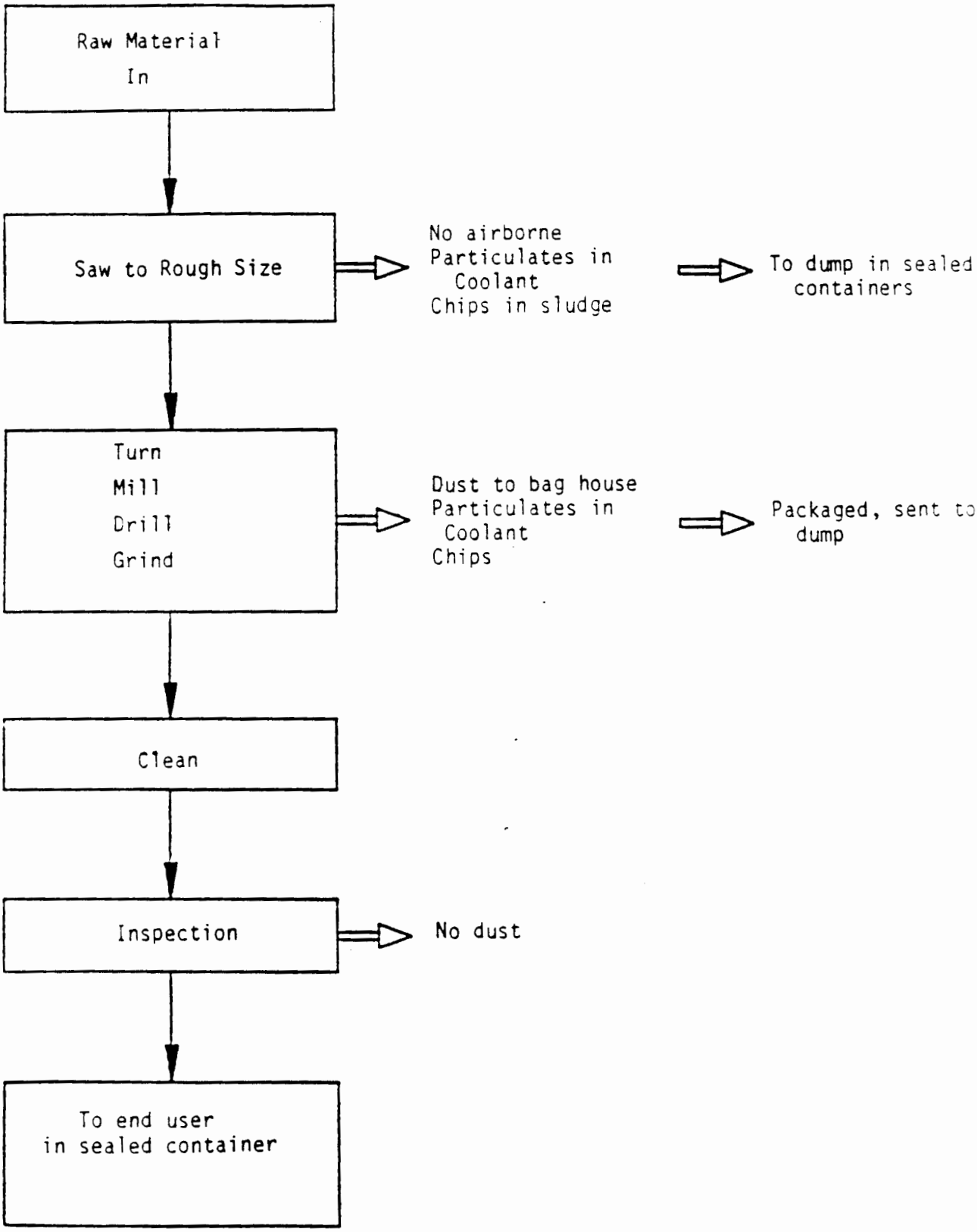
Waste Material/Amount: (1) Shop 4: 10-12 boxes (2'x1'x1') per year and one 55-gallon drum per year. (2) Shop 13: less than 15 gallons of chips per year.

Method of Disposal: Disposal at a facility permitted under the Resource, Conservation and Recovery Act.

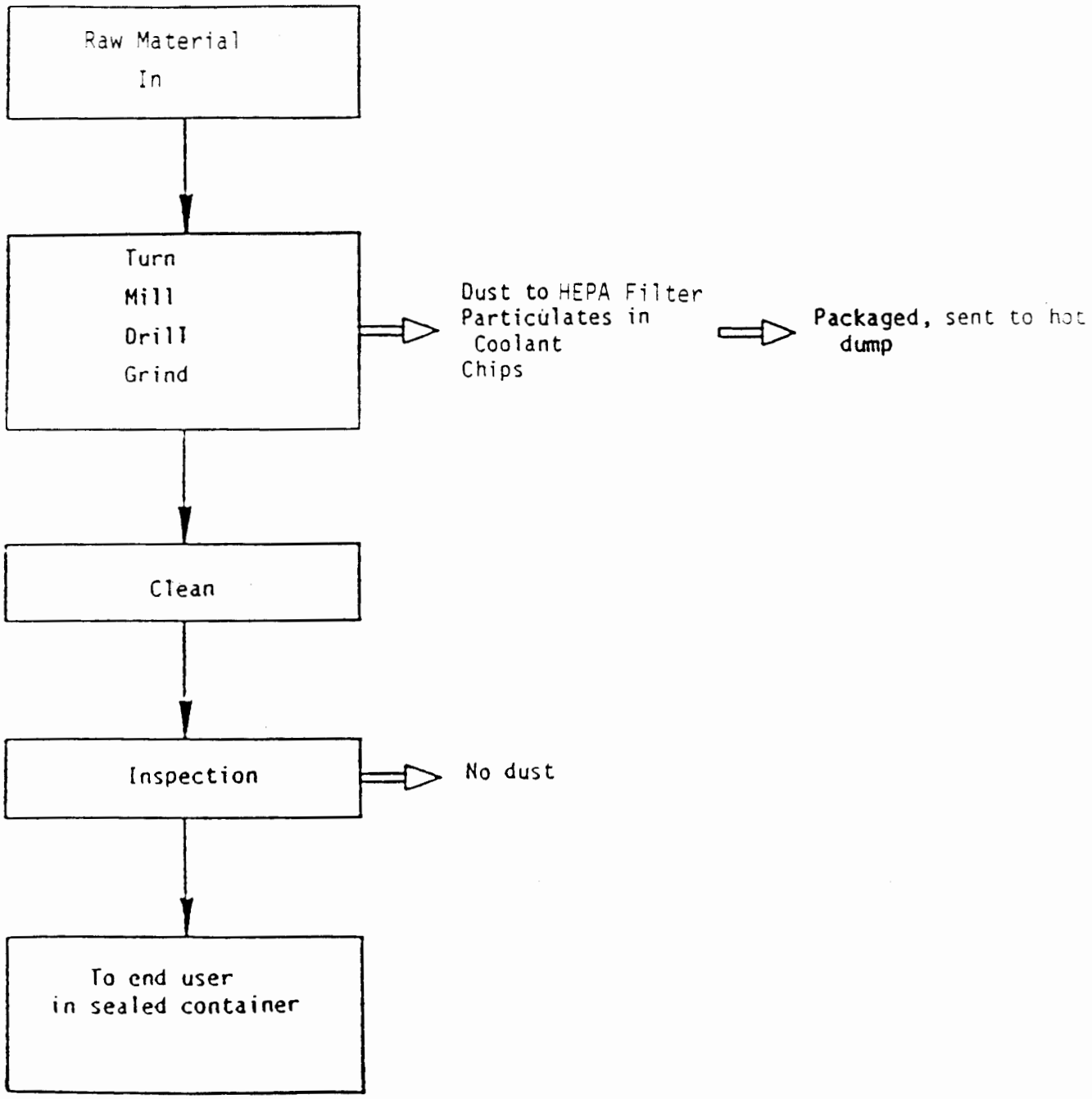

SCALE MOUNTAIN
South Mesa
Sewage Disposal
LOS ALAMOS
Twomile
Water Tank
PAJARITO
NATIONAL
Canyon
Radio Tower
SANTA FE
Twomile
Mesa
Canyon
Canon de
Pajarito
Valle
Threemile
Mesa
BEAMON
Frijoles
Mesa
Escobas

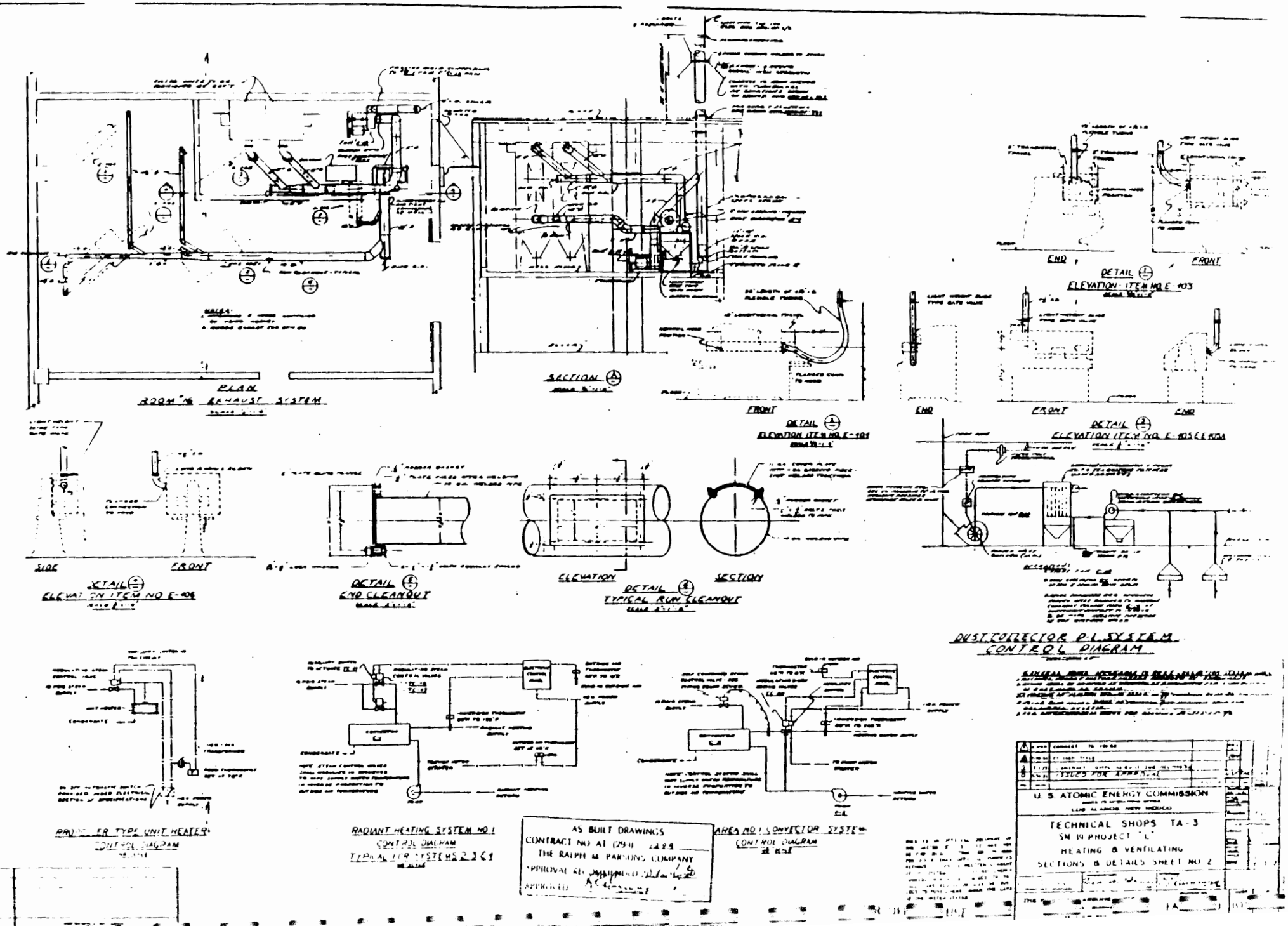


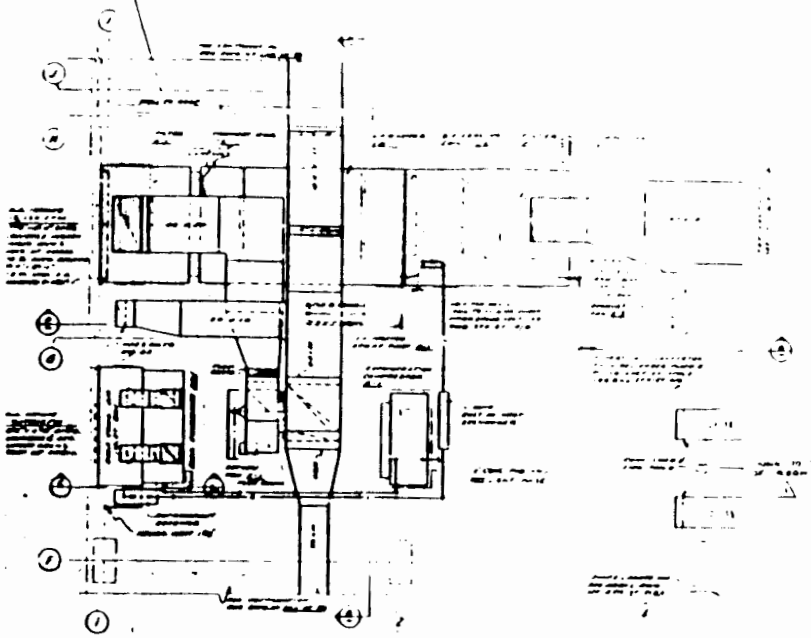
"NOT FOR PUBLIC DISSEMINATION
THIS DOCUMENT CONTAINS INFORMATION

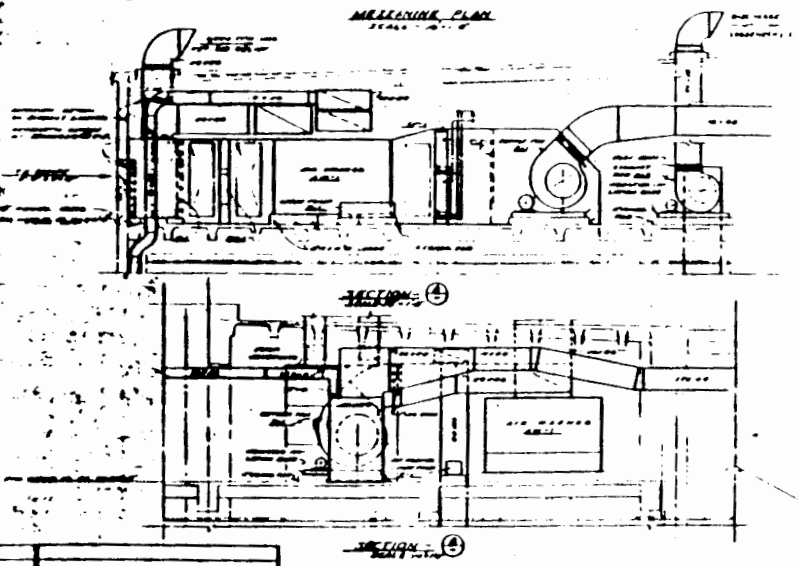

Raw Material
In
Saw to Rough Size
No airborne
Particulates in
Coolant
Chips in sludge
To dump in sealed
containers
Turn
Mill
Drill
Grind
Dust to bag house
Particulates in
Coolant
Chips
Packaged, sent to no
dump
Clean
Inspection
No dust
To end user
in sealed container

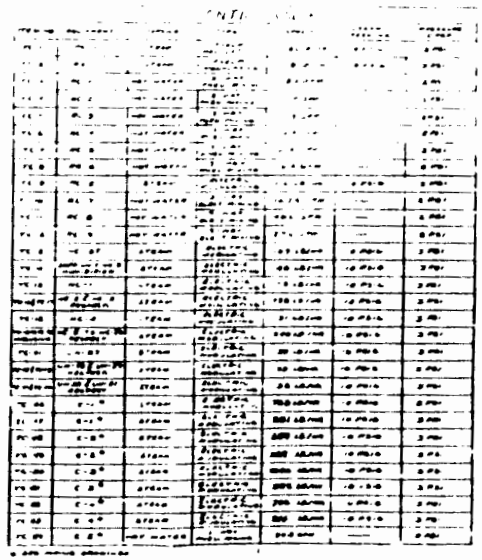
PROCESS PLAN SHOP 13 3e

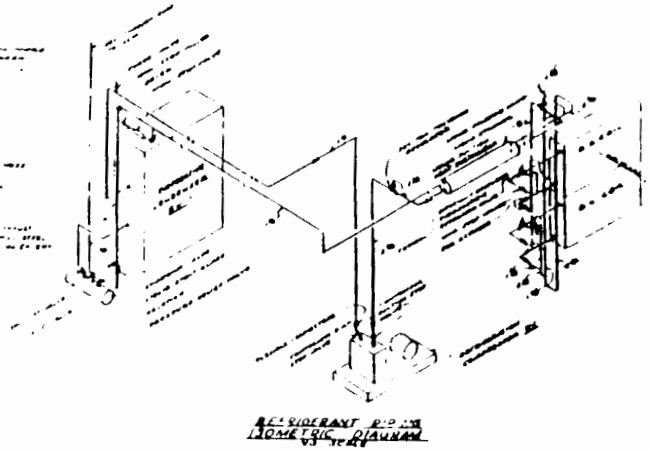



PLAN
ROOM 16 EXHAUST SYSTEM
SECTION
FRONT
DETAIL
ELEVATION ITEM NO E-101
END
FRONT
DETAIL
ELEVATION ITEM NO E-103
END
FRONT
END
DETAIL
ELEVATION ITEM NO E-105 & E-106A
SIDE
FRONT
DETAIL
ELEVATION ITEM NO E-106
DETAIL
END CLEANOUT
ELEVATION
SECTION
DETAIL
TYPICAL RUN CLEANOUT
DUST COLLECTOR P-L SYSTEM
CONTROL DIAGRAM
RADIANT HEATING SYSTEM NO 1
CONTROL DIAGRAM
AREA NO 1 CONVECTOR SYSTEM
CONTROL DIAGRAM
AS BUILT DRAWINGS
CONTRACT NO AT (29-1) 2299
THE RALPH M PARSONS COMPANY
APPROVAL RECOMMENDED
APPROVED
U. S. ATOMIC ENERGY COMMISSION
LOS ALAMOS NEW MEXICO
TECHNICAL SHOPS TA-3
SM 19 PROJECT "L"
HEATING & VENTILATING
SECTIONS & DETAILS SHEET NO 2









EQUIPMENT SCHEDULE

NOTES:

AS BUILT DRAWINGS
CONTRACT NO. AT (29-1) 1628
THE RALPH M. PARSONS COMPANY
APPROVAL RECOMMENDED
APPROVED

U. S. ATOMIC ENERGY COMMISSION

TECHNICAL SHOPS TA-3
SM-33 PROJECT "L"
HEATING & VENTILATING
MEZZANINE PLAN & DETAILS

THE RALPH M. PARSONS COMPANY

SEAKF 3/10

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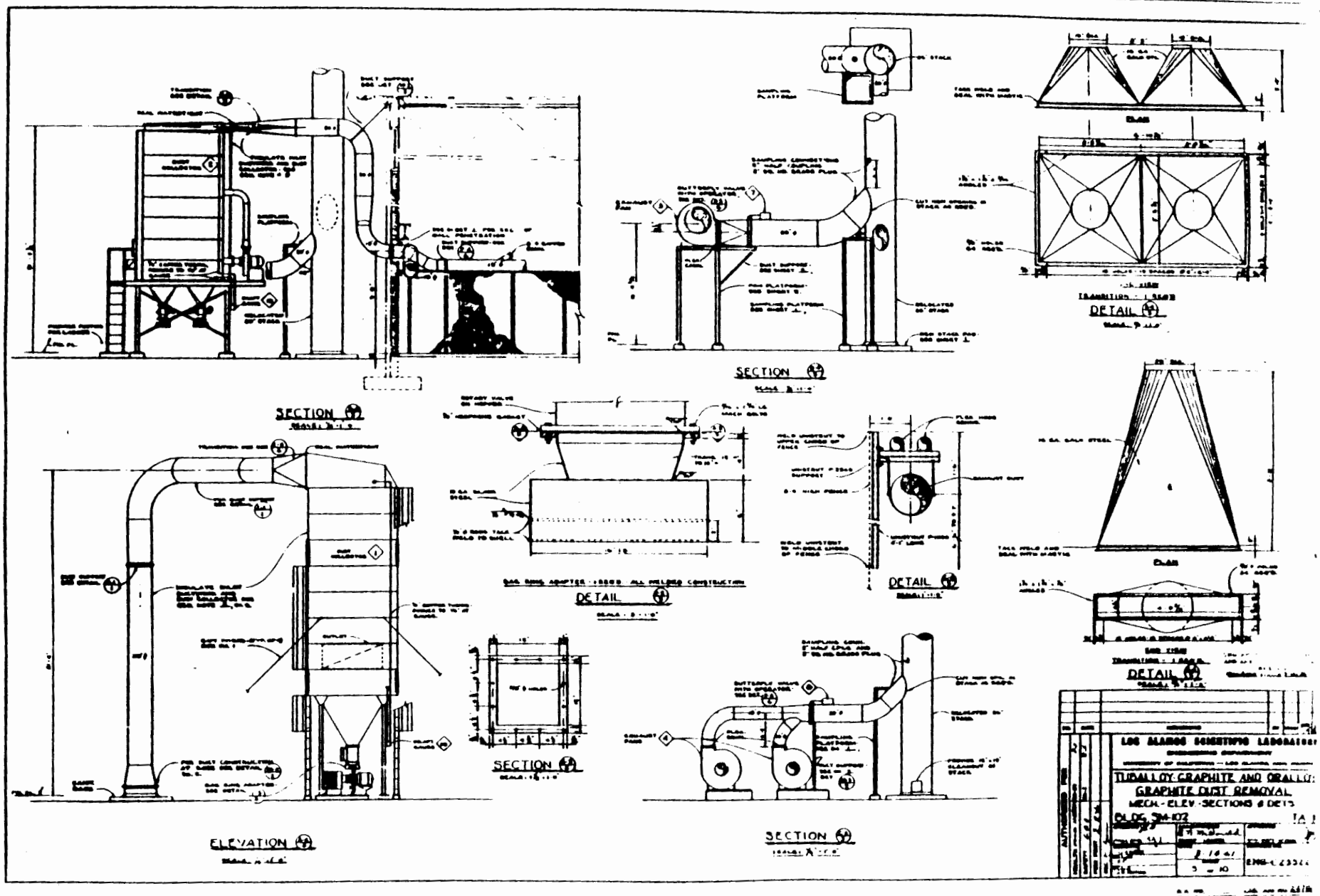
SECTION
SECTION
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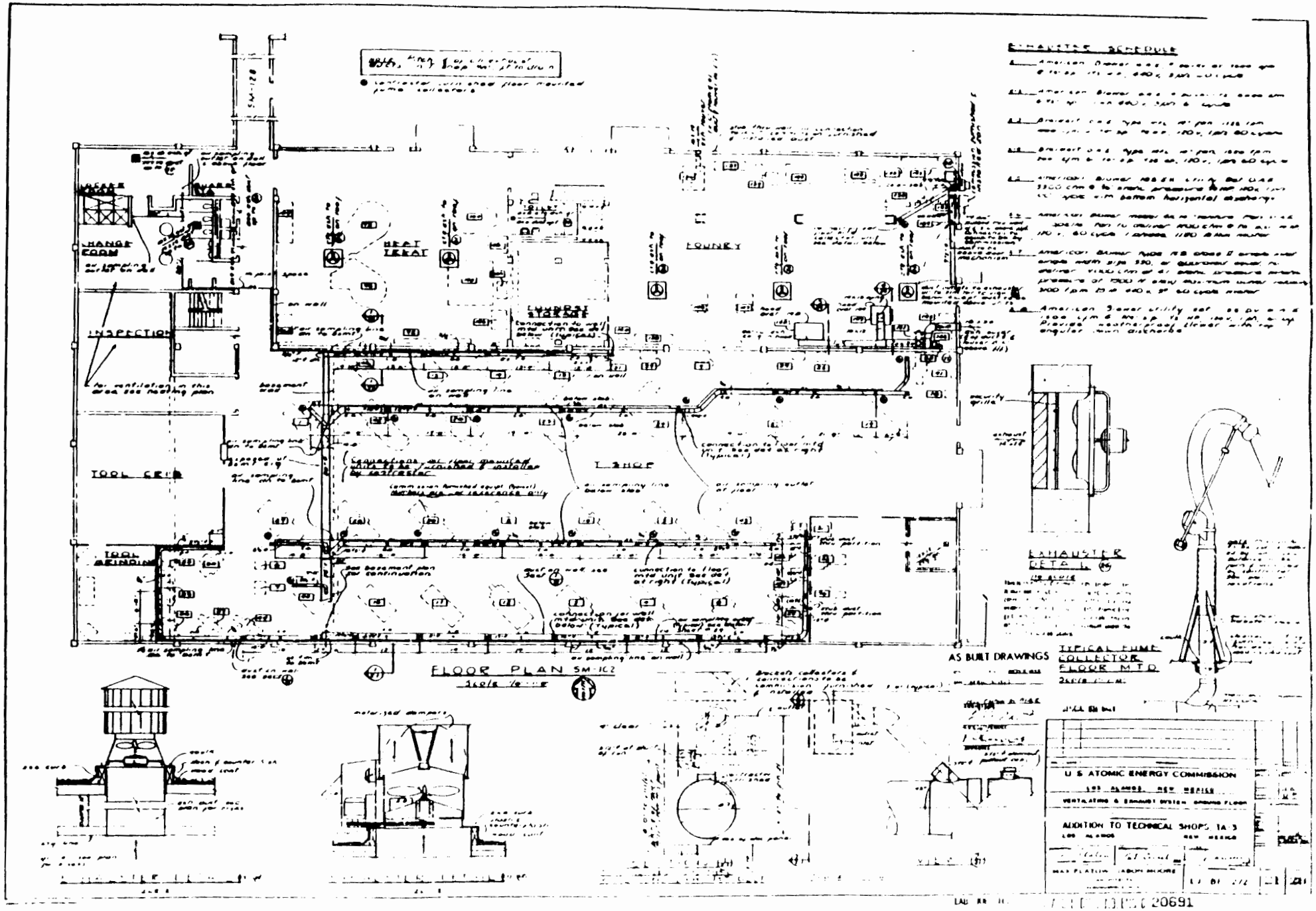
ELEVATION
LOS ALAMOS SCIENTIFIC LABORATORY
TUBALLOY-GRAPHITE AND ORALLOY-GRAPHITE DUST REMOVAL
MECH.-ELEV.-SECTIONS & DETS


EXHAUSTER SCHEDULE
HEAT TREAT
FOUNDRY
INSPECTION
TOOL CRIB
TOOL GRINDING
L SHOP
FLOOR PLAN SM-102
EXHAUSTER DETAIL
AS BUILT DRAWINGS
TYPICAL FUME COLLECTOR FLOOR MTD
U S ATOMIC ENERGY COMMISSION
ADDITION TO TECHNICAL SHOPS TA-3

EMISSION SAMPLING FOR BERYLLIUM PARTICULATES
AT
LOS ALAMOS NATIONAL LABORATORY

TA 3 SM 39
LOS ALAMOS, NEW MEXICO

by
Kramer & Associates

September, 1986

Introduction

Exhaust emissions from the beryllium machining area at TA-3 SM-39 were sampled by Kramer & Associates (125 Eubank NE, Albuquerque, NM 87123) on September 10, 1986, and analysed for total particulate beryllium. The following individuals were among those present during the sampling:

1. Bill Ristau and Gary Kramer - Kramer & Associates
2. Mr. Jim Romero - New Mexico EID
3. Mr. David Nocumson - Los Alamos National Laboratory

Emissions from the machining operation are passed through a baghouse prior to discharge through a circular stack to the atmosphere. Sampling locations are illustrated in Figure 1.

Methods and Procedures

All sampling and analytical procedures used followed those set forth in Methods 103 and 104 respectively of the Code of Federal Regulations (CFR)-40, Parts 61, Appendix B, July, 1984. One of three points on a single traverse was sampled for 120 minutes through a 0.319" nozzle during each test run. The sampling train used was a MISCO Model 7200 Source Sampler which is identical in operation to that shown in the CFR-40, Method 5 (see Figure 2). Probes, nozzles, and associated glassware upstream from the filter were cleaned with acetone which was collected in a jar with lid for transport to the KA laboratory in Albuquerque for analysis. Jars were emptied and rinsed with acetone into beakers for evaporation. Filters were placed in the appropriate beakers after the acetone was evaporated, and the entire sample dissolved in concentrated nitric acid according to the analytical procedures in Method 104 of the CFR-40. Analyses for beryllium was conducted by atomic absorption spectroscopy. All samples were in the custody of Gary Kramer at all times.

Results and Discussion

Test data, and calculated results are summarized in Table 1. Original data are included in Appendix 1; equipment calibration data, and computer program information are listed in Appendix 2.

[illegible] were collected for all samples [illegible] hours actual sampling time. [illegible] occurring continuously during the [illegible] sampling period. The average emission was [illegible] which is less than the maximum [illegible] per hour.

Gary R. Kramer

Gary R. Kramer, PE

TABLE 1

STACK SAMPLING DATA SUMMARY

LOS ALAMOS NATIONAL LABS TA-3 SM-39

SAMPLING DATA	TEST #1	TEST #2	TEST #
ACTUAL METERED CUBIC FEET	102.662	97.501	95.99[illegible]
BAR. PRESSURE (IN HG)	22.68	22.68	22.68
AVG GAS METER TEMP. (F)	69.71	75.18	74.8[illegible]
ML WATER COLLECTED	22.3	24.8	21.8
BERYLLIUM COLLECTED (MG)	<1E-05	<1E-05	<1E-05
CARBON DIOXIDE (%)	0	0	0
OXYGEN IN STACK (%)	20.9	20.9	20.9
NITROGEN IN STACK (%)	78.1	78.1	78.1
STACK PRESSURE (IN HG)	22.68	22.68	22.68
AVE STACK TEMPERATURE (F)	71.87	71.25	70.62
S-PITOT CORRECTION FACTOR	.848	.848	.848
AVE STK VEL PRES (IN H2O)	.4046	.3782	.3699
AREA OF STACK (SQ. FT)	.66	.66	.66
SAMPLING TIME (MINUTES)	120	120	120
[illegible]LE DIAMETER (INCHES)	.319	.319	.319
ORIF DEL P (IN H2O)	1.775	1.531	1.468
CALCULATED RESULTS			
CORRECTED MET VOL (DSCF)	78.07	73.27	72.18
VOL H2O COLLECTED (SCF)	1.04	1.16	1.02
PERCENT H2O IN STACK (%)	1.3	1.5	1.3
MOLE WT STACK GAS (WET)	28.81	28.79	28.81
MOLE WT STACK GAS (DRY)	28.95	28.95	28.95
MOLE FRAC DRY STACK GAS	.987	.985	.987
AVG STACK VELOCITY (FPM)	1587	1483	1449
AVG STACK FLOW (DSCFM)	780	729	714
AVG STACK FLOW (ACFM)	1033	964	943
ISOKINETIC RATIO (%)	99.4	99.9	100.4
BERYLLIUM EMISSION(LB/HR)	<1.3E-08	<1.3E-08	<1.3E-08

FIGURE 1

TA-3 SM-39

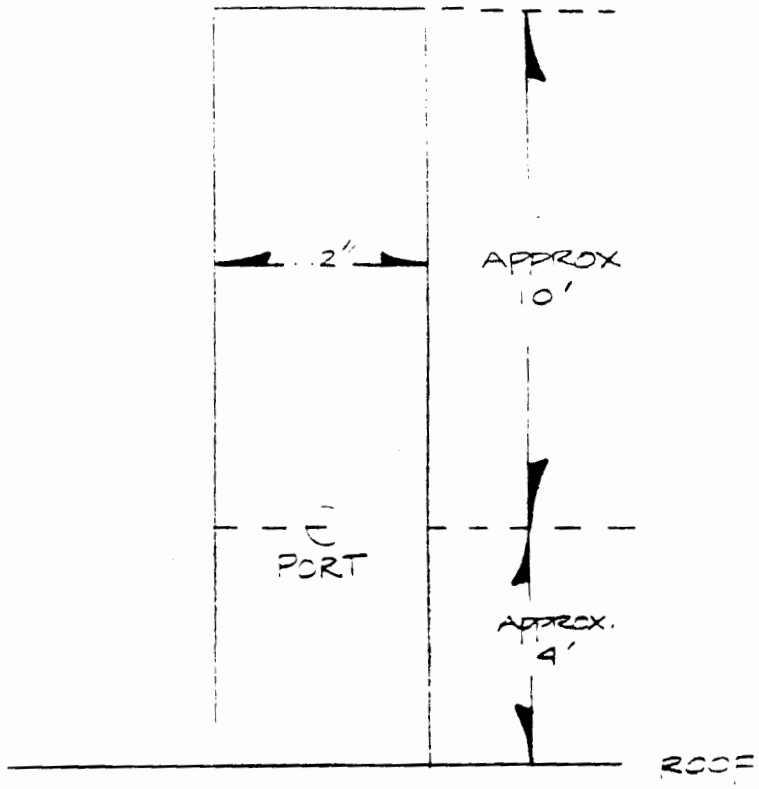


FIGURE 1

SAMPLING LOCATION SCHEMATIC
TA-3 SM-39 BERYLLIUM SOURCE
LOS ALAMOS NATIONAL LABORATORY

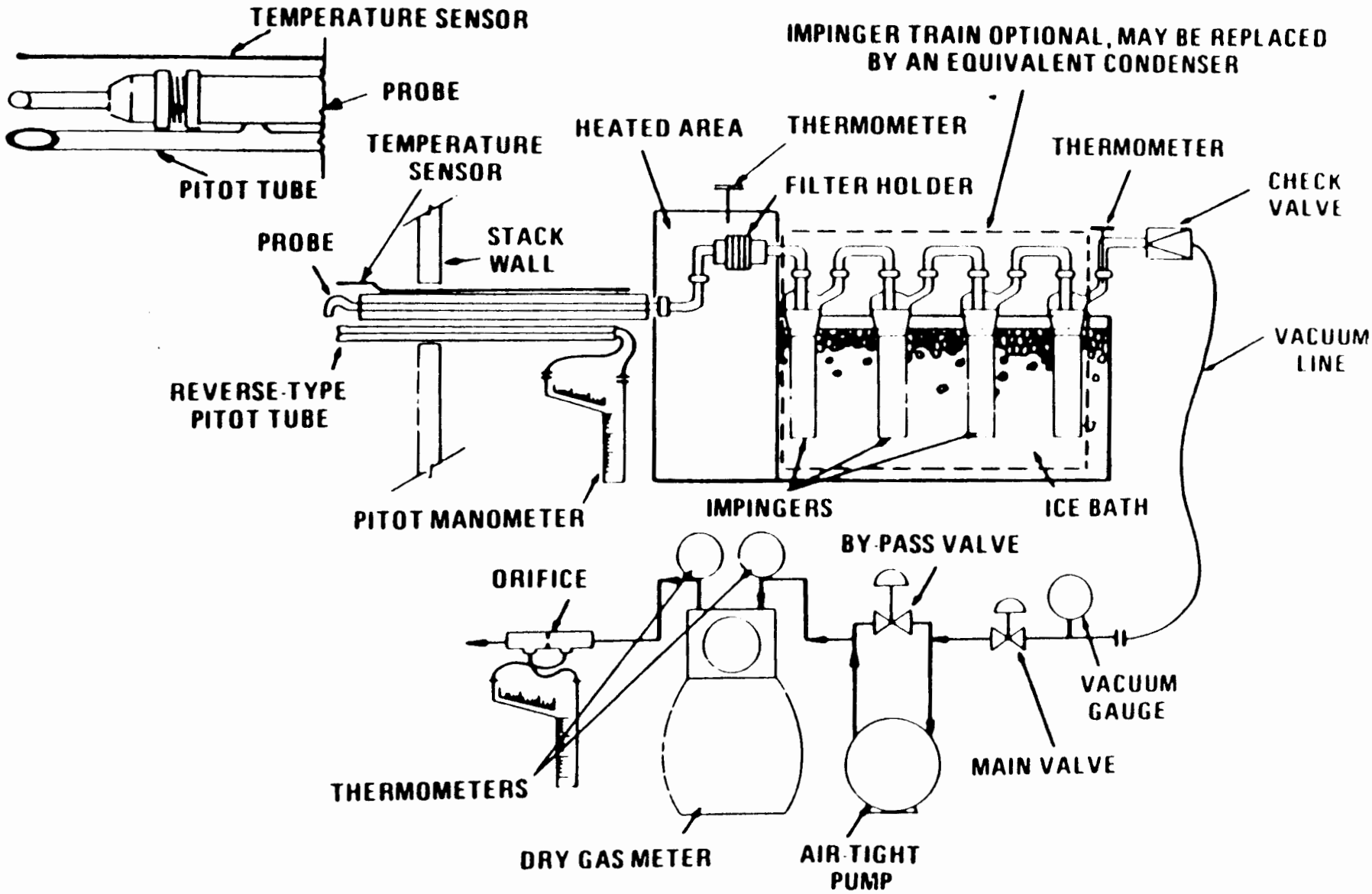


Figure 2 Particulate-sampling train.

APPENDIX 1

ORIGINAL DATA

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA-3 SM 39

Run No. 1 Date 9/10/86 Time 0844 Ambient Temp. °F 55

Bar. Press., in. Hg. 22.68 Stack Location BAGHOUSE DSCHG

Stack Diameter, in. 11" 0.66 Stack Pressure, in Hg 22.68

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 28 Acetone Jar No. 4 Acetone Bkr No. 4

Probe Tip Diameter, in. 0.319 Assumed Moisture, % 1

Probe Length, Ft. 3' Cp 0.848 Δ H@ 1.68

Calculator Setting ΔP = 0.1 / 0.1 ΔH = 1.85 / ΔH = 1.1

Orsat Analysis Data			
CO_2		Air	
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Moisture Content	
Impinger #1	1
Impinger #2	
Impinger #3	
Total initial H_2O	
Net Impinger H_2O	1
Net H_2O in Silica Gel	22.3
Total H_2O Collected	23.3

Leak Test

Initial 0.006 cfm @ 5" Hg

Final 0.012 cfm @ 8" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS Run No. 1

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1	0844	800.907	0.17	1.80	1.80	54	51	2	110	50	70	
	0859	813.681	0.17	1.80	1.80	65	59	2	110	50	70	
	0914	826.41	0.16	1.75	1.75	75	63	2	100	55	70	
	0929	839.150	0.16	1.75	1.75	73	69	2	100	55	70	
	0944	851.96	0.16	1.75	1.75	79	70	2	100	55	70	
	0959	864.89	0.16	1.75	1.75	78	70	2	100	55	75	
	1014	877.600	0.165	1.80	1.80	80	71	2	100	60	75	
	1029	890.025	0.165	1.80	1.80	79	73	2	105	60	75	
	1044	903.569										
		102.662										
			$\overline{\sqrt{\Delta P}}$ =	1.775	1.775	72.9	65.8	2	103	55	71.9	
			0.4046			69.3					531.9	
						529.3						

kramer & associates

placed displaced

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 3 SM 39

Run No. 2 Date 9/10/86 Time 1122 Ambient Temp. °F 65

Bar. Press., in. Hg. 22.68 Stack Location _____

Stack Diameter, in. 11 Stack Pressure, in Hg 22.68

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 33 Acetone Jar No. 5 Acetone Bkr No. 5

Probe Tip Diameter, in. 0.319 Assumed Moisture, % 1

Probe Length, Ft. 3 Cp 0.848 Δ H@ 1.68

Calculator Setting ΔP = 0.1 ΔH = 1.08

Orsat Analysis Data

CO_2			
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Moisture Content

Impinger #1	
Impinger #2	
Impinger #3	
Total initial H_2O	
Net Impinger H_2O	
Net H_2O in Silica Gel	24.8
Total H_2O Collected	24.8

Leak Test

Initial 0.006 cfm @ 8" Hg.

Final 0.006 cfm @ 8" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA-3 SM 39 Run No. 2

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
2	1122	903.723	0.15	1.6	1.6	65	65	<1	80	45	70	
@ 6"	1137	915.94	0.145	1.55	1.55	71	68	<1	160	50	75	
	1152	928.09	0.145	1.55	1.55	80	70	<1	130	50	70	
	1207	940.23	0.145	1.55	1.55	80	71	<1	120	50	70	
	1222	952.53	0.140	1.50	1.50	77	71	<1	120	50	75	
	1237	964.61	0.140	1.50	1.50	82	77	<1	110	55	70	
	1252	976.80	0.140	1.50	1.50	82	80	<1	110	55	70	
	1307	988.99	0.140	1.50	1.50	83	81	<1	110	55	70	
	1322	1.224										
		97.501										

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PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 3 SM 39

Run No. 3 Date 9/10/86 Time 1401 Ambient Temp. °F 70

Bar. Press., in. Hg. 22.68 Stack Location BAGHOUSE

Stack Diameter, in. 11" Stack Pressure, in Hg 22.68

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 32 Acetone Jar No. 6 Acetone Bkr No. 6

Probe Tip Diameter, in. 0.319 Assumed Moisture, % 1

Probe Length, Ft. 3 Cp 0.848 Δ H@ 1.68

Calculator Setting _____ _____

Orsat Analysis Data				Moisture Content	
CO_2	AIR			Impinger #1	
$CO_2 + O_2$				Impinger #2	—
$CO_2 + O_2 + CO$				Impinger #3	—
				Total initial H_2O	
				Net Impinger H_2O	
				Net H_2O in Silica Gel	21.8
				Total H_2O Collected	21.8

Leak Test

Initial 0.002 @ 6" Hg

Final 0.002 @ 6" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA3 SM 39 Run No. 3

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
3	1401	1.458	0.14	1.5	1.5	70	70	<1	80	50	70	
9"	1416	13.49	0.14	1.5	1.5	80	75	<1	100	50	70	
	1431	25.52	0.14	1.5	1.5	80	75	<1	120	50	70	
	1446	37.58	0.13	1.4	1.4	82	75	<1	120	50	70	
	1501	49.36	0.135	1.45	1.45	76	73	<1	100	50	70	
	1516	61.34	0.135	1.45	1.45	76	70	<1	100	50	70	
	1531	73.27	0.135	1.45	1.45	77	73	<1	100	50	70	
	1546	85.32	0.14	1.50	1.50	75	70	<1	100	50	75	
	1601	97.45										
		95.496										

0.1 0.2 offset

kramer & associates

ACETONE WASH AND FILTER WEIGHT RECORDS

Facility LOS ALAMOS NAT. LAB TA 3 SM 39

Testing Dates 9/10/86

Date of Tare Weighing A.A. ANALYSES Weighed By WTR

Date of Final Weighing METHOD 104 Weighed by _____

I.D. No.	MG/L A.A. DATA ~~Tare Wt.~~	ML SAMPLE ~~Final Wt (1)~~	Final Wt (2)	Net Wt., mg
3	<0.001	10		$<1 \times 10^{-5}$
4	<0.001	10		$<1 \times 10^{-5}$
5	<0.001	10		$<1 \times 10^{-5}$
BLANK	<0.001	10		—
STD. 0.0025	0.002	10		—
STD. 0.005	0.005	10		—

APPENDIX 2

CALIBRATION DATA AND COMPUTER PROGRAMS

DRY METER AND ORIFICE CALIBRATION DATA

Date 9/8/86 Location EID - AIR QUALITY Barometric Pressure, P_b 23.51 in Hg

Control Module Serial No. MISCO 7249 Dry Gas Meter No. 83

Orifice Setting ΔH	Metered Gas Volume, Ft^3		Meter Temperature, ^oF		Metering Time Minutes t	Accuracy Ratio G *	Orifice Coefficient $\Delta H_@$ *
	Wet Test V_w	Dry V_d	Wet Test T_w	Dry(ave) T_d			
0.50	5.000	4.952	64.5	61	10.617	1.0014	1.605
1.00	5.000	4.984	64.5	65	7.733	1.002	1.689
1.50	10.000	10.046	64.5	72	12.75	1.005	1.700
2.00	9.000	9.157	64.5	77	9.917	1.000	1.677
2.50	10.000	10.278	64.5	81	9.917	0.996	1.686

$$* \; G = \frac{V_w \, P_b \, (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(T_w + 460)}$$

$$H_@ = \frac{0.0317 \, \Delta H}{P_b (T_d + 460)} \left(\frac{(T_w + 460)t}{V_w} \right)^2$$

G = ratio of accuracy of wet test meter to dry test meter

$\Delta H_@$ = orifice pressure differential that gives 0.75 cfm of air at 70^oF and 29.92 inches Hg

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PITOT TUBE CALIBRATION SHEET

Pitot Tube No. JOY Pitot Length 3' Calibration Date 2/6/84

Wind Tunnel Location UNM WIND TUNNEL Calibrated By GRK

Nozzle Size: 1/8" SMALL 3/16"

P_L	P_S	C_P
0.18	0.25	0.840
0.36	0.495	0.844
0.81	1.1	0.849
1.3	1.75	0.853
0.645	0.86	0.857

AVE : 0.849

Nozzle Size: 1/4", 1/8" (LARGE)

P_L	P_S	C_P
0.205	0.280	0.847
0.41	0.56	0.847
0.86	1.20	0.838
0.65	0.87	0.856

AVE: 0.847

Nozzle Size: 3/8"

P_L	P_S	C_P
0.21	0.29	0.842
0.47	0.64	0.848
0.865	1.20	0.840
1.4	1.9	0.850

AVE: 0.845

Nozzle Size: 1/2"

P_L	P_S	C_P
0.22	0.305	0.841
0.41	0.55	0.855
0.60	0.80	0.857
1.4	1.9	0.850

AVE : 0.851

Nomenclature: P_L = Velocity pressure (inches water) measured with Standard Pitot

P_S = Velocity pressure (inches water) measured with S Pitot .

C_P = S pitot correction factor = $0.99(P_L/P_S)^{1/2}$

THERMISTOR CALIBRATION DATA

TEMPERATURE DEGREES C

	Meter				
Reference	In	Out	Impinger	Oven	Probe
3.3	3.3	3.3	1.6	--	4.0
26.0	25.5	26.0	26.6	24.5	23.5
96.0	94.5	94.5	94.0	98.0	95.0

READY.

LANL TA-3 SM-39 COMPUTER PROGRAM

READY.

```
5 FOR I=1TO3
10 READ RN(I),H2O(I),CUFT(I),CO(I),O2(I),MG(I),R(I)
20 READ PTS(I),BP(I),SP(I),CP(I),AR(I),TPD(I),TM(I)
26 A=0:B=0:C=0:D=0:E=0
27 FOR Z=1 TO PT(I) STEP1
28 READ DP,DH,T,TT,SK
29 A=A+SQR(DP):B=B+DH:C=C+T:D=D+TT:E=E+SK
35 NEXT Z
40 PA(I)=INT(10000*A/PTS(I))/10000:HA(I)=INT(1000*B/PTS(I))/1000
42 TA(I)=INT(100*(C+D)/(2*PTS(I)))/100:SAT(I)=INT(100*E/PTS(I))/100
45 VMSTD(I)=INT(1764.7*CUFT(I)*(BP(I)+HA(I)/13.6)/(TA(I)+460))/100
50 VW(I)=INT(4.707*H2O(I))/100
55 BWO(I)=INT(1000*VW(I)/(VW(I)+VMSTD(I)))/10
57 N2(I)=99-CO(I)-O2(I)
60 MW(I)=INT((44*CO2(I)+40+32*O2(I)+28*(99-CO2(I)-O2(I)))*(1-BW(I)/100)+18*BWO
))/100
62 DMW(I)=INT(44*CO2(I)+40+32*O2(I)+28*(99-CO2(I)-O2(I)))/100
   VSA(I)=INT(60*85.49*CP(I)*PA(I)*(SQR((SAT(I)+460)/(MW(I)*SP(I)))))
   NUM(I)=17.316*VMSTD(I)*(SAT(I)+460)*60
72 DEN(I)=VSA(I)*(100-BWO(I))*.01*SP(I)*TPD(I)*TPD(I)*TM(I)
73 ISO(I)=INT(10*NUM(I)/DEN(I))/10
75 QSA(I)=INT(10.6283*VSA(I)*(100-BWO(I))*AREA(I)*SP(I)/(60*(SAT(I)+460)))
77 F(I)=1-BWO(I)/100
80 CS(I)=0.0154*MGMS(I)/VMSTD(I)
85 G(I)=INT(100000000*CS(I)*QSA(I)*.0001428*60)/100000000
86 AC(I)=INT(VSA(I)*AR(I)*((100-BWO(I))/100))
90 NEXT I
99 DATA 1,22.3,102.662,0,20.9,0.00001 ,0
100 DATA 8 ,22.68,22.68,.848,.66  ,.319,120
101 DATA .17,1.80,54,51,70
102 DATA .17,1.80,65,59,70
103 DATA .16,1.75,75,63,70
104 DATA .16,1.75,73,69,70
105 DATA .16,1.75,79,70,70
106 DATA .16,1.75,78,70,75
107 DATA .165,1.80,80,71,75
108 DATA .165,1.80,79,73,75
199 DATA 2,24.8, 97.501,0,20.9,0.00001 ,0
200 DATA 8 ,22.68,22.68,.848,.66  ,.319,120
201 DATA .15,1.6,65,65,70
202 DATA .145,1.55,71,68,75
203 DATA .145,1.55,80,70,70
    DATA .145,1.55,80,71,70
    DATA .14,1.5,77,71,75
206 DATA .14,1.5,82,77,70
207 DATA .14,1.5,82,80,70
208 DATA .14,1.5,83,81,70
299 DATA 3,21.8, 95.996,0,20.9,0.00001 ,0
300 DATA 8 ,22.68,22.68,.848,.66  ,.319,120
301 DATA .14,1.5,70,70,70
```

```
[illegible]
306 DATA .135,1.45,76,7[illegible],7[illegible]
307 DATA .135,1.45,77,77,70
308 DATA .14,1.5,75,7[illegible],75
499 PRINT ISO(1),ISO(2),ISO(3):STOP
    OPEN4,4:CMD4
    PRINT CHR$(27)"G";CHR$(14)"                    TABLE 1"
505 PRINTCHR$(10)CHR$(14)"       STACK SAMPLING DATA SUMMARY"
510 PRINT CHR$(10)CHR$(14)"LOS ALAMOS NATIONAL LABS TA-3 SM-39"
512 PRINT CHR$(10)
513 PRINT CHR$(10)
515 PRINT CHR$(10);CHR$(16)"07SAMPLING DATA";
516 PRINT CHR$(16)"36TEST #1          TEST #2          TEST #3"
520 PRINT CHR$(10)"ACTUAL METERED CUBIC FEET",CU(1);
521 PRINT CHR$(16)"50";CU(2);CHR$(16)"66";CU(3)
525 PRINT"BAR. PRESSURE (IN HG)     ",BP(1);CHR$(16)"50";BP(2);CHR$(16)"66";BP(3
530 PRINT"AVG GAS METER TEMP. (F)   ",TA(1);CHR$(16)"50";TA(2);CHR$(16)"66";TA(3
533 PRINT"ML WATER COLLECTED        ",H2(1);CHR$(16)"50";H2(2);CHR$(16)"66";H2(3
535 PRINT"BERYLLIUM COLLECTED (MG)  ",MG(1);CHR$(16)"50";MG(2);CHR$(16)"66";MG(3
540 PRINT"CARBON DIOXIDE (%)        ",CO(1);CHR$(16)"50";CO(2);CHR$(16)"66";CO(3
545 PRINT"OXYGEN IN STACK  (%)      ",O2(1);CHR$(16)"50";O2(2);CHR$(16)"66";O2(3
)
550 PRINT"NITROGEN IN STACK  (%)    ",N2(1);CHR$(16)"50";N2(2);CHR$(16)"66";N2(3
557 PRINT "STACK PRESSURE (IN HG)   ",SP(1);CHR$(16)"50";SP(2);CHR$(16)"66";SP(3
560 PRINT"AVE STACK TEMPERATURE (F)",SA(1);CHR$(16)"50";SA(2);CHR$(16)"66";SA(3
565 PRINT"S-PITOT CORRECTION FACTOR",CP(1);CHR$(16)"50";CP(2);CHR$(16)"66";CP(3
570 PRINT"AVE STK VEL PRES (IN H2O)",PA(1);CHR$(16)"50";PA(2);CHR$(16)"66";PA(3
574 PRINT"AREA OF STACK (SQ. FT)    ",AR(1);CHR$(16)"50";AR(2);CHR$(16)"66";AR(3
580 PRINT"SAMPLING TIME (MINUTES)   ",TM(1);CHR$(16)"50";TM(2);CHR$(16)"66";TM(3
585 PRINT"NOZZLE DIAMETER (INCHES)  ",TP(1);CHR$(16)"50";TP(2);CHR$(16)"66";TP(3
590 PRINT"AVG ORIF DEL P (IN H2O)   ",HA(1);CHR$(16)"50";HA(2);CHR$(16)"66";HA(3
    PRINT CHR$(10)CHR$(10);CHR$(16)"03CALCULATED RESULTS"
    PRINT " "
600 PRINT"CORRECTED MET VOL (DSCF)  ",VM(1);CHR$(16)"50";VM(2);CHR$(16)"66";VM(3
605 PRINT"VOL H2O COLLECTED (SCF)   ",VW(1);CHR$(16)"50";VW(2);CHR$(16)"66";VW(3
610 PRINT"PERCENT H2O IN STACK (%)  ",BW(1);CHR$(16)"50";BW(2);CHR$(16)"66";BW(3
615 PRINT"MOLE WT STACK GAS (WET)   ",MW(1);CHR$(16)"50";MW(2);CHR$(16)"66";MW(3
620 PRINT"MOLE WT STACK GAS (DRY)   ",DM(1);CHR$(16)"50";DM(2);CHR$(16)"66";DM(3
625 PRINT"MOLE FRAC DRY STACK GAS   ",F(1);CHR$(16)"50";F(2);CHR$(16)"66";F(3)
630 PRINT"AVG STACK VELOCITY (FPM)  ",VS(1);CHR$(16)"50";VS(2);CHR$(16)"66";VS(3
635 PRINT"AVG STACK FLOW (DSCFM)    ",QS(1);CHR$(16)"50";QS(2);CHR$(16)"66";QS(3
640 PRINT"AVG STACK FLOW (ACFM)     ",AC(1);CHR$(16)"50";AC(2);CHR$(16)"66";AC(
645 PRINT"ISOKINETIC RATIO (%)      ",IS(1);CHR$(16)"50";IS(2);CHR$(16)"66";IS(3
655 PRINT"BERYLLIUM EMISSION(LB/HR)",G(1);CHR$(16)"50";G(2);CHR$(16)"66";G(3)
700 FOR Y=1 TO 7
710 PRINT CHR$(10)
715 NEXT Y
720 PRINT"------------------------------ KRAMER & ASSOCIATES ------------------"
721 PRINT"----------"
723 PRINT CHR$(10);CHR$(10);CHR$(10);CHR$(10)
725 CLOSE 4:END

READY.
```

PERMIT 636

TONEY ANAY
GOVERNOR

DENISE D. FORD
DIRECTOR

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 827-0070

March 19, 1986

CERTIFIED MAIL NO. P 176 061 928
RETURN RECEIPT REQUESTED

Mr. Harold E. Valencia
Area Manager
Dept. of Energy
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Dear Mr. Valencia:

This letter constitutes Air Quality Permit Number 636 which is issued to the Los Alamos National Laboratory pursuant to Section 74-2-7 NMSA and Air Quality Control Regulation 702, to construct and operate a beryllium machine shop in TA-3, Building 102 near Los Alamos, New Mexico. The facility is be be constructed and operated in accordance with the application dated November 7, 1985 and is subject to the following conditions:

1. Beryllium emissions to the atmosphere shall not exceed 4×10^{-7} pounds per hour (7×10^{-8} tons per year).

2. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Division, for a minimum of two years.

The Division has performed an analysis to verify the emissions from the proposed machine shop and has performed dispersion modeling using emission estimates from the facility to determine the impact on the ambient air. Based on the analysis and the control measures described in your application, the Division has determined that the provisions of the Air Quality Control Act, Air Quality Control Regulation 751, and the ambient air quality standards will be met. However, in order to assure this, conditions have been placed on the permit. The Air Quality Control Act allows the Division to place reasonable restrictions other

than those relating to emission rates. The reasons for these conditions are explained below:

Condition 1 regarding the emissions from the beryllium processing operation corresponds to the emission limit specified in the application. The Air Quality Control Act allows for placement of an emission limit and requires that such a limit be only as restrictive as the more stringent of the following: 1) the extent necessary to meet the requirements of the Air Quality Control Act and the Federal Act: or 2) the emission rate specified in the permit application. The emission rate specified in the permit application has been determined to be more stringent in this case.

Condition 2 corresponds to the reporting and record keeping requirements contained in AQCR 751 which incorporates the National Emission Standards for Hazardous Air Pollutants (NESHAPS), by reference.

Section 74-2-7.K NMSA 1978 provides that if the Division issues a permit with conditions, and the applicant is dissatisfied with the action taken by the Division, the applicant may request a hearing before the Environmental Improvement Board. The request must be made in writing to the Director of the Environmental Improvement Division within thirty days after receipt of the permit.

There are additional requirements contained in Air Quality Control Regulation 702 that should be noted:

Section M provides that the Division may cancel a permit if the construction is not commenced within one year from the date of issuance or, if during the construction, work is suspended for a period of one year.

Section P requires the permitted source to notify the Division in writing of the:

1. anticipated date of initial startup of a source not more than sixty days nor less than thirty days prior to the date, and

2. actual date of initial startup of a source within fifteen days after the startup date.

AQCR 751 requires each owner or operator to test emissions from the new source within 90 days of startup.

A performance test is required for beryllium and shall be performed in accordance with EPA Reference Method 103 or 104 as outlined in 40 CFR Part 61 Appendix B. The permittee should arrange a pretest meeting with the Division at least two weeks prior to the date of testing and should advise the Division of any variations to the procedures. The results should be submitted to the Division within forty-five days after the completion of testing.

The permit and conditions apply in the event of any change in control or ownership of the facility. In the event of any such change in control or ownership, the permittee should notify the succeeding owner of the permit and conditions.

If you have any questions regarding this permit please contact Bob Kirkpatrick or Jim Shively.

Sincerely,

J. David Duran

J. David Duran
Acting Bureau Chief

JDD:lo

xc: Tito Madrid, District Manager, District II
Gerald Silva, Health Program Manager, Espanola
Bruce Nicholson, Program Manager, Modeling and Analysis
Jack Divita, EPA Region VI, Dallas

to:

ED-AIR QUALITY BUREAU
NEW SOURCE REVIEW UNIT
P.O. BOX 968
SANTA FE, NM 87504-0968
TELEPHONE: 505-9840020

Revised: 2/80

FOR ED U. ..Y
Application No.
App. Rec'd. Date:
Date App. Complete:
Reviewed by:
Approved/Disapproved:
Date:
AQCR: County:
Date St. Operation:
Date Perf. Test/Insp:

APPLICATION FOR PERMIT AND CERTIFICATE OF REGISTRATION

GENERAL FORM

FOR

SOURCES LOCATED WITHIN THE STATE OF NEW MEXICO [1]

Please answer all questions applicable to your specific business, operation, and products.
Use the abbreviation "N.A." for "not applicable" wherever appropriate.
Submittal of process flow sheets, equipment descriptions, and other information may be required to complete this application. [2]

SECTION 1 - GENERAL DATA

1. Name of Company: Los Alamos National Laboratory 2. Date Submitted: November 7, 1985

3. Company Address: Los Alamos, New Mexico Phone: 667-5105

Person to Contact: Harold E. Valencia Title: DOE/LAAO Manager Phone: 667-5105

4. Name, Address and location of new plant or modification: see attachment A

Is U.S.G.S. quadrangular map or equivalent attached? [3] Yes

5. Describe briefly the type and capacity of the plant and nature of modifications (if applicable) and products: [4]

see attachment A

Date of Anticipated Start of Construction: see attachment A

6. Class of land at plantsite (private, State, Federal, Indian, etc.): Federal

7. Is this permanent? Yes If not, how long is it expected to be occupied? N.A. Date of Anticipated Startup: see attachment A

8. Normal operating schedule: (1) 8-10 hours per day, (2) intermittent (1) 5 days per week, (2) intermittent (1) 4 weeks per month, (2) intermittent (1) 12 months per year, (2) intermittent

9. Specify maximum operating periods: Shops 4 and 13 will occasionally operate 12 hrs/day.

10. Specify percent annual production by quarters: Dec. - Feb. 25, Mar. - May 25, June - Aug. 25, Sep. - Nov. 25

Notes: (1) Submitted in accordance with Air Quality Control Regulation No. 702, Permits, or Regulation No. 703, Registration.
(2) Notification of the need for other additional information required to complete this application will be given to the applicant by the Air Quality Bureau within 10 days after the receipt of the application. Filing of the application will not be considered to be complete until the date of submittal of such additional information. The granting or denial of the permit will be made within 30 days after this completion date.
(3) Regulation No. 702, Section D, Item 5 requires that this application be accompanied by a U. S. Dept. of the Interior Geological Survey quadrangular map or equivalent map showing the exact location of the proposed construction or modification.
(4) Include site plan showing location of all stacks or other emission points and property or fence lines for [illegible] or movable equipment. Include perin[illegible] number [illegible] ive [illegible] of [illegible] par[illegible]

ON 2 - FUEL USAGE N.A.

Unit No. [1]	Type of Fuel Burning Equipment [2]	Equipment Manufacturer	Rated Capacity Million BTU/Hr. [3]	Fuel Type [5]	FUEL DATA [4], [9] Amount Per Year [6]	Heating Value [7]	Percent Sulfur [8]	Percent Ash [8]

Notes: [1] Give a different number to represent each unit; give corresponding data opposite the same number in Sections 3 through 9.
[2] Boiler, oven, furnace, gas engine, gas turbine, etc. Include model number, configuration, etc., attach separate sheets if necessary.
[3] Give maximum rate as well as normal rate, if different.
[4] If auxiliary fuel or different fuel used "on standby", also give data for that fuel.
[5] Natural gas; bituminous coal; No. 6 fuel oil; refinery gas; etc. Include condition of fuel (pulverized, slurry, etc. if applicable).
[6] Million cubic feet of gas; tons of coal; gallons of fuel oil; pounds of LPG; etc.
[7] Higher heating value; Btu/lb, Btu/gal or Btu/MCF (MCF = 1000 std. cu. ft.)
[8] Sulfur and ash contents should be maximum percentages by weight. Sulfur and ash contents are not required if sweet natural gas is used as the fuel.
[9] Attach process flow sheet, including material balance for the combustion plant, if available.

SECTION 3 - MATERIALS PROCESSED AND PRODUCED

A. RAW MATERIALS PROCESSED

Unit No. [1]	Type	Composition [2]	Condition [3]	Quantity [4] (Specify Units)
1	Semi-finished Be parts	Mainly pure Be; 20% Be and copper; and, 2-3% BeO	Solid Be parts	Classified Secret
2	"	Pure Be and radioactive Be	"	"

B. MATERIALS PRODUCED (DO NOT INCLUDE EMISSIONS AND PRODUCTS LISTED IN SECTIONS 4, 8, AND 9)

1	Finished Be parts	same as A	Solid Be parts	Classified Secret
2	"	"	"	"

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Give each major component with weight percentages and chemical compositions if known.
[3] Give typical particle size distribution for aggregates, pumice dust, etc. and average moisture content if known.
[4] Pounds or tons per hour, gallons per minute, or standard [illegible]

Section 4 - UNIT EMISSIONS (PRIOR TO AIR POLLUTION CONTROL EQUIPMENT, OR TO ATMOSPHERE, IF UNCONTROLLED)

Unit No. (1)	Process or Operation (2)	Quantity of Gases Discharged to Air Pollution Control Equipment (3)	ESTIMATES OF AIR POLLUTANTS								Basis of Estimates (7)
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 (7)				
			Type (4)	Quantity (5)	Type (4)	Quantity (5)	Type (4)	Quantity (5)	Type (4)	Quantity (5)	
1	Be Machining	see stack data	Be	11×10^{-3} lb/hr 11.4×10^{-3} T/yr		lb/hr T/yr				lb/hr T/yr	Process Material Balances
2	"	"	"	1.4×10^{-3} lb/hr 2.4×10^{-4} T/yr		lb/hr T/yr				lb/hr T/yr	"
				lb/hr T/yr		lb/hr T/yr				lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr				lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr				lb/hr T/yr	

Notes:
(1) Give a different number to each unit corresponding to unit numbers in Sections 2 through 9.
(2) Smelter furnace, asphalt plant drier, iron-melting cupola, cement manufacture-dry process, solvent cleaner, etc.
(3) Gas flow rate in actual cubic feet per minute, if applicable. State temperature (°F), pressure, (psia) and percent moisture (if applicable). Enter "see stack data" if discharge goes directly to the stack.
(4) Particulate matter (give chemical description), Sulfur Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Oxides, etc.
(5) Quantities at maximum production rates. T = tons (2000 lb.)
(6) If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(7) From process material balances, field tests by plant or equipment manufacturer, EPA emission factors (AP-42), other.

Section 5 - AIR POLLUTION CONTROL EQUIPMENT, EMISSIONS TO ATMOSPHERE (1)

Also attach process flow sheets and equipment layout and assembly drawings necessary to describe all air pollution control equipment.

Unit No. (2)	Air Pollution Control Equipment		EMISSIONS TO ATMOSPHERE (3)						Air Pollution Control Equipment Collection Efficiency	
			Pollutant No. 1		Pollutant No. 2		Pollutant No. 3 (7)			
	Type (4)	Manufacturer and Model No.	Type (5)	Quantity (6)	Type (5)	Quantity (6)	Type (5)	Quantity (6)	% by Weight	How Determined (8)
1	Dynamic dry precipitator	American Air Filter	Be	4×10^{-6} lb/hr 4×10^{-6} T/yr		lb/hr T/yr		lb/hr T/yr	65	Manufacturer's Rating
	Baghouse	American Wheelabrator Corp.		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	99.9	"
2	HEPA	Flanders Size Z820	"	4×10^{-7} lb/hr 7×10^{-8} T/yr		lb/hr T/yr		lb/hr T/yr	99.97	"
3	Cyclones	Carter Day and Bin-o-matic		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		

Notes:
(1) Attach additional sheets as needed, to list all control equipment.
(2) Corresponding to numbers in Sections 2 through 9.
(3) Cyclone, scrubber, electrostatic precipitator, baghouse, etc.
(4) Estimated emissions after gases have passed through control equipment.
(5) Particulate matter, etc. (See Note 4, Section 4)
(6) Quantities at maximum production rates. T = tons (2000 lbs.)
(7) If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(8) Field test results, manufacturers rating, etc.

N 5 - CONTINUED

Capital Costs (Optional):
Approximate expected capital investement of new or modified air pollution control equipment: $ --
Estimated yearly operation and maintenance costs for air pollution control equipment: $ --

SECTION 6 - STACK DATA - Include drawings or sketches (plan view and elevations) of any buildings or equipment in close proximity to stacks.

Unit No.	Stack Height, Ft.[1]	Inside Diameter, Ft.	EXIT GAS CONDITIONS[2]			SAMPLING PORTS		
			Temperature °F	Velocity Ft./Sec.	Moisture % by Volume	Number	Size	Location[3]
1	54	.917	70	37.5	1	None	N.A.	N.A.
2	45.	3	70	19.3	1	"	"	"

Notes: [1] Height above ground level.
[2] If conditions are not at actual stack exit, specify location for which estimates are made.
[3] Example: 2 ports at 90°, 25' from top.

What provisions are made for accessibility to stack sampling ports? N.A.

SECTION 7 - EMISSION MEASUREMENT EQUIPMENT N.A.

Unit No.	Pollutant	Type of Instrument[1]	Manufacturer - Model No.	Range[2]	Sensitivity	Accuracy

Notes: [1] Ultra Violet Photometric Analyzer, NDIR Photometer, Opacity Meter, EPA Sampling Train, etc.
[2] 0-1000 ppm, 0-50 $\mu g/m^3$, 0-100% opacity, etc.

Sec[illegible] 8 - HAZARDOUS AIR POLLUTANTS[1] OTHER TOXIC CHEMICALS, AND [illegible]

A. [illegible]the any hazardous air pollutants and toxic chemicals used or [illegible]ed in plant processes.[2]

Unit[3]	Description of Chemical[4]	Quantity Emitted to Atmosphere[5]	How, Where Emitted[6]
1	Be	4×10^{-6} tons/yr	See Sections 4-6
2	"	4×10^{-7} tons/yr	"

Notes: [1] Asbestos, beryllium, mercury, vinyl chloride, benzene, radionuclides, any others specified by Federal EPA.
[2] List other chemicals considered harmful in small amounts of concentrations and not covered in Sections 4 & 5. (E.g., Arsenic and cadmium cpds.)
[3] Give unit number from Section 4 if previously listed; if not, describe source of toxic emissions.
[4] Give trade name or common name and chemical composition if known.
[5] Give in lb. per hr., and tons (2000 lb) per year.
[6] If emitted in separate stack, give stack conditions; if part of another stack flow, specify which one.

B. Describe sources and characteristics of any odors emitted from plant processes: N.A.

SECTION 9 - WASTE PRODUCT DISPOSAL (SOLID AND LIQUID WASTES, AND AUXILIARY INCINERATION EMISSIONS NOT COVERED IN SECTIONS 4 OR 5)

A. Auxiliary Incineration Operation: N.A.
Normal on-site combustion operating schedule: _____ hours per day, _____ days per week, _____ weeks per year.
Seasonal or peak combustion operating periods (specify): _____

B. Waste Products or Emissions

Unit No.[1]	Waste Material: Type[2]	Waste Material: Amount[3]	Method of Disposal[4]	Incinerator Capacity lb. per Hr.	Auxiliary Fuel Used[5]	Type and Efficiency of Air Cleaning Equipment[6]	Estimate of Air Pollutants, if any: Type[7]	Estimate of Air Pollutants, if any: Quantity per Year[3]
1	Be Waste	see attachment A /hr. /yr.	see attachment A	N.A.	N.A.	N.A.	N.A.	N.A. /hr. " /yr.
2	"	see attachment A /hr. /yr.	"	"	"	"	"	" /hr. " /yr.
		/hr. /yr.						/hr. /yr.

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Waste paper, wood chips, rubbish, garbage, acids, oils, etc.
[3] Pounds, tons, or gallons.
[4] Incinerator, single chamber; Incinerator, double chamber; sanitary landfill; etc.
[5] Give type and quantity used in incinerator or other burner.
[6] Give general type (cyclone, scrubber, etc.) if any, weight efficiency.
[7] Give major pollutants (ash, smoke, SO_2, etc.).

SECTION 10 - CERTIFICATION

I, the undersigned, a responsible officer or authorized representative of the applicant company, certify that, to the best of my knowledge, the information stated on this application, together with associated drawings, specifications and other data, give a true and complete representation of the planned new plant or modifications to an existing plant with respect to air pollution sources and control equipment. I also understand that any significant omissions, errors, or misrepresentations in these data will be cause for revocation of part or all of this permit.

[illegible]

NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION/AIR QUALITY BUREAU/ PERMIT APPLICATION/ATTACHMENT A

Section 1 - General Data

4. Mechanical Fabrication Division (MED) beryllium (Be) operations located at: (1) TA-3-[illegible], Room 1[illegible], Shop 4, operated by MED-1; and, (2) TA-3-10[illegible], Shop 13, Room 11[illegible], also operated by MED-1. The numbering, (1) and (2), will be used to refer to these 2 operations throughout this permit application.

5. Be machining operations producing small quantities of Be parts which are classified Secret Restricted Data. (1) Shop 4: Be is machined on 3 lathes, 2 mills, a pneumolathe, 2 surface grinders, a saw, a jig bore, and an electical discharge machine. This operation is to be modified. New machines are to be added and the shop layout is to be modified. (2) Shop 13: Be machined intermittently on lathes, horizontal boring mill, CNC lathe 921, and saws. Be machining took place during approximately 30 days in 1984.

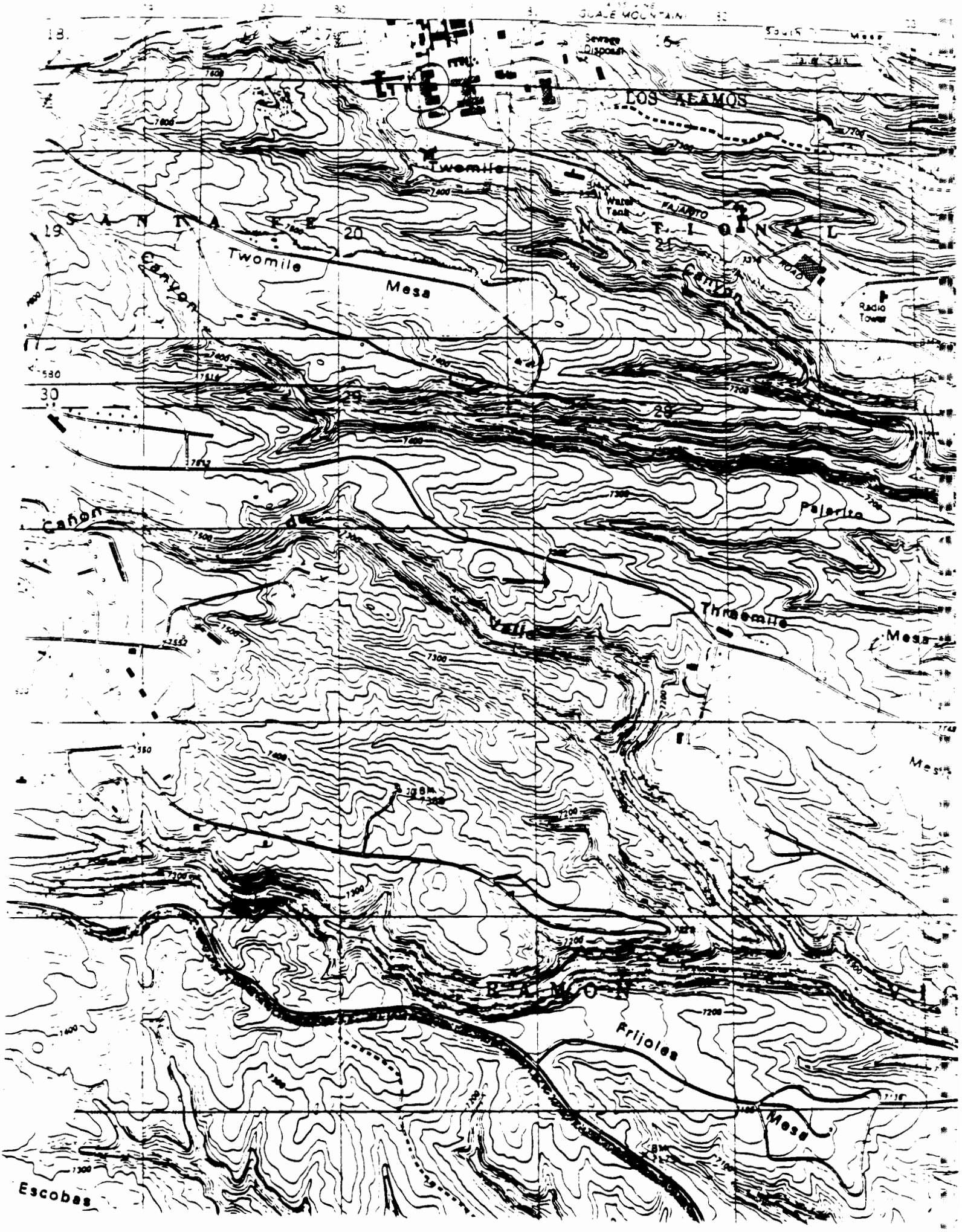
Date of Anticipated Start of Construction: This applies only to Shop 4 which is to be modified (see above). Construction is to begin upon receipt of an approved permit.

7. Date of anticipated start-up: (1) Shop 4: Be operation original start-up date was in 1953. Start-up of modified operation to begin approximately 10 days after receipt of an approved permit. (2) Shop 13: 1976.

Section 9 - Waste Product Disposal/B. Waste Products or Emissions

Waste Material/Amount: (1) Shop 4: 10-12 boxes (2'x1'x1') per year and one 55-gallon drum per year. (2) Shop 13: less than 15 gallons of chips per year.

Method of Disposal: Disposal at a facility permitted under the Resource, Conservation and Recovery Act.


LOS ALAMOS
Sewage Disposal
Water Tank
FAJADITO
ROAD
Radio Tower
Twomile
Canyon
Mesa
Canyon
Pajarito
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Valle
Threemile
Mesa
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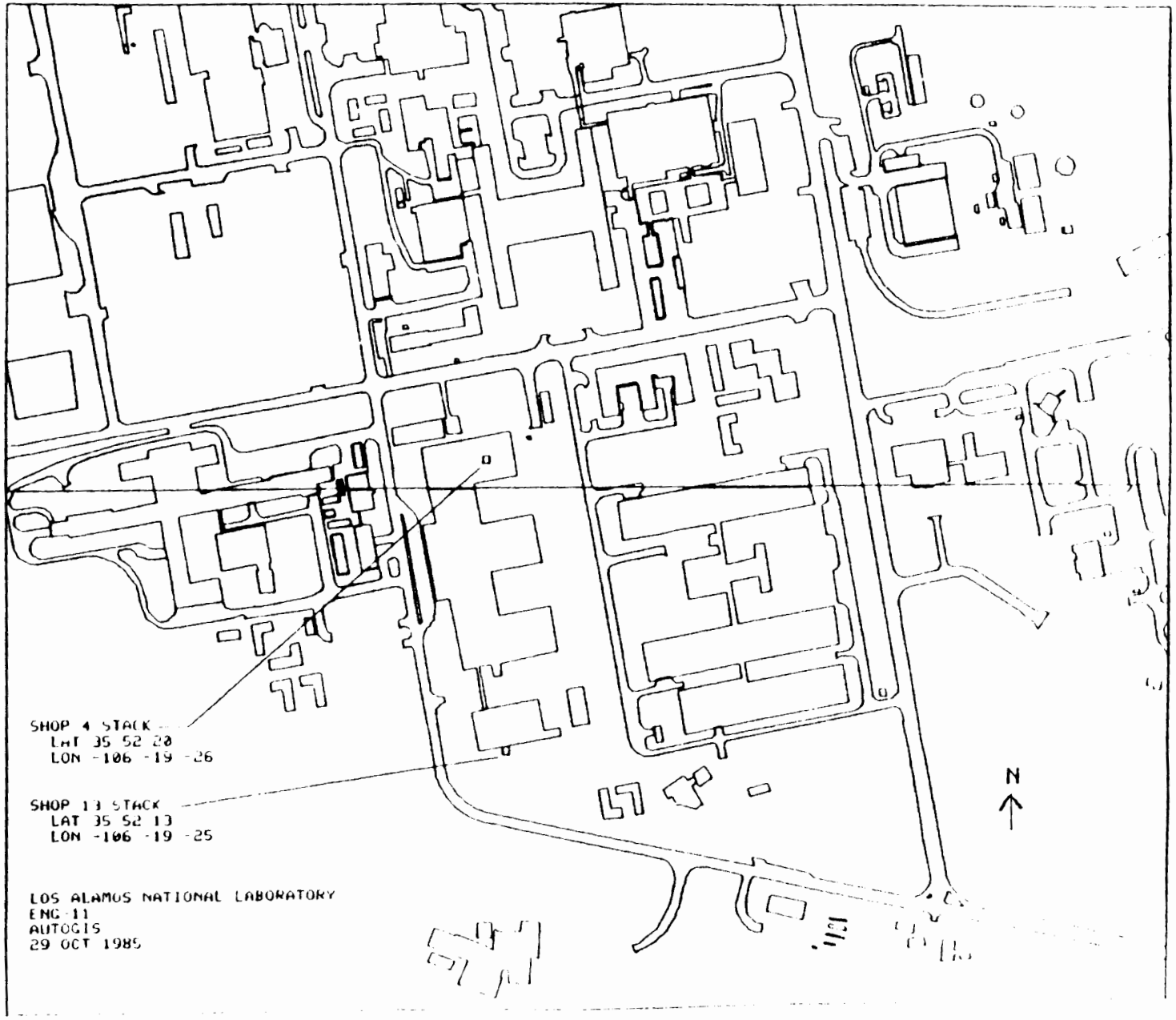
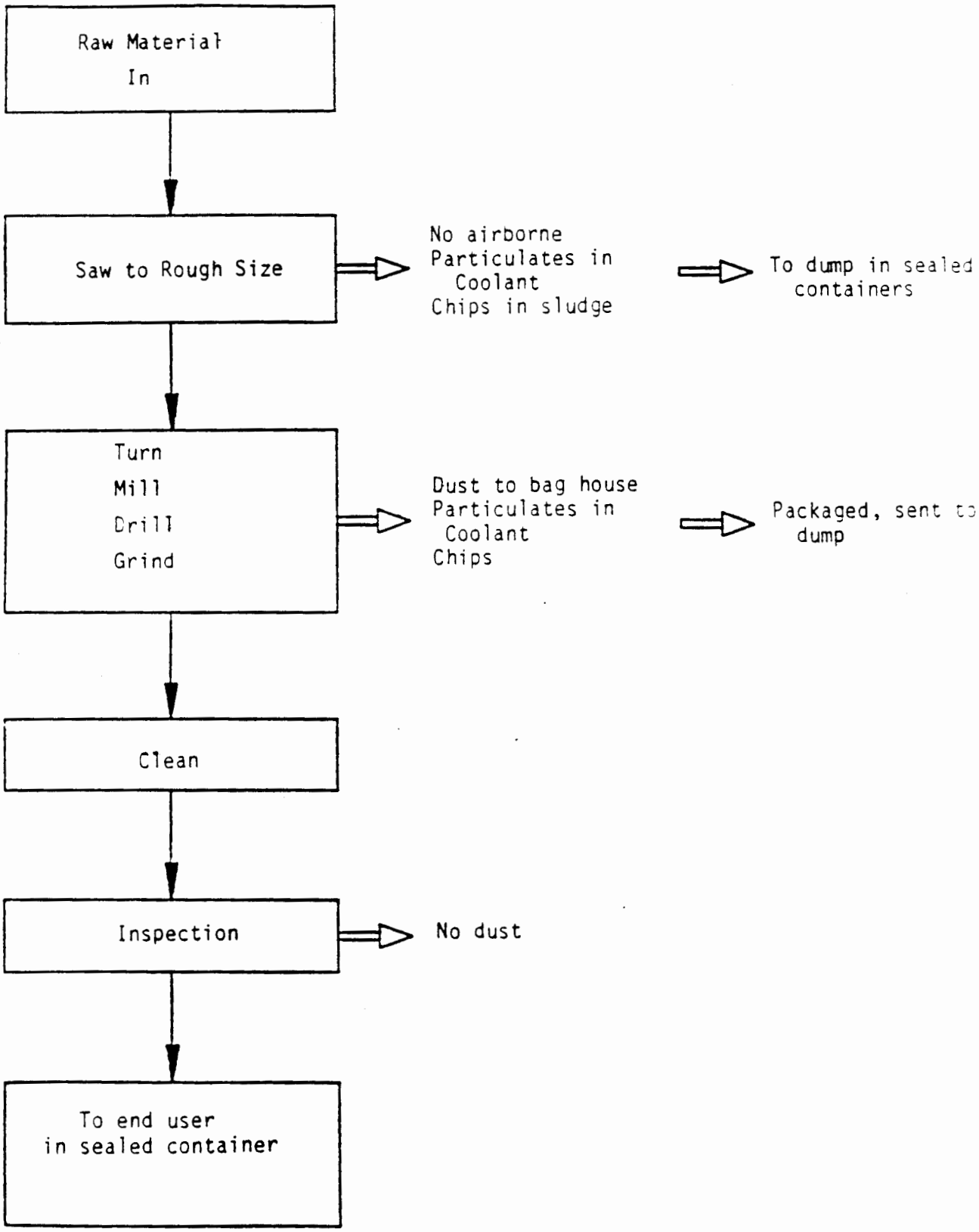
RAMON
Frijoles
Mesa
Escobas

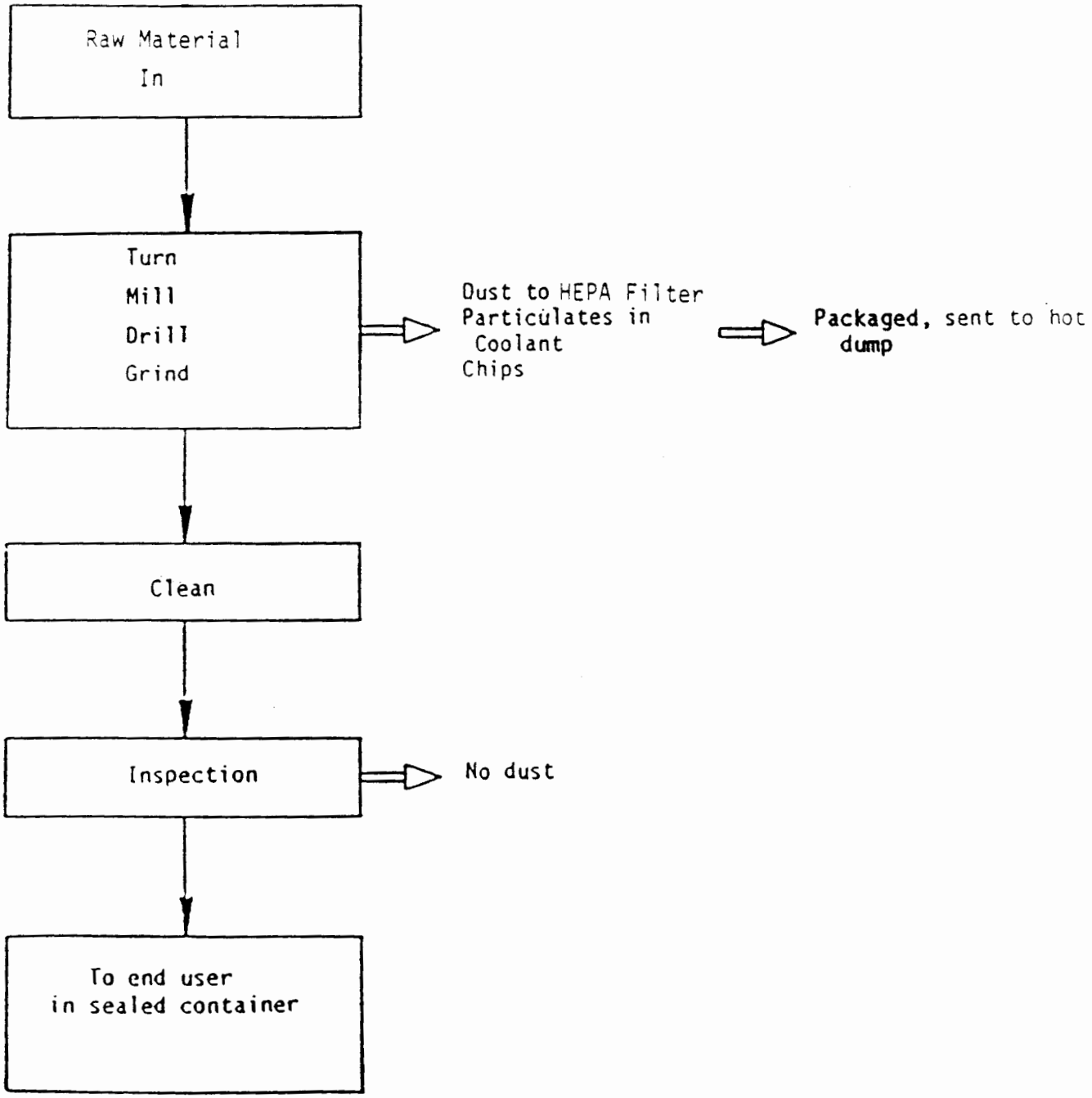


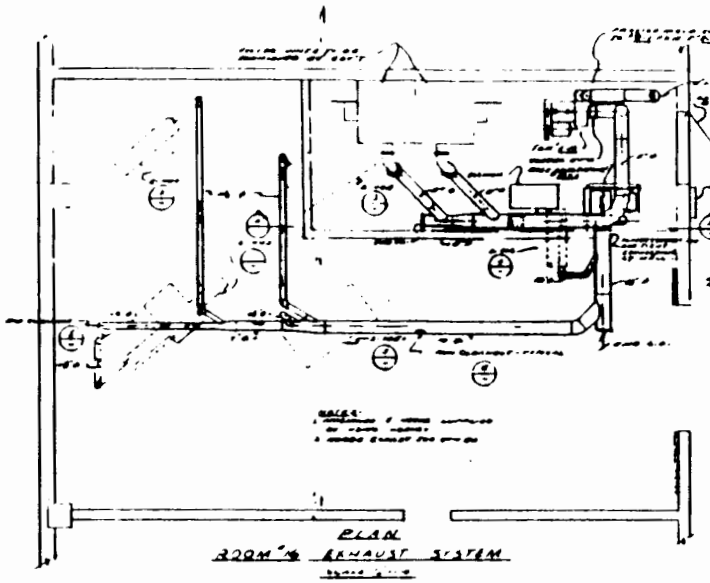
"NOT FOR PUBLIC DISSEMINATION
THIS DOCUMENT CONTAINS INFORMATION
THAT MAY BE SUBJECT TO SECTION 148

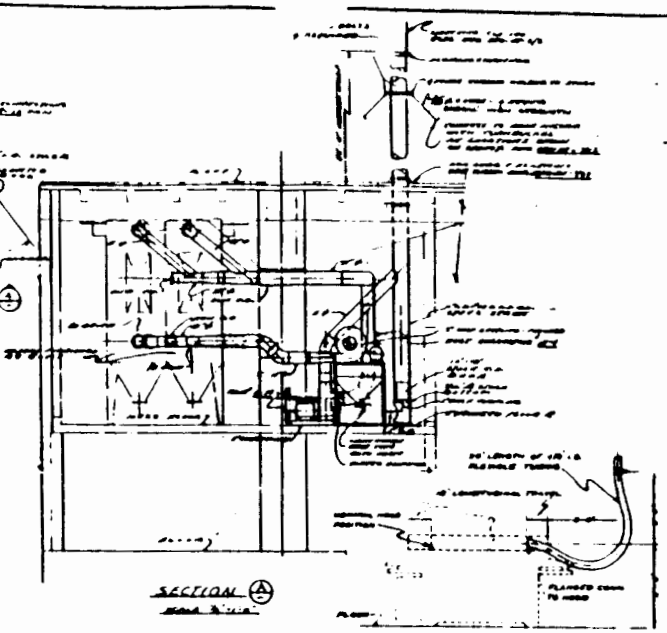
PROCESS PLAN SHOP 4 Be

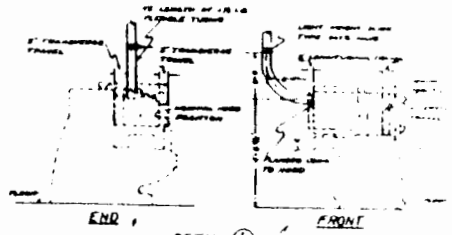


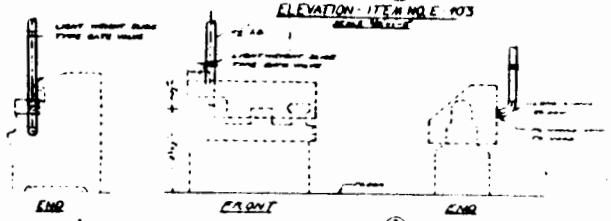
PROCESS PLAN SHOP 13 Be

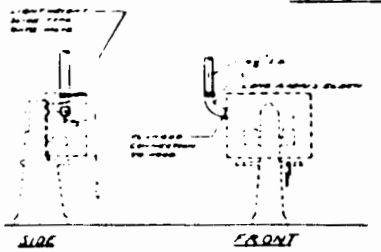


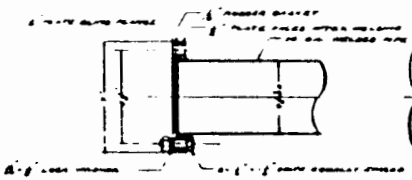


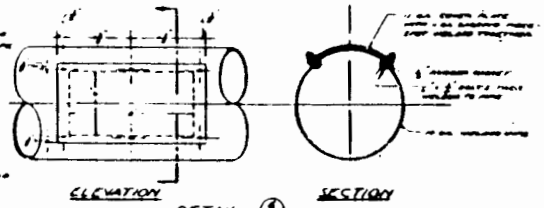


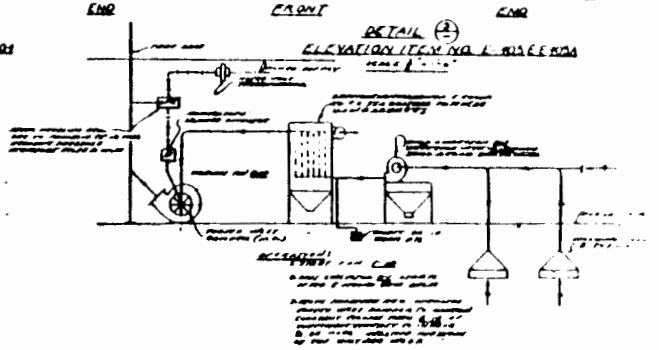


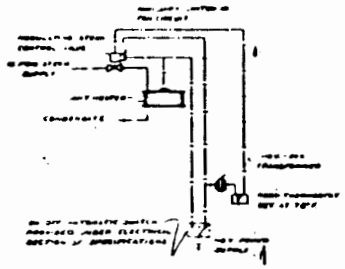


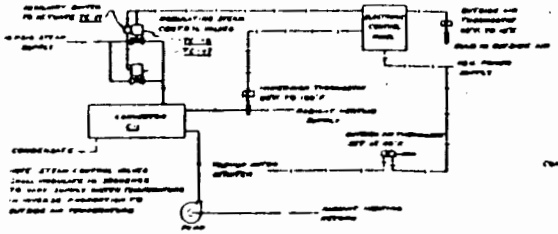


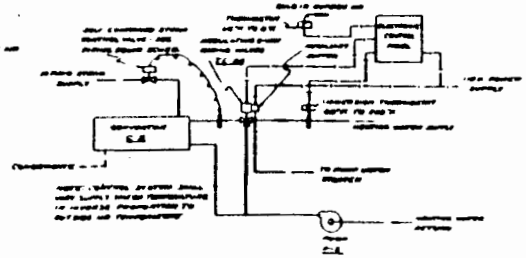












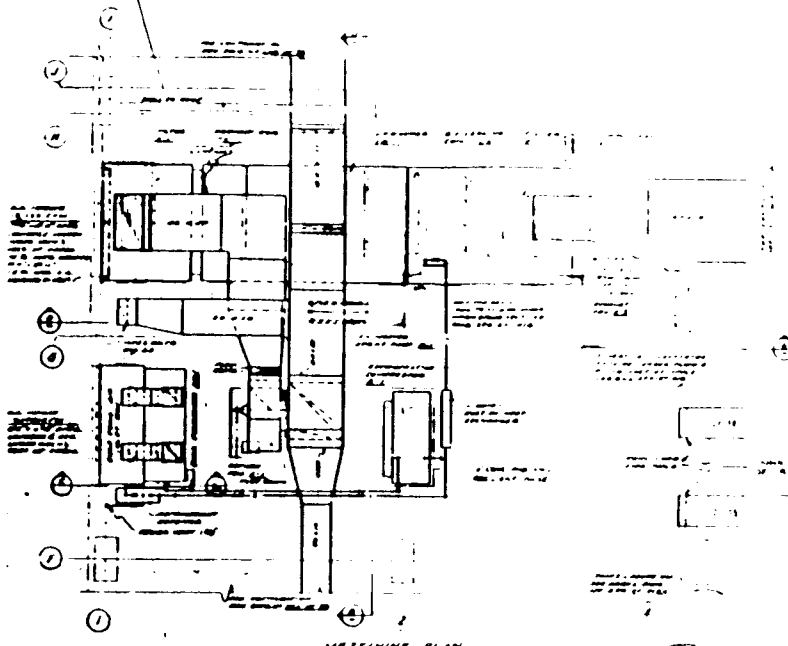
AS BUILT DRAWINGS
CONTRACT NO AT (29-1) - 1284
THE RALPH M PARSONS COMPANY
APPROVAL RECOMMENDED
APPROVED

U S ATOMIC ENERGY COMMISSION
LOS ALAMOS NEW MEXICO

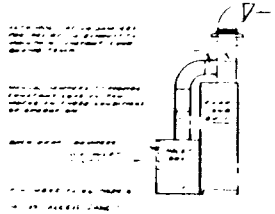
TECHNICAL SHOPS TA-3
SM 19 PROJECT "L"
HEATING & VENTILATING
SECTIONS & DETAILS SHEET NO 2

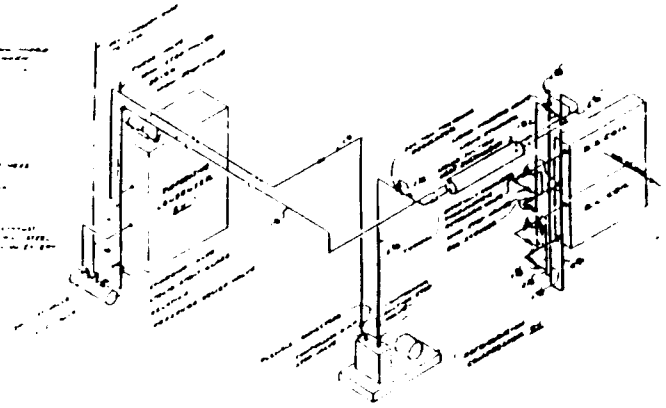
THE RALPH M PARSONS COMPANY

FOR OFFICIAL USE



MEZZANINE PLAN

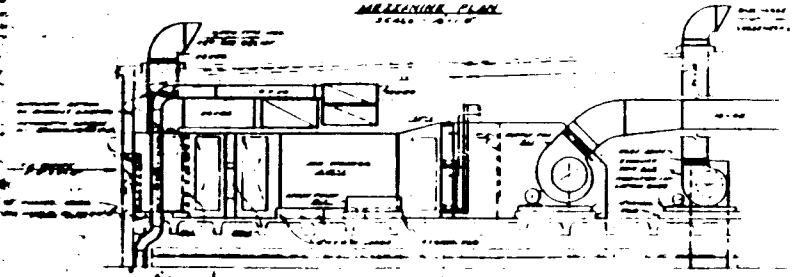




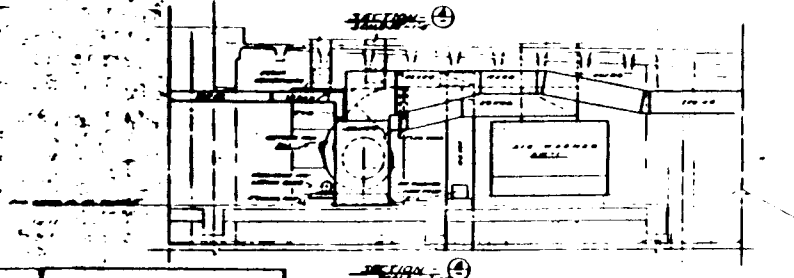
REFRIGERANT PIPING ISOMETRIC DIAGRAM

EQUIPMENT SCHEDULE

DUST COLLECTION



SECTION



SECTION

NOTES:

AS BUILT DRAWINGS
CONTRACT NO. AT (29-1) 2228
THE RALPH M. PARSONS COMPANY
APPROVAL RECOMMENDED
APPROVED

U. S. ATOMIC ENERGY COMMISSION

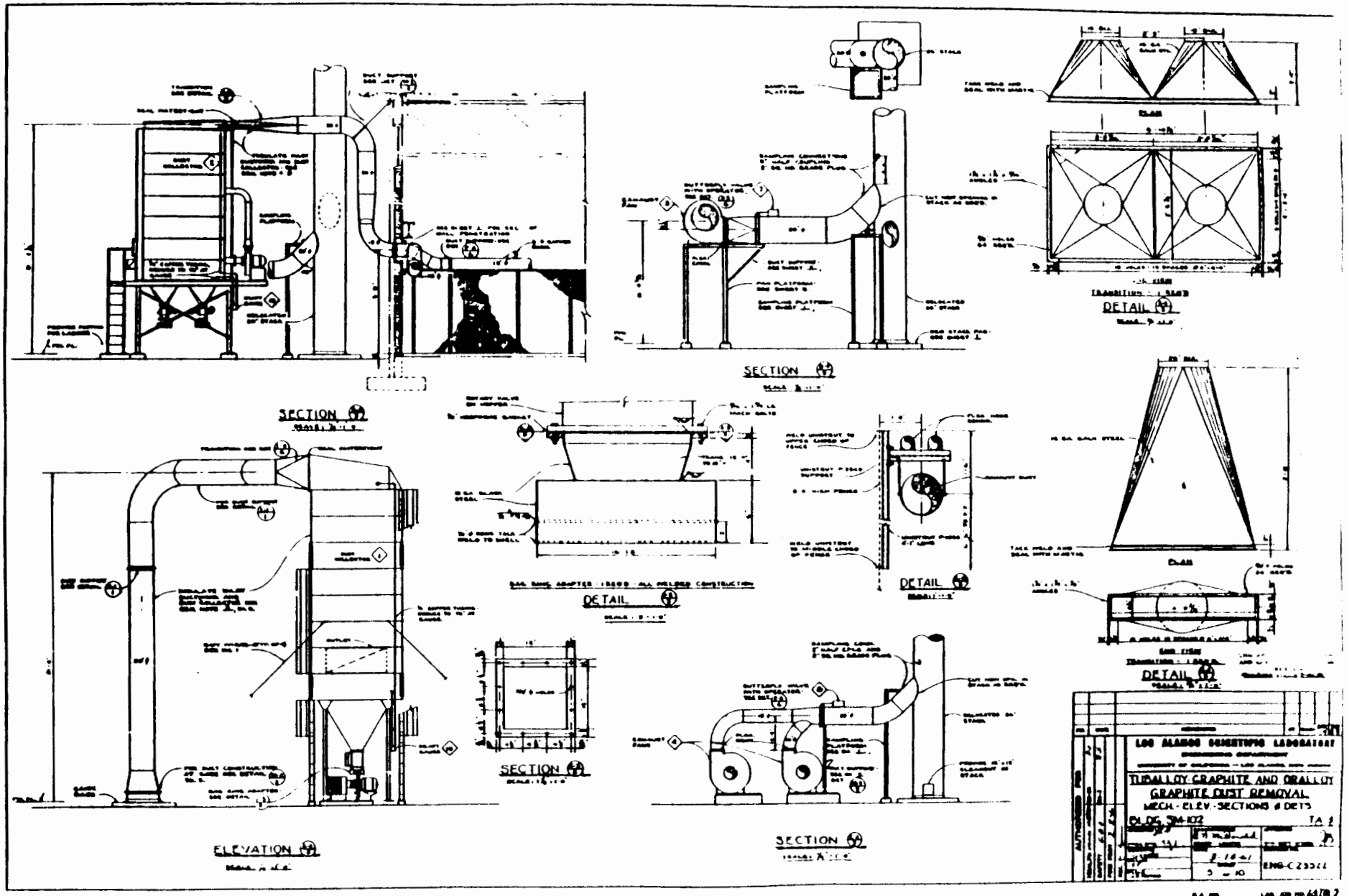
TECHNICAL SHOPS TA-3
SM-39 PROJECT "L"
HEATING & VENTILATING
MEZZANINE PLAN & DETAILS

THE RALPH M. PARSONS COMPANY

SEA-KF-5/10

FOR OFFICIAL USE ONLY

LAB JOB 432 LASL ENGINEERING 1480


SECTION
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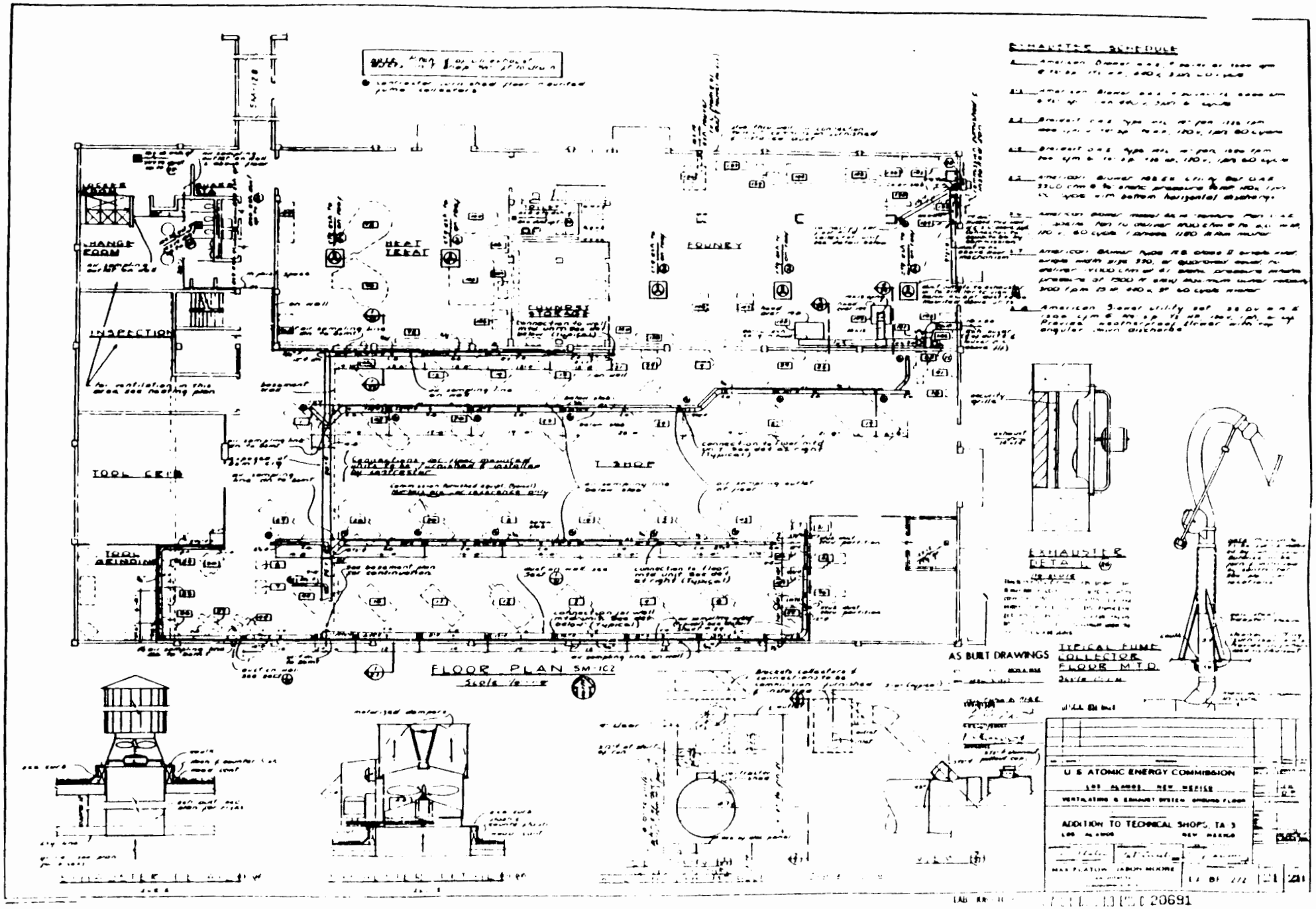
ELEVATION
SECTION
LOS ALAMOS SCIENTIFIC LABORATORY
TUBALLOY GRAPHITE AND ORALLOY
GRAPHITE DUST REMOVAL
MECH. ELEV. SECTIONS & DETS
ENG-C23522


HANGE ROOM
INSPECTION
TOOL CRIB
TOOL GRINDING
HEAT TREAT
FOUNDRY
T. SHOP
FLOOR PLAN SM-102
EXHAUSTER DETAIL
TYPICAL FUME COLLECTOR FLOOR MTD.
AS BUILT DRAWINGS
U S ATOMIC ENERGY COMMISSION
LOS ALAMOS, NEW MEXICO
VENTILATING & EXHAUST SYSTEM GROUND FLOOR
ADDITION TO TECHNICAL SHOPS, TA 3
LOS ALAMOS NEW MEXICO
MAX PLATON JAMES MOORE

20691

Rec'd
9-27-85

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO David H. Nochumson, HSE-8, MS K490

DATE September 23, 1985

FROM Rhonda S. Carpenter

MAIL STOP/TELEPHONE D472/7-4651

SYMBOL MEC-DO:RC85-03

SUBJECT BERYLLIUM EMISSIONS INFORMATION

Attached is the information you requested on MEC Division's beryllium operations.

The item number corresponds to those in the blank permit form which is also attached.

If you need any further information, please contact me.

Rhonda S. Carpenter
Rhonda S. Carpenter
Project Leader for Safety

RSC:glc

APPROVED BY Joseph F. B. Szoo
Joseph F. B. Szoo
Division Leader

Attachment 1: Response
Attachment 2: Permit Form

Cy: Joseph F. B. Szoo, MEC-DO, MS D472
Glen J. Dill, MEC-1, MS D472
File

SECTION 1

4. Shop 4: MEC-1, TA-3-39-Room 16
   Shop 13: MEC-1, TA-3-102-Room 118

5. Shop 4 - Machining beryllium on 3 lathes, 2 mills, a pneumolathe, 2 surface grinders, a saw, a jig bore, and an electrical discharge machine (EDM).
   Shop 13 - Machining beryllium on lathes, horizontal boring mill, CNC lathe 921, and saws.

7. Shop 4 - Yes; this shop has been machining beryllium since 1953. A work order is in to expand this shop.
   Shop 13 - Yes, 1976.

8. Shop 4 - 8-10 hrs./day; 5 days/wk; 4 weeks/month; 12 months/year
   Shop 13 - There is no normal operating schedule for this shop. Jobs come in sporadically. Last year overall the running time was about 30 days total.

9. Shop 4 - 12 hours/day.
   Shop 13 - 12 hours/day.

10. Shop 4 - 25%/quarter.
    Shop 13 - 25%/quarter.

SECTION 2

Not Applicable

SECTION 3

A. Shop 4 - Machine mainly beryllium, 20% beryllium copper and 2-3% beryllium oxide. The number of pieces/day and the size varies.
   Shop 13 - Machining beryllium and radioactive beryllium. We do not do production work in this shop, so the number of and size of pieces vary.

B. Not applicable.

SECTION 4

Shop 4 - Stack gas rate $3000m^3$/hr.

Shop 13 - Unknown

SECTION 5

Shop 4 - Cyclone, baghouse, beryllium emissions less than 2 grams/year.

Shop 13 - HEPA Filter; unknown emissions. With the infrequent operations and the HEPA Filter (which is 99.97% efficient) changed after each run, emissions are likely to be none detected.

SECTION 6

Please contact ENG-4 for stack data.

SECTION 7

Shop 4 - Fixed sampler; sampling rate is 3.7 m^3/hr; filter changed from 35-100 hours of operation.

Shop 13 - None

SECTION 8

A. Not applicable

B. Not applicable

SECTION 9

Shop 4 - Beryllium waste, sanitary landfill, 10-12 boxes (2' x 1' x 1') per year and one 55-gallon drum per year.

Shop 13 - Beryllium waste, sanitary landfill, less than 15 gallons of chips/year.

memorandum

LOS ALAMOS AREA OFFICE

DATE: AUG 1 9 1985

TO / OF: LTP:CEB

SUBJECT: Permitting the Dynamic Testing of Explosives which Release Beryllium into the Atmosphere (REF: Memo, Valencia/Adams, 6/7/85, ADTS-85-213) 0704 0569

TO: Christopher S. Adams, Jr., ADTS, Laboratory, M.S. A120

In response to the permit application referenced above for dynamic testing of explosives, the New Mexico Environmental Improvement Division (NMEID) has informed us that on the basis of the information provided in the permit application dated May 24, 1985, the NMEID has determined that the facility was constructed prior to August 31, 1972, and it has been operating in the State since then. Therefore, according to New Mexico Air Quality Control Regulation No. 702-S, a permit <u>is not required</u>.

Also, the estimated emissions do not exceed 2000 pounds per year and registration is not required.

If there are any changes in the facilities operation or if you have any questions, please contact Avedon Gallegos, of my staff, at (FTS) 843-5288.

Harold E. Valencia
Area Manager

ROUTED TO: AL TIEDMAN
C. ADAMS
CYS MADE FOR: J. ARAGON
D. NOCHUMSON

0721 2493

ATTACHMENT

Section 1 - General Data

4. Mechanical Fabrication Division (MEC) beryllium (Be) operations located at: (1) TA-3-39, Shop 4, MEC-1, and TA-3-39, room 2IL, Shop 10 (MEC-5); (2) TA-3-102, Shop 17 (MEC-1); and, (3) TA-3-66, Oralloy Shop (MEC-5).

TONEY ANAY
GOVERNOR

DENISE D. FO
DIRECTOR

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 827-0070

March 19, 1986

CERTIFIED MAIL NO. P 176 061 928
RETURN RECEIPT REQUESTED

Mr. Harold E. Valencia
Area Manager
Dept. of Energy
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Dear Mr. Valencia:

This letter constitutes Air Quality Permit Number 636 which is issued to the Los Alamos National Laboratory pursuant to Section 74-2-7 NMSA and Air Quality Control Regulation 702, to construct and operate a beryllium machine shop in TA-3, Building 102 near Los Alamos, New Mexico. The facility is be be constructed and operated in accordance with the application dated November 7, 1985 and is subject to the following conditions:

1. Beryllium emissions to the atmosphere shall not exceed 4×10^{-7} pounds per hour (7×10^{-8} tons per year).

2. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Division, for a minimum of two years.

The Division has performed an analysis to verify the emissions from the proposed machine shop and has performed dispersion modeling using emission estimates from the facility to determine the impact on the ambient air. Based on the analysis and the control measures described in your application, the Division has determined that the provisions of the Air Quality Control Act, Air Quality Control Regulation 751, and the ambient air quality standards will be met. However, in order to assure this, conditions have been placed on the permit. The Air Quality Control Act allows the Division to place reasonable restrictions other

than those relating to emission rates. The reasons for these conditions are explained below:

Condition 1 regarding the emissions from the beryllium processing operation corresponds to the emission limit specified in the application. The Air Quality Control Act allows for placement of an emission limit and requires that such a limit be only as restrictive as the more stringent of the following: 1) the extent necessary to meet the requirements of the Air Quality Control Act and the Federal Act: or 2) the emission rate specified in the permit application. The emission rate specified in the permit application has been determined to be more stringent in this case.

Condition 2 corresponds to the reporting and record keeping requirements contained in AQCR 751 which incorporates the National Emission Standards for Hazardous Air Pollutants (NESHAPS), by reference.

Section 74-2-7.K NMSA 1978 provides that if the Division issues a permit with conditions, and the applicant is dissatisfied with the action taken by the Division, the applicant may request a hearing before the Environmental Improvement Board. The request must be made in writing to the Director of the Environmental Improvement Division within thirty days after receipt of the permit.

There are additional requirements contained in Air Quality Control Regulation 702 that should be noted:

Section M provides that the Division may cancel a permit if the construction is not commenced within one year from the date of issuance or, if during the construction, work is suspended for a period of one year.

Section P requires the permitted source to notify the Division in writing of the:

1. anticipated date of initial startup of a source not more than sixty days nor less than thirty days prior to the date, and

2. actual date of initial startup of a source within fifteen days after the startup date.

AQCR 751 requires each owner or operator to test emissions from the new source within 90 days of startup.

A performance test is required for beryllium and shall be performed in accordance with EPA Reference Method 103 or 104 as outlined in 40 CFR Part 61 Appendix B. The permittee should arrange a pretest meeting with the Division at least two weeks prior to the date of testing and should advise the Division of any variations to the procedures. The results should be submitted to the Division within forty-five days after the completion of testing.

The permit and conditions apply in the event of any change in control or ownership of the facility. In the event of any such change in control or ownership, the permittee should notify the succeeding owner of the permit and conditions.

If you have any questions regarding this permit please contact Bob Kirkpatrick or Jim Shively.

Sincerely,

J. David Duran

J. David Duran
Acting Bureau Chief

JDD:lo

xc: Tito Madrid, District Manager, District II
Gerald Silva, Health Program Manager, Espanola
Bruce Nicholson, Program Manager, Modeling and Analysis
Jack Divita, EPA Region VI, Dallas

KRAMER & ASSOCIATES

ALBUQUERQUE, NEW MEXICO

EMISSION SAMPLING FOR BERYLLIUM PARTICULATES
AT
LOS ALAMOS NATIONAL LABORATORY

TA 3 SM 102
LOS ALAMOS, NEW MEXICO

by
Kramer & Associates

September, 1986

Greater than 80 DSCF of sample were collected for all samples during a minimum of two hours actual sampling time. Beryllium machining was occuring continuously during the entire two-hour sampling period. During the first 40 minutes of sampling in the first run beryllium machining had not begun. Therefore, an additional 40 minutes of sampling was added to the end of the first run only. The mass of beryllium collected was divided by the actual volume of gas collected during the beryllium machining time period. The average emission was $<5.9 \times 10^{-8}$ pounds per hour which is less than the maximum allowable of 4×10^{-7} pounds per hour.

Gary R. Kramer

Gary R. Kramer, PE

Introduction

Exhaust emissions from the beryllium machining area at TA-3 SM-102 were sampled by Kramer & Associates (125 Eubank NE, Albuquerque, NM 87123) on September 11, 1986, and analysed for total particulate beryllium. The following individuals were among those present during the sampling:

1. Bill Ristau and Gary Kramer - Kramer & Associates
2. Mr. David Nocumson - Los Alamos National Laboratory

Emissions from the machining operation are passed through a HEPA filter prior to discharge through a circular stack to the atmosphere. Sampling locations are illustrated in Figure 1.

Methods and Procedures

All sampling and analytical procedures used followed those set forth in Methods 103 and 104 respectively of the Code of Federal Regulations (CFR)-40, Parts 61, Appendix B, July, 1984. One of three points on a single traverse was sampled for 120 minutes through a 0.497" nozzle during each test run. The sampling train used was a MISCO Model 7200 Source Sampler which is identical in operation to that shown in the CFR-40, Method 5 (see Figure 2). Probes, nozzles, and associated glassware upstream from the filter were cleaned with acetone which was collected in a jar with lid for transport to the KA laboratory in Albuquerque for analysis. Jars were emptied and rinsed with acetone into beakers for evaporation. Filters were placed in the appropriate beakers after the acetone was evaporated, and the entire sample dissolved in concentrated nitric acid according to the analytical procedures in Method 104 of the CFR-40. Analyses for beryllium was conducted by atomic absorption spectroscopy. All samples were in the custody of Gary Kramer at all times.

Results and Discussion

Test data, and calculated results are summarized in Table 1. Original data are included in Appendix 1; equipment calibration data, and computer program information are listed in Appendix 2.

TABLE 1

STACK SAMPLING DATA SUMMARY

LOS ALAMOS NATIONAL LABS TA-3 SM-102

SAMPLING DATA	TEST #1	TEST #2	TEST #3
ACTUAL METERED CUBIC FEET	145.264	123.58	105.717
BAR. PRESSURE (IN HG)	22.88	22.88	22.88
AVG GAS METER TEMP. (F)	61.81	74.31	75.68
ML WATER COLLECTED	24.8	18.2	20.2
BERYLLIUM COLLECTED (MG)	<1E-05	<1E-05	<1E-05
CARBON DIOXIDE (%)	0	0	0
OXYGEN IN STACK (%)	20.9	20.9	20.9
NITROGEN IN STACK (%)	78.1	78.1	78.1
STACK PRESSURE (IN HG)	22.88	22.88	22.88
AVE STACK TEMPERATURE (F)	73.63	83.12	76.25
S-PITOT CORRECTION FACTOR	.848	.848	.848
AVE STK VEL PRES (IN H2O)	.185	.2	.1732
AREA OF STACK (SQ. FT)	7.069	7.069	7.069
SAMPLING TIME (MINUTES)	160	120	120
NO[illegible] DIAMETER (INCHES)	.497	.497	.497
AV[illegible] IF DEL P (IN H2O)	2.246	2.493	1.844

CALCULATED RESULTS			
CORRECTED MET VOL (DSCF)	113.21	94.13	80.16
VOL H2O COLLECTED (SCF)	1.16	.85	.95
PERCENT H2O IN STACK (%)	1	.8	1.1
MOLE WT STACK GAS (WET)	28.84	28.86	28.83
MOLE WT STACK GAS (DRY)	28.95	28.95	28.95
MOLE FRAC DRY STACK GAS	.99	.992	.989
AVG STACK VELOCITY (FPM)	723	788	679
AVG STACK FLOW (DSCFM)	3842	4123	3587
AVG STACK FLOW (ACFM)	5059	5525	4747
ISOKINETIC RATIO (%)	96.9	100.1	98
BERYLLIUM EMISSION(LB/HR)	<5.7332E-08	<5.7E-08	<5.9E-08

FIGURE 1

TA-3 SM-102

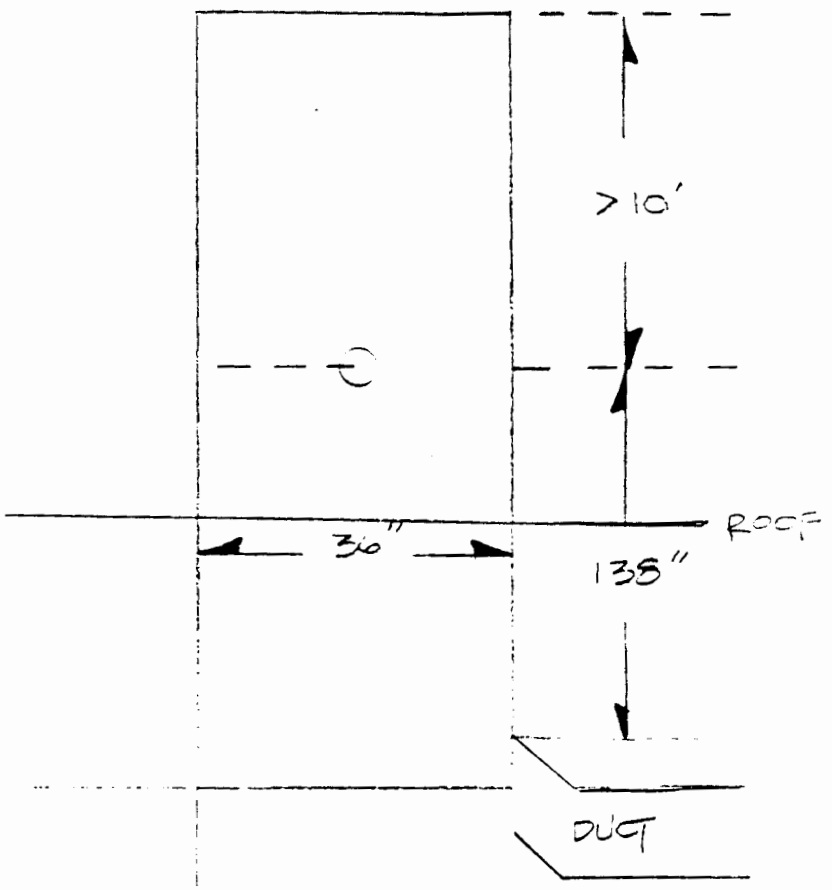


FIGURE 1

SAMPLING LOCATION SCHEMATIC
TA-3 SM-102 BERYLLIUM SOURCE
LOS ALAMOS NATIONAL LABORATORY

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 3 SM 102

Run No. 1 Date 9/11/86 Time 0830 Ambient Temp. °F 50

Bar. Press., in. Hg. 22.88 Stack Location HEPA FILTER DSCHG

Stack Diameter, in. 36 Stack Pressure, in Hg 22.88

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 31 Acetone Jar No. 7 Acetone Bkr No. 7

Probe Tip Diameter, in. 0.497 Assumed Moisture, % 1

Probe Length, Ft. 3 Cp 0.848 Δ H@ 1.68

Calculator Setting _____ _____

Orsat Analysis Data				Moisture Content	
CO_2	AIR			Impinger #1	
$CO_2 + O_2$				Impinger #2	
$CO_2 + O_2 + CO$				Impinger #3	
				Total initial H_2O	
				Net Impinger H_2O	
				Net H_2O in Silica Gel	24.8
				Total H_2O Collected	24.8

Leak Test

Initial 0.015 @ 5" Hg

Final 0.009 @ 7" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA 3 SM 102 Run No. 1

	Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
0830	1	830	92.635	0.025	1.63	1.63	~~45~~	45	1	155	45	65	
		845	109.800	0.025	1.63	1.63	60	49	1	130	45	65	
		900	122.150	0.030	1.95	1.95	60	53	2	120	45	70	← 0910
		915	136.000	0.030	1.95	1.95	70	60	2	130	45	70	MACHINING STARTED
	Lift from Started	930	149.700	0.030	1.95	1.95	68	60	2	130	50	70	← LITHIUM-H FAN STARTED
		945	163.400	0.04	2.65	2.65	75	63	5	120	50	75	
		1000	179.400	0.04	2.65	2.65	75	64	5	120	55	80	
		1015	195.300	0.04	2.65	2.65	75	68	5	120	55	80	
		1030	211.364 (113.629)										
		1102	211.365	0.04	2.55	2.55	55	55	2	110	55	80	
			223.300	0.04	2.55	2.55	65	60	2	110	55	80	
			235.200	0.04	2.55	2.55	70	65	2	110	55	75	
			243.000 (31.635)										
			145.264		111.47 = ACTUAL VOLUME TAKEN DURING BERYLLIUM MILLING								
			145.26 − 111.47 = 111.41		1.303								

NOTE: 2 HOUR 40 MINUTE SAMPLING PERIOD TO OBTAIN 2 HR OF ACTUAL MILLING & MACHINING TIME.

Kramer & Associates

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 3 SM102

Run No. 2 Date 9/11/86 Time 1245 Ambient Temp. °F 70

Bar. Press., in. Hg. 22.88 Stack Location HEPA FILTER DSCHG

Stack Diameter, in. 36 Stack Pressure, in Hg 22.88

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 39 Acetone Jar No. 8 Acetone Bkr No. 8

Probe Tip Diameter, in. 0.497 Assumed Moisture, % 1

Probe Length, Ft. 3 Cp 0.848 Δ H@ 1.68

Calculator Setting _____ _____

Orsat Analysis Data				Moisture Content	
CO_2	AIR			Impinger #1	
$CO_2 + O_2$				Impinger #2	
$CO_2 + O_2 + CO$				Impinger #3	
				Total initial H_2O	
				Net Impinger H_2O	
				Net H_2O in Silica Gel	18.2
				Total H_2O Collected	18.2

Leak Test

Initial 0.014 @ 6" Hg

Final 0.015 @ 8" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA3 SM102 Run No. 2

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
2	1245	243.152	0.04	2.5	2.5	60	60	1	120	50	80	
	1300	259.000	0.04	2.5	2.5	70	68	1	120	50	85	
	1315	272.850	0.04	2.5	2.5	78	70	1	120	50	85	
	1330	288.300	0.04	2.5	2.5	80	73	1	120	50	80	
	1345	303.250	0.04	2.5	2.5	80	74	1	120	50	80	
	1400	319.650	0.04	2.5	2.5	80	78	1	120	50	80	
	1415	335.450	0.04	2.5	2.5	80	78	1	120	50	85	
	1430	351.000	0.04	2.45	2.45	83	80	1	120	50	90	
	1445	366.732										
		123.580										

kramer & associates

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location LOS ALAMOS TA 3 SM 102

Run No. 3 Date 9/11/86 Time 1525 Ambient Temp. °F 75

Bar. Press., in. Hg. 22.88 Stack Location HEPA FILTER OSCHO

Stack Diameter, in. 36 Stack Pressure, in Hg 22.88

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 27 Acetone Jar No. 9 Acetone Bkr No. 9

Probe Tip Diameter, in. 0.497 Assumed Moisture, % 1

Probe Length, Ft. 3 Cp 0.848 Δ H@ 1.68

Calculator Setting _____ _____

Orsat Analysis Data

CO_2	AIR		
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Moisture Content

Impinger #1	
Impinger #2	
Impinger #3	
Total initial H_2O	
Net Impinger H_2O	
Net H_2O in Silica Gel	20.2
Total H_2O Collected	20.2

Leak Test

Initial 0.001 @ 6" Hg

Final 0.003 @ 7" Hg

PARTICULATES SAMPLING DATA

Plant Name and Location LOS ALAMOS TA 3 SM 102 Run No. 3

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
3	1525	366.835	0.03	~~1.5~~ 1.9	~~1.5~~ 1.9	68	68	1	120	50	80	
	1540	379.980	0.03	1.9	1.9	73	68	1	120	50	80	
	1555	393.080	0.03	1.9	1.9	80	69	1	120	55	75	
	1610	—	0.03	1.9	1.9	80	73	1	120	55	75	
	1625	419.460	0.03	1.9	1.9	80	75	1	120	55	75	
	1640	—	0.03	1.9	1.9	79	77	1	120	55	75	
	1655	446.100	0.03	1.9	1.9	82	78	1	120	55	75	
	1710	459.30	0.03	1.9	1.9	82	79	1	120	55	75	
	1725	472.546										
		105.713										

kramer & associates

ACETONE WASH AND FILTER WEIGHT RECORDS

Facility LOS ALAMOS LABS TA-3 SM-102

Testing Dates 9/11/86

Date of Tare Weighing ATOMIC ABSORPTION Weighed By WMR

Date of Final Weighing METHOD 104 Weighed by

I.D. No.	~~Tare Wt.~~ MG/L AA DATA	~~Final Wt (1)~~ ML SAMPLE	Final Wt (2)	Net Wt., mg
7	<0.001	10		$<1 \times 10^{-5}$
8	<0.001	10		$<1 \times 10^{-5}$
9	<0.001	10		$<1 \times 10^{-5}$
Blank	<0.001	10		
std 0.0025	0.002	10		
std 0.005	0.005	10		

APPENDIX 2

CALIBRATION DATA AND COMPUTER PROGRAMS

DRY METER AND ORIFICE CALIBRATION DATA

Date 9/8/86 Location EID - AIR QUALITY Barometric Pressure, P_b 23.51 in Hg

Control Module Serial No. MISCO 7249 Dry Gas Meter No. 83

Orifice Setting ΔH	Metered Gas Volume, Ft^3		Meter Temperature, ^oF		Metering Time Minutes t	Accuracy Ratio G *	Orifice Coefficient $\Delta H_@$ *
	Wet Test V_w	Dry V_d	Wet Test T_w	Dry(ave) T_d			
0.50	5.000	4.952	64.5	61	10.617	1.0014	1.605
1.00	5.000	4.984	64.5	65	7.733	1.002	1.689
1.50	10.000	10.046	64.5	72	12.75	1.005	1.700
2.00	9.000	9.157	64.5	77	9.917	1.000	1.677
2.50	10.000	10.278	64.5	81	9.917	0.996	1.686

$$* \; G = \frac{V_w \, P_b \, (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(T_w + 460)}$$

$$H_@ = \frac{0.0317 \, \Delta H}{P_b (T_d + 460)} \cdot \left(\frac{(T_w + 460)t}{V_w} \right)^2$$

G = ratio of accuracy of wet test meter to dry test meter

$\Delta H_@$ = orifice pressure differential that gives 0.75 cfm of air at 70^oF and 29.92 inches Hg

Kramer & Associates

PITOT TUBE CALIBRATION SHEET

Pitot Tube No. JOY Pitot Length 3' Calibration Date 2/6/84

Wind Tunnel Location UNM WIND TUNNEL Calibrated By GRK

Nozzle Size: 1/8" SMALL 3/16"

P_L	P_S	C_P
0.18	0.25	0.840
0.36	0.495	0.844
0.81	1.1	0.849
1.3	1.75	0.853
0.645	0.86	0.857

AVE : 0.849

Nozzle Size: 1/4", 1/8" (LARGE)

P_L	P_S	C_P
0.205	0.280	0.847
0.41	0.56	0.847
0.86	1.20	0.838
0.65	0.87	0.856

AVE: 0.847

Nozzle Size: 3/8"

P_L	P_S	C_P
0.21	0.29	0.842
0.47	0.64	0.848
0.865	1.20	0.840
1.4	1.9	0.850

AVE: 0.845

Nozzle Size: 1/2"

P_L	P_S	C_P
0.22	0.305	0.841
0.41	0.55	0.855
0.60	0.80	0.857
1.4	1.9	0.850

AVE: 0.851

Nomenclature: P_L = Velocity pressure (inches water) measured with Standard Pitot

P_S = Velocity pressure (inches water) measured with S Pitot .

C_P = S pitot correction factor = $0.99(P_L/P_S)^{1/2}$

THERMISTOR CALIBRATION DATA

TEMPERATURE DEGREES C

Reference	Meter In	Meter Out	Impinger	Oven	Probe
3.3	3.3	3.3	1.6	--	4.0
26.0	25.5	26.0	26.6	24.5	23.5
96.0	94.5	94.5	94.0	98.0	95.0

READY.

L TA-3 SM-102 COMPUTER PROGRAM

READY.

```
 FOR I=1TO3
10 READ RN(I),H2O(I),CUFT(I),CO(I),O2(I),MG(I),R(I)
20 READ PTS(I),BP(I),SP(I),CP(I),AR(I),TPD(I),TM(I)
 6 A=0:B=0:C=0:D=0:E=0
 7 FOR Z=1 TO PT(I) STEP1
28 READ DP,DH,T,TT,SK
29 A=A+SQR(DP):B=B+DH:C=C+T:D=D+TT:E=E+SK
 3 NEXT Z
40 PA(I)=INT(10000*A/PTS(I))/10000:HA(I)=INT(1000*B/PTS(I))/1000
42 TA(I)=INT(100*(C+D)/(2*PTS(I)))/100:SAT(I)=INT(100*E/PTS(I))/100
 3 VMSTD(I)=INT(1764.7*CUFT(I)*(BP(I)+HA(I)/13.6)/(TA(I)+460))/100
5 VW(I)=INT(4.707*H2O(I))/100
55 BWO(I)=INT(1000*VW(I)/(VW(I)+VMSTD(I)))/10
5 N2(I)=99-CO(I)-O2(I)
6 MW(I)=INT((44*CO2(I)+40+32*O2(I)+28*(99-CO2(I)-O2(I)))*(1-BW(I)/100)+18*BWO(I
))/100
63 DMW(I)=INT(44*CO2(I)+40+32*O2(I)+28*(99-CO2(I)-O2(I)))/100
6 VSA(I)=INT(60*85.49*CP(I)*PA(I)*(SQR((SAT(I)+460)/(MW(I)*SP(I)))))
70 NUM(I)=17.316*VMSTD(I)*(SAT(I)+460)*60
72 DEN(I)=VSA(I)*(100-BWO(I))*.01*SP(I)*TPD(I)*TPD(I)*TM(I)
7 (I)=INT(10*NUM(I)/DEN(I))/10
7 QSA(I)=INT(10.6283*VSA(I)*(100-BWO(I))*AREA(I)*SP(I)/(60*(SAT(I)+460)))
77 F(I)=1-BWO(I)/100
8 CS(I)=0.0154*MGMS(I)/VMSTD(I)
8 G(I)=INT(1000000000*CS(I)*QSA(I)*.0001428*60)/1000000000
86 AC(I)=INT(VSA(I)*AR(I)*((100-BWO(I))/100))
9 NEXT I
9 G(1)=G(1)*1.302
99 DATA 1,24.8,145.264,0,20.9,0.00001,0
100 DATA 11,22.88,22.88,.848,7.069,.497,160
1 DATA .025,1.63,45,45,65
1 DATA .025,1.63,60,49,65
103 DATA .030,1.95,60,53,70
1 DATA .030,1.95,70,60,70
1 DATA .030,1.95,68,60,70
106 DATA .040,2.65,75,63,75
107 DATA .040,2.65,75,64,80
1 DATA .040,2.65,75,68,80
1 DATA .04,2.55,55,55,80
1 DATA .04,2.55,65,60,80
1 DATA .04,2.55,70,65,75
1 DATA 2,18.2,103.580,0,20.9,0.00001,0
1 DATA 8 ,22.88,22.88,.848,7.069,.497,120
1 DATA .04,2.5,60,60,80
2 DATA .04,2.5,70,65,85
20 TA .04,2.5,78,70,85
2 TA .04,2.5,80,73,80
2 DATA .04,2.5,80,74,80
205 DATA .04,2.5,80,78,80
207 DATA .04,2.5,80,78,85
2 DATA .04,2.45,83,80,90
29 DATA 3,20.2,105.713,0,20.9,0.00001,0
0 DATA 8 ,22.88,22.88,.848,7.069,.497,120
```

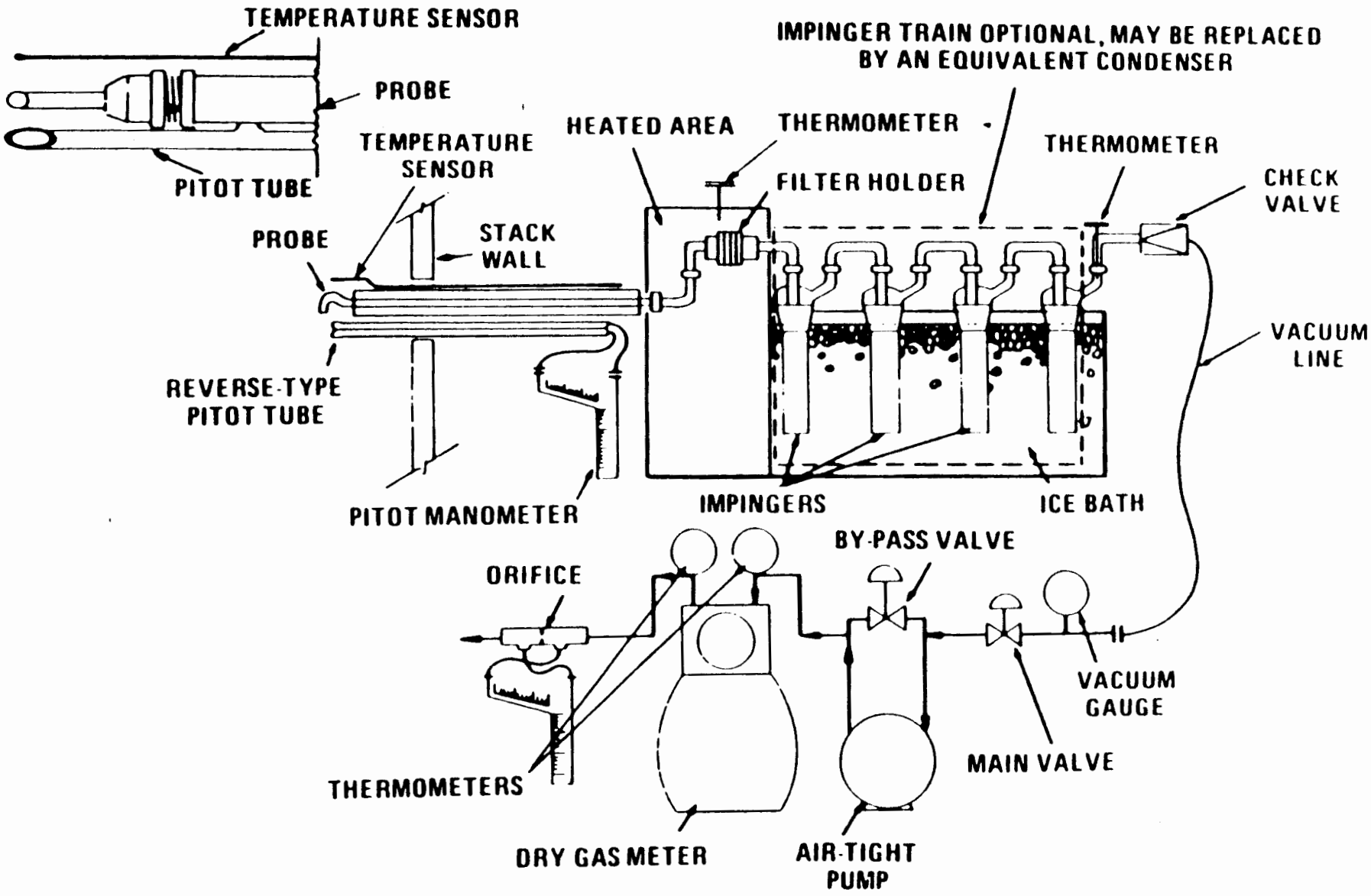


Figure 2 Particulate-sampling train.

APPENDIX 1

ORIGINAL DATA

```
303 DATA .03,1.9,80,69,75
304 DATA .03,1.9,80,73,75
305 DATA .03,1.9,80,75,75
306 DATA .03,1.9,79,77,75
307 DATA .03,1.9,82,78,75
308 DATA .03,1.9,82,79,75
49     INT ISO(1),ISO(2),ISO(3):STOP
500 OPEN4,4:CMD4
503 PRINT CHR$(27)"G":CHR$(14)"                    TABLE 1"
505 PRINTCHR$(10)CHR$(14)"       STACK SAMPLING DATA SUMMARY"
510 PRINT CHR$(10)CHR$(14)"LOS ALAMOS NATIONAL LABS TA-3 SM-102"
512 PRINT CHR$(10)
513 PRINT CHR$(10)
515 PRINT CHR$(10);CHR$(16)"07SAMPLING DATA";
516 PRINT CHR$(16)"36TEST #1        TEST #2          TEST #3"
520 PRINT CHR$(10)"ACTUAL METERED CUBIC FEET",CU(1);
521 PRINT CHR$(16)"50";CU(2);CHR$(16)"66";CU(3)
525 PRINT"BAR. PRESSURE (IN HG)     ",BP(1);CHR$(16)"50";BP(2);CHR$(16)"66";BP(3)
530 PRINT"AVG GAS METER TEMP. (F)   ",TA(1);CHR$(16)"50";TA(2);CHR$(16)"66";TA(3)
533 PRINT"ML WATER COLLECTED        ",H2(1);CHR$(16)"50";H2(2);CHR$(16)"66";H2(3)
535 PRINT"BERYLLIUM COLLECTED (MG)  ",MG(1);CHR$(16)"50";MG(2);CHR$(16)"66";MG(3)
540 PRINT"CARBON DIOXIDE (%)        ",CO(1);CHR$(16)"50";CO(2);CHR$(16)"66";CO(3)
545 PRINT"OXYGEN IN STACK  (%)       ",O2(1);CHR$(16)"50";O2(2);CHR$(16)"66";O2(3)
)
550 PRINT"NITROGEN IN STACK  (%)    ",N2(1);CHR$(16)"50";N2(2);CHR$(16)"66";N2
557 PRINT "STACK PRESSURE (IN HG)   ",SP(1);CHR$(16)"50";SP(2);CHR$(16)"66";SP
560 PRINT"AVE STACK TEMPERATURE (F)",SA(1);CHR$(16)"50";SA(2);CHR$(16)"66";SA(3)
565 PRINT"S-PITOT CORRECTION FACTOR",CP(1);CHR$(16)"50";CP(2);CHR$(16)"66";CP
570 PRINT"AVE STK VEL PRES (IN H2O)",PA(1);CHR$(16)"50";PA(2);CHR$(16)"66";PA
574 PRINT"AREA OF STACK (SQ. FT)    ",AR(1);CHR$(16)"50";AR(2);CHR$(16)"66";AR
580 PRINT"SAMPLING TIME (MINUTES)   ",TM(1);CHR$(16)"50";TM(2);CHR$(16)"66";TM
585    INT"NOZZLE DIAMETER (INCHES) ",TP(1);CHR$(16)"50";TP(2);CHR$(16)"66";TP
590    INT"AVG ORIF DEL P (IN H2O)  ",HA(1);CHR$(16)"50";HA(2);CHR$(16)"66";HA
595 PRINT CHR$(10)CHR$(10);CHR$(16)"03CALCULATED RESULTS"
597 PRINT " "
600 PRINT"CORRECTED MET VOL (DSCF)  ",VM(1);CHR$(16)"50";VM(2);CHR$(16)"66";VM
605 PRINT"VOL H2O COLLECTED (SCF)   ",VW(1);CHR$(16)"50";VW(2);CHR$(16)"66";VW
610 PRINT"PERCENT H2O IN STACK (%)  ",BW(1);CHR$(16)"50";BW(2);CHR$(16)"66";BW
615 PRINT"MOLE WT STACK GAS (WET)   ",MW(1);CHR$(16)"50";MW(2);CHR$(16)"66";MW
620 PRINT"MOLE WT STACK GAS (DRY)   ",DM(1);CHR$(16)"50";DM(2);CHR$(16)"66";DM
625 PRINT"MOLE FRAC DRY STACK GAS   ",F(1);CHR$(16)"50";F(2);CHR$(16)"66";F
630 PRINT"AVG STACK VELOCITY (FPM)  ",VS(1);CHR$(16)"50";VS(2);CHR$(16)"66";VS
635 PRINT"AVG STACK FLOW (DSCFM)    ",QS(1);CHR$(16)"50";QS(2);CHR$(16)"66";QS
640 PRINT"AVG STACK FLOW (ACFM)     ",AC(1);CHR$(16)"50";AC(2);CHR$(16)"66";AC
645 PRINT"ISOKINETIC RATIO (%)      ",IS(1);CHR$(16)"50";IS(2);CHR$(16)"66";IS
655 PRINT"BERYLLIUM EMISSION(LB/HR)",G(1);CHR$(16)"50";G(2);CHR$(16)"66";G
700 FOR Y=1 TO 7
710 PRINT CHR$(10)
715 NEXT Y
720 PRINT"-------------------------------- KRAMER & ASSOCIATES ----------------
721 PRINT"----------"
723 PRINT CHR$(10);CHR$(10);CHR$(10);CHR$(10)
725 CLOSE 4:END
```

READY.

PERMIT 741

New Mexico Health and Environment Department

MAY 1 4 35 PM '89
TECH PROGRAM BRANCH
LAND

MARILYN BUCKE
Acting Secretary
CARLA J. MUTH
Deputy Secretary
MICHAEL J. BURKHART
Deputy Secretary
RICHARD MITZELFELT
Director

April 26, 1989

CERTIFIED
P 996 328 947
MAIL

CERTIFIED MAIL NO. P 996 328 947
RETURN RECEIPT REQUESTED

Mr. Harold E. Valencia
Area Manager
Dept. of Energy
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Air Quality Permit No. 741

Dear Mr. Valencia:

Air Quality Permit No. 741 is issued to the Los Alamos National Laboratory pursuant to Section 74-2-7 NMSA 1978 and Air Quality Regulations 702-Permits and 751-Emission Standards for Hazardous Air Pollutants, to construct a beryllium processing operation near Los Alamos, New Mexico. The facility shall be operated in accordance with the application dated November 22, 1988 and is subject to the following conditions:

1. Emissions

   The facility shall be operated such that the process rate does not exceed a maximum of 1.7 pounds of beryllium for any one hour and the monthly and annual process rates do not exceed those listed in the permit application and the emissions do not exceed those specified in the application of 3.1×10^{-6} pounds per hour (2.0×10^{-7} tons per year) without first obtaining a permit modification.

2. Record Keeping

   Record keeping will be considered adequate to meet the requirements of NESHAPS under two conditions:

   1) that documentation be made available, upon request by the EID, demonstrating that the pre-filters and HEPA filters operate at their estimated control efficiency. This can consist of periodic testing, log book entries of filter changes or maintenance, or any evidence that will demonstrate that care and maintenance of the filter system does exist, and;

   2) that documentation be made available, upon request by the Division, which demonstrates that the quantity of beryllium processed does

not exceed 1.7 pounds for any one hour during the year and that the monthly and annual production rates do not exceed the values specified in the permit application. This can be based on records related to the beryllium inventory or quantities used during defined periods of time.

3. Compliance

Compliance with this permit will be based on LANL's adherence to New Mexico Air Quality Control Regulation No. 751 (AQCR 751) and the federal National Emission Standards for Hazardous Air Pollutants, (NESHAPS), 40 CFR Part 61 Subpart A, General Provisions, and Subpart C, National Emission Standard for Beryllium.

The Division has evaluated the application and the estimated emissions from the proposed operation; has reviewed dispersion modeling submitted by the applicant and performed supplemental dispersion modeling to determine compliance with the applicable ambient air quality standards. Based on this analysis, the Division has determined that the provisions of the Air Quality Control Act, Air Quality Control Regulation 751, 40 CFR Part 61, Subpart A and C, AQCR 702, and the ambient air quality standards will be met. However, in order to assure this, conditions have been placed on the permit. The reasons for these conditions are explained below:

Condition 1, Emissions, has been placed in the permit to allow the Division to track modifications to the facility. Estimated, actual emissions have been based on the type and quantity of materials processed, as specified in Section 3 of the application, and on the control equipment specified in Section 5 of the application.

Condition 2, Record Keeping, has been placed in the permit to allow the Division a means of verifying that the control methods stated in the permit will continue to be operated at the control efficiency levels indicated in the permit application.

Condition 3, Compliance, has been placed in the permit because the Division has determined that New Mexico AQCR 751 and the federal NESHAPS does apply. 40 CFR Part 61, Subpart A and Subpart C applies to facilities that process beryllium. Compliance will be based on the successful completion of performance tests as required in 40 CFR Part 60.33 and with maintaining proper records to demonstrate continued operation in accordance with the permit.

AQCR 702-Permits provides that if the Division issues a permit with conditions, and the applicant is dissatisfied with the action taken by the Division, the applicant may request a hearing before the Environmental Improvement Board. The request must be made in writing to the Director of the Environmental Improvement Division within thirty days after receipt of the permit.

Additionally, there are other requirements that should be noted. Air Quality Control Regulation 702 provides that:

> The Division may cancel a permit if the construction is not commenced within two years from the date of issuance or if, during the construction, work is suspended for a total of one year, and;
>
> The owner or operator shall notify the Division in writing of the:
>
> 1. anticipated date of initial startup of the source not less than thirty days prior to the date; and
>
> 2. actual date of initial startup of the source within fifteen days after the startup date.

Section 40 CFR Part 61.33 requires that a performance test be conducted within 90 days of startup of the facility. The performance test is required for beryllium and shall be performed in accordance with EPA Reference Methods 103 or 104 as outlined in 40 CFR Part 61 Appendix B. The permittee should arrange a pretest meeting with the Division at least 30 days prior to the date of testing and should advise the Division of any variations to the procedures. All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test. All determinations shall be reported to the Division by a registered letter dispatched before the close of the next business day following such determination. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Division upon request. These records should reflect the most recent two year period.

Any future physical changes or changes in the method of operation which differ from those specified in the permit application may constitute a modification and should be preceded by the submittal of a permit application for our review.

The permit and conditions apply in the event of any change in control or ownership of the facility. In the event of any such change in control or ownership, the permittee should notify the succeeding owner of the permit and conditions.

If you have any questions regarding this permit please contact Bruce Nicholson or Jim Shively.

Sincerely,

Cubia L. Clayton
Bureau Chief
Air Quality Bureau

CLC:BN:JS:lb

xc: Michael Brown, District II Manager, Santa Fe
Gerald Silva, Health Program Manager, Espanola
William Hargraves, Program Manager, Surveillance & Enforcement
Diane Sales, U.S. EPA Region VI, Dallas
Craig Eberhart, LANL, MS K490, Los Alamos, NM

SECTION 2 - FUEL USAGE

Unit No. [1]	Type of Fuel Burning Equipment [2]	Equipment Manufacturer	Rated Capacity Million BTU/Hr. [3]	Fuel Type [5]	FUEL DATA [4], [5] Amount Per Year [4]	Heating Value [7]	Percent Sulfur [8]	Percent Ash [8]

Notes: [1] Give a different number to represent each unit; give corresponding data opposite the same number in Sections 3 through 9.
[2] Boiler, oven, furnace, gas engine, gas turbine, etc. Include model number, configuration, etc., attach separate sheets if necessary.
[3] Give maximum rate as well as normal rate, if different.
[4] If auxiliary fuel or different fuel used "on standby", also give data for that fuel.
[5] Natural gas; bituminous coal; No. 6 fuel oil; refinery gas; etc. Include condition of fuel (pulverized, slurry, etc. if applicable)
[6] Million cubic feet of gas; tons of coal; gallons of fuel oil; pounds of LPG; etc.
[7] Higher heating value; Btu/lb, Btu/gal or Btu/MCF (MCF = 1000 std. cu. ft.)
[8] Sulfur and ash contents should be maximum percentages by weight. Sulfur and ash contents are not required if sweet natural gas is used as the fuel.
[9] Attach process flow sheet, including material balance for the combustion plant, if available.

SECTION 3 - MATERIALS PROCESSED AND PRODUCED

A. RAW MATERIALS PROCESSED

Unit No. [1]	Type	Composition [2]	Condition [3]	Quantity [4] (Specify Units)
1.	Pellets, powders & recycled scrap materials	Be(0-5 wt% Cu, Ni, or Co)	Pellets, Powders & Recycled scrap materials	1.7 lb/hour maximum rate
		Be(0-1 wt% Ti, Zr or Cr)		
		~~Be (0-20 wt% Al or Ag)~~		
		Al (0-20 wt% Be)		
		~~Cu (0-5 wt% Be)~~		

B. MATERIALS PRODUCED (DO NOT INCLUDE EMISSIONS AND PRODUCTS LISTED IN SECTIONS 4, 8, AND 9)

1.	Pellets, ingots, and finished parts	Be & Be alloys, same as above	Solid parts	1.5 lb/hr maximum rate

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Give each major component with weight percentages and chem[illegible] compositions if known.
[3] Give typical particle size distribution for agglomerates, pa[illegible] [illegible]

Return to:

EID-AIR QUALITY BUREAU
NEW SOURCE REVIEW UNIT
P.O. BOX 968
SANTA FE, NM 87504-0968
TELEPHONE: 505- 827-0070

Revised: 2/80

APPLICATION FOR PERMIT AND CERTIFICATE OF REGISTRATION

GENERAL FORM

FOR

SOURCES LOCATED WITHIN THE STATE OF NEW MEXICO [1]

FOR EID USE ONLY
Application No.:
App. Rec'd. Date:
Date App. Complete:
Reviewed by:
Approved/Disapproved:
Date:
ACQR: County:
Date St. Operation:
Date Perf. Test/Insp:

Please answer all questions applicable to your specific business, operation, and products.
Use the abbreviation "N.A." for "not applicable" wherever appropriate.
Submittal of process flow sheets, equipment descriptions, and other information may be required to complete this application. [2]

SECTION I - GENERAL DATA

1. Name of Company: Los Alamos National Laboratory 2. Date Submitted: 11/2/88

3. Company Address: Los Alamos, NM Phone: 667-5105

Person to Contact: Harold E. Valencia Title: DOE/LAAO Area Manager Phone: 667-5105

4. Name, Address and location of new plant or modification: Technical Area (TA) 3, Building 35, Room 105

Is U.S.G.S. quadrangular map or equivalent attached? [3] Yes

5. Describe briefly the type and capacity of the plant and nature of modifications (if applicable) and products: [4] Research and development processing of beryllium (Be) and its alloys, e.g. Be alloys containing copper (Cu) nickel (Ni), cobalt (Co), titanium (Ti), zirconium (Zr). aluminum (Al) or silver (Ag). These Be alloys will be produced in the form of pellets, ingots, and consolidated parts. Date of Anticipated Start of Construction: October, 1988

6. Class of land at plant site (private, State, Federal, Indian, etc.): Federal

7. Is this permanent? Yes If not, how long is it expected to be occupied? N/A Date of Anticipated Startup: January 3, 1989

8. Normal operating schedule: 6 hours per day, 4 days per week, 4 weeks per month, 12 months per year.

9. Specify maximum operating periods: 8 hrs/day, 5 days/week, 4 weeks/month and 12 months/year.

10. Specify percent annual production by quarters: Dec. - Feb. 25, Mar. - May 25, June - Aug. 25, Sep. - Nov. 25

Notes: [1] Submitted in accordance with Air Quality Control Regulation No. 702, Permits, or Regulation No. 703, Registration.
[2] Notification of the need for other additional information required to complete this application will be given to the applicant by the Air Quality Bureau within 10 days after the receipt of the application. Filing of the application will not be considered to be complete until the date of submittal of such additional information. The granting or denial of the permit will be made within 30 days after this completion date.
[3] Regulation No. 702, Section D, Item 5 requires that this application be accompanied by a U. S. Dept. of the Interior Geological Survey quadrangular map or equivalent map showing the exact location of the proposed construction or modification.
[4] Include site plan showing location of all ste[illegible] other emission points and property or fence lines for portable or movable equipment. Include serial number [illegible]

SECTION 5 - CONTINUED

Capital Costs (Optional):
Approximate expected capital investement of new or modified air pollution control equipment: $ _____
Estimated yearly operation and maintenance costs for air pollution control equipment: $ _____

SECTION 6 - STACK DATA - Include drawings or sketches (plan view and elevations) of any buildings or equipment in close proximity to stacks.

Unit No.	Stack Height, Ft. [1]	Inside Diameter, Ft.	EXIT GAS CONDITIONS [2]			SAMPLING PORTS		
			Temperature °F	Velocity Ft./Sec.	Moisture % by Volume	Number	Size	Location [3]
1	33	2.5	70	35	1	2	3"NPT	2 ports at 90 degrees; 3 diameters downstream from any disturbance.

Notes: [1] Height above ground level.
[2] If conditions are not at actual stack exit, specify location for which estimates are made.
[3] Example: 2 ports at 90°, 25' from top.

What provisions are made for accessibility to stack sampling ports? Ports will be accesible from a platform built around the stack.

SECTION 7 - EMISSION MEASUREMENT EQUIPMENT N/A

Unit No.	Pollutant	Type of Instrument [1]	Manufacturer - Model No.	Range [2]	Sensitivity	Accuracy

Notes: [1] Ultra Violet Photometric Analyzer, NDIR Photometer, Opacity Meter, EPA Sampling Train, etc.
[2] 0-1000 ppm, 0-50 $\mu g/m^3$, 0-100% opacity, etc.

SECTION 4 - UNIT EMISSIONS (PRIOR TO AIR POLLUTION CONTROL EQUIPMENT, OR TO ATMOSPHERE, IF UNCONTROLLED)

Unit No. (1)	Process or Operation (2)	Quantity of Gases Dis-charged to Air Pollution Control Equipment (3)	ESTIMATES OF AIR POLLUTANTS (4) Pollutant No. 1 Type (5)	Pollutant No. 1 Quantity (6)	Pollutant No. 2 Type (5)	Pollutant No. 2 Quantity (6)	Pollutant No. 3 (7) Type (5)	Pollutant No. 3 (7) Quantity (6)	Basis of Estimates (8)
	Materials Processing	See stack data	Be & Be alloys	.02 lb/hr .0012 T/yr		lb/hr T/yr		lb/hr T/yr	Process Materials balances
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	

Notes: (1) Give a different number to each unit corresponding to unit numbers in Sections 2 through 9.
(2) Smelter furnace, asphalt plant drier, iron-melting cupola, cement manufacture-dry process, solvent cleaner, etc.
(3) Give flow rate in actual cubic feet per minute, if applicable. State temperature (°F), pressure, (psia) and percent moisture (if applicable). Enter "see stack data" if discharge goes directly to the stack.
(4) Particulate matter (give chemical description), Sulfur Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Oxides, etc.
(5) Quantities at maximum production rates. T = tons (2000 lb.)
(6) If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(7) From process material balances, field tests by plant or equipment manufacturer, EPA emission factors (AP-42), other.

SECTION 5 - AIR POLLUTION CONTROL EQUIPMENT, EMISSIONS TO ATMOSPHERE (1) Also attach process flow sheets and equipment layout and assembly drawings necessary to describe all air pollution control equipment.

Unit No. (2)	Air Pollution Control Equipment Type (3)	Manufacturer and Model No.	EMISSIONS TO ATMOSPHERE (4) Pollutant No. 1 Type (5)	Pollutant No. 1 Quantity (6)	Pollutant No. 2 Type (5)	Pollutant No. 2 Quantity (6)	Pollutant No. 3 (7) Type (5)	Pollutant No. 3 (7) Quantity (6)	Air Pollution Control Equipment Collection Efficiency % by Weight	How Determined (8)
	Pre-filter	Cambridge Hi-flow 65	Be & Be alloys	3×10^{-8} lb/hr 2×10^{-7} T/yr		lb/hr T/yr		lb/hr T/yr	48	Manufacturer's rating
	HEPA	Cambridge Absolute		lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	99.97	Manufacturer's rating
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		

Notes: (1) Attach additional sheets as needed, to list all control equipment.
(2) Corresponding to numbers in Sections 2 through 9.
(3) Cyclone, scrubber, electrostatic precipitator, baghouse, etc.
(4) Estimated emissions after gases have passed through control equipment.
(5) Particulate matter, etc. (See Note 4, Section 4)
(6) Quantities at maximum production rates. T = tons (2000 lbs.)
(7) If more than 1 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(8) Field test results, manufacturers rating, etc.

COMPANY NAME Los Alamos National Laboratory

SECTION 10; CERTIFICATION:

I, Harold E. Valencia, hereby certify that the information and data submitted in this application are completely true and as accurate as possible, to the best of my personal knowledge and professional expertise and experience.

Signed this _____ day of _____, 19_____, upon my oath or affirmation, before a notary of the State of _____.

_____ _____

SIGNATURE DATE

Harold E. Valencia

PRINTED NAME

Subscribed and sworn to before me on this _____ day of _____, 19_____.

My authorization as a Notary of the State of _____ expires on the _____ day of _____, 19_____.

_____ _____

NOTARY'S SIGNATURE DATE

_____

NOTARY'S PRINTED NAME

SECTION 3 - HAZARDOUS AIR POLLUTANTS[1] OTHER TOXIC CHEMICALS, AND ODORS

A. Describe any hazardous air pollutants and toxic chemicals used or emitted in plant processes.[2]

Unit[3]	Description of Chemicals[4]	Quantity Emitted to Atmosphere[5]	How, Where Emitted[6]
1	Be and Be alloys	3.2×10^{-6} lb/hr	See Section 4-6
		1.9×10^{-7} tons/yr	

Notes: [1] Asbestos, beryllium, mercury, vinyl chloride, benzene, radionuclides, any others specified by federal EPA.
[2] List other chemicals considered harmful in small amounts and concentrations and not covered in Sections 4 & 5. (E.g., Arsenic and cadmium cpds.)
[3] Give unit number from Section 4 if previously listed; if not, describe source of toxic emissions.
[4] Give trade name or common name and chemical composition if known.
[5] Give in lb. per hr., and tons (2000 lb) per year.
[6] If emitted in separate stack, give stack conditions; if part of another stack flow, specify which one.

B. Describe sources and characteristics of any odors emitted from plant processes: NA

SECTION 4 - WASTE PRODUCT DISPOSAL (SOLID AND LIQUID WASTES, AND AUXILIARY INCINERATION EMISSIONS NOT COVERED IN SECTIONS 4 OR 5)

A. Auxiliary Incineration Operations
Normal on-site combustion operating schedule: _____ hours per day, _____ days per week, _____ weeks per year.
Seasonal or peak combustion operating periods (specify): _____

B. Waste Products or Emissions

Unit No.[1]	Waste Material Type[2]	Waste Material Amount[3]	Method of Disposal[4]	Incinerator Capacity Lb. per Hr.	Auxiliary Fuel Used[5]	Type and Efficiency of Air Cleaning Equipment[6]	Estimate of Air Pollutants, if any Type[7]	Quantity per Year[3]
1	Pre-Filter and HEPA Filter	.02 lb/hr.	Direct Burial at TA-54, Area G	N/A	N/A	N/A	N/A	N/A /hr.
		2.4 lb/yr.						N/A /yr.
	Cleaning Waste	.2 lb /hr.	"	N/A	N/A	N/A	N/A	N/A /hr.
		24 lb /yr.						N/A /yr.
		/hr.						/hr.
		/yr.						/yr.

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Waste paper, wood chips, rubbish, garbage, acids, oils, etc.
[3] Pounds, tons, or gallons.
[4] Incinerator, single chamber; Incinerator, double chamber; sanitary landfill; etc.
[5] Give type and quantity used in incinerator or other burner.
[6] Give general type (cyclone, scrubber, etc.) if any, weight efficiency.
[7] Give major pollutants (ash, smoke, SO_2, etc.).

BERYLLIUM AND BERYLLIUM ALLOY PROCESSING EMISSION CALCULATIONS FOR THE OPERATIONS PLANNED FOR TECHNICAL AREA 3, BUILDING 35, ROOM 105

ASSUMPTIONS AND CALCULATIONS:

1. 100 percent beryllium processing;

2. Processing rate - Maximum 1.7 lb/hr; 20 lb/mo; 240 lb/yr;

3. Maximum spill inside contained system - Estimated at ten percent of process rate or 0.2 lb/hr;

4. Emissions to filters - Estimated at ten percent of spill or 0.02 lb/hr. Yearly emissions - 2.4 lb/yr or .0012 tons per year;

5. Air emissions:

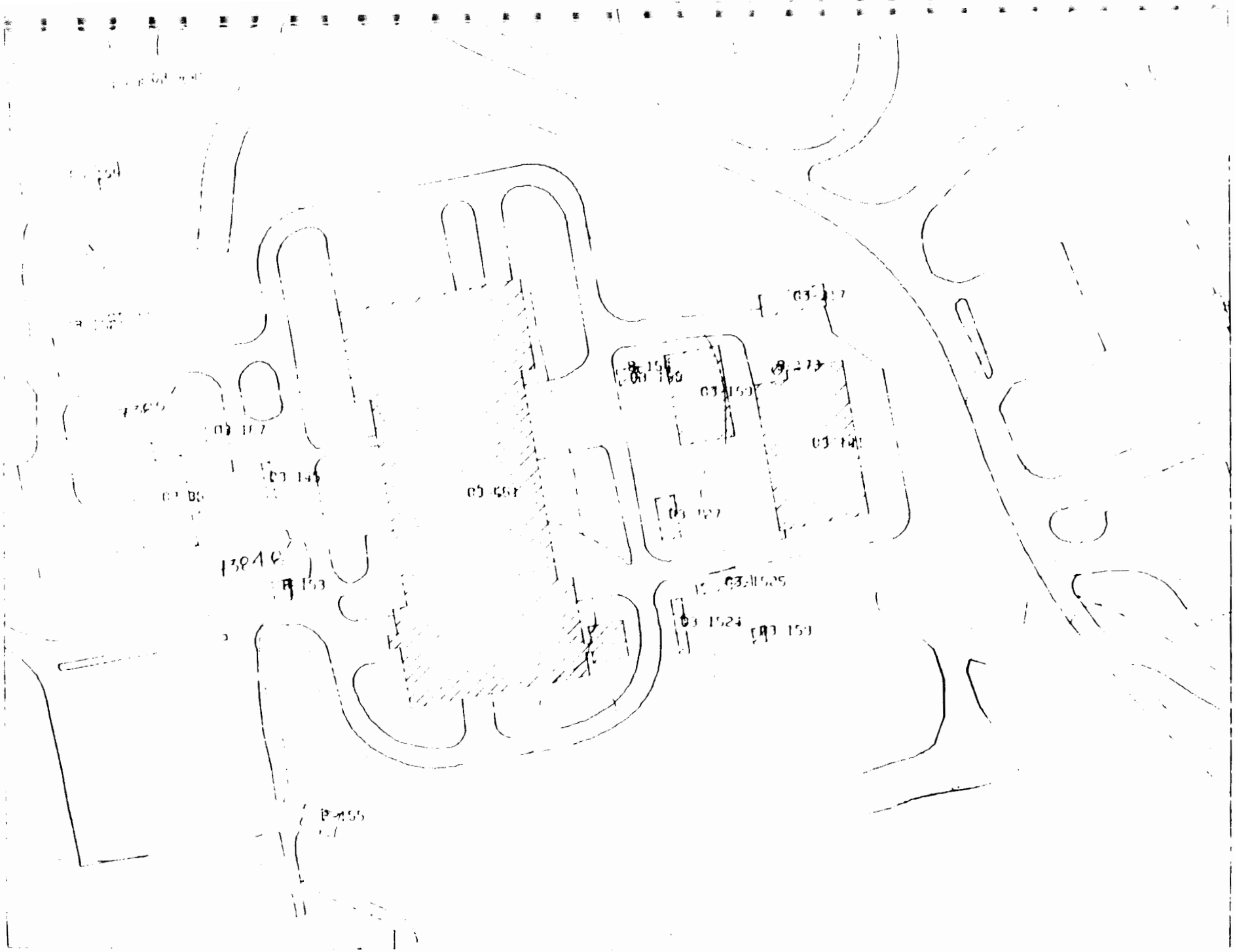
   Cambridge Hi-flow 65 prefilter - 48 percent removal
   Cambridge Absolute HEPA filter - 99.97 percent removal

   Therefore emissions to the ambient air under worst case conditions are:

   Per hour:
   (.02 lb/hr) x .52 x .0003 = 0.0000031 lb/hr

   Per day:
   3.1×10^{-6} lb/hr x 24 hr/day x 454 g/lb = .034 g/day

   Per year:
   (.0012 T/yr) x .52 x .0003 = 0.00000019 T/yr



PERMIT 1081

State of New Mexico
ENVIRONMENT DEPARTMENT
AIR QUALITY BUREAU
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-0070

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

November 25, 1992

CERTIFIED MAIL NO. P 667 233 598
RETURN RECEIPT REQUESTED

Mr. Joseph C. Vozella
Acting Chief, ES&H Branch
Department of Energy
Los Alamos, New Mexico 87544

Air Quality Permit No.1081
Tech. Area 55, Bldg. 4
Los Alamos National Laboratory

Dear Mr. Vozella:

Air Quality Permit No. 1081 is issued by the Air Quality Bureau of the New Mexico Environment Department ("Department") to the Department of Energy ("DOE") pursuant to the Air Quality Control Act ("Act") and regulations adopted pursuant to the Act including Air Quality Control Regulation 702, Permits ("AQCR 702") and is enforceable pursuant to the Act and the air quality control regulations applicable to this source. This permit authorizes the Department of Energy to modify and operate the **beryllium machining operation in Technical Area 55, Building 4** at the Los Alamos National Laboratory located in Los Alamos, New Mexico.

Federal new source performance standards (NSPS) do not apply to this facility. National emission standards for hazardous air pollutants (NESHAP), 40 CFR 61, Subpart A, General Provisions, and Subpart C, National Emission Standard for Beryllium, do apply to those portions of this facility identified in condition 1. During any asbestos demolition or renovation work 40 CFR 61, Subpart M (NESHAP) would apply also.

The Beryllium Machining operation shall be modified and operated in accordance with the permit application dated April 15, 1992 and received April 21, 1992. Those operations which are not subject to AQCR 751 and 40 CFR 61, Subpart C, are the welding/brazing, beryllium compatibility testing, and impact testing, which are identified in Section 2.2 on pages 10-12 of the application. The application was ruled complete on June 1, 1992. The Department has reviewed the permit application for the proposed machining operation, and based on the application, the air quality modeling analysis submitted as part of the application, and the conditions of this permit, the Department has determined that the provisions of the Act and ambient air quality standards will be met. Conditions have been imposed in this permit in order to assure continued compliance. AQCR 702, Part Two K.4 states that any term

DRUG FREE

20003057
US DOE / LAAO

03D 004165

1.0 INTRODUCTION

The National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, regulates certain types of sources. One of these source types is machine shops which process beryllium ore, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight. Regulated processes include cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations. The regulation requires that affected new or modified sources submit applications to construct or modify before the start of construction or modification.

The New Mexico Environment Department (NMED) has received authority from the Environmental Protection Agency (EPA) to enforce the requirements of the beryllium NESHAP. Air Quality Control Regulation (AQCR) 702 sets forth the requirements for permitting beryllium machining sources; this air permit application fulfills the requirements of that regulation for beryllium machining operations to be located in Technical Area 55, Building 4 (TA-55-4; Room 115 and the 300 wing) at Los Alamos National Laboratory. Section 2 of this document provides a brief description of the regulated machining processes. Section 3 describes the topography, land use, climate, and air quality currently existing at the project site. Section 4 contains the results of the air quality assessment. A description of the Preliminary Operational Plan for Startup, Shutdown, and Malfunction of Air Pollution Control Equipment is contained in Section 5. Section 6 contains the completed copy of the Application for Permit and Certificate of Registration.

TRU waste items are packaged in certified waste containers for disposal at the Waste Isolation Pilot Project (WIPP).

Metallographic Specimen Preparation of Beryllium Metal

The metallography process requires the grinding of specimens obtained in the cutting operations described above to prepare them for observations. This operation will be conducted on a non-routine basis in a glovebox in Room 115 under negative pressure. It is anticipated that several samples could be prepared in one day, several times per month. For the purposes of estimating emissions, it will be assumed that 5 samples will be prepared every day.

The samples are first ground to obtain the desired thickness. Following the grinding, electropolishing and/or etching of the sample is performed. This involves the removal of several mils of surface to eliminate the surface damage layer. All the metallographic operations are conducted in kerosene baths. The contaminated kerosene is processed to remove plutonium and beryllium which are both disposed as TRU waste. The kerosene is solidified and disposed as a TRU waste. During these phases of this operation, the beryllium is wet and would not be emitted. The only potential for emissions is that the cutting and grinding wheels are allowed to dry between operations. However, to provide a conservative estimate, it is assumed that all of the particles generated during machining will be pure beryllium and would be emitted to the glovebox atmosphere.

Because the glovebox is under negative pressure, all machined materials which become airborne will be contained within the box and pass through the glove box ventilation system, consisting of four HEPA filters in series, before being exhausted out the north building stack. All of the filters

2. Beryllium and Aluminum Emission Limits

Operation	Be Emission Limit		Al Emission Limit	
	(pph)	(tpy)	(pph)	(tpy)
Weld Cutting	1.0×10^{-5}	2.0×10^{-6}	1.0×10^{-5}	2.0×10^{-6}
Weld Dressing	1.0×10^{-5}	5.0×10^{-8}	1.0×10^{-5}	5.0×10^{-8}
Metallography	2.0×10^{-6}	1.5×10^{-6}	na	na
	2.2×10^{-5}	3.6×10^{-6}	2.0×10^{-5}	2.1×10^{-6}

Condition 2 has been placed in the permit in accordance with AQCR 702, Part Two K.1, K.2.a(ii), and 40 CFR 61 Subpart C. These are the emission rates applied for and evaluated as the basis of the Department's review. They are also less than the 10 grams/24 hour period NESHAP standard (9.2×10^{-4} pph) and were used to demonstrate that the ambient concentration of beryllium will be less than 0.01 ug/m^3 averaged over a 30 day period, both of which are contained in 40 CFR 61.32.

Compliance with this condition will be determined by compliance with the specified emission limits as measured by the appropriate Compliance Test Method specified in condition 4 - Compliance Tests and Test Methods.

3. Control Equipment and Control Efficiencies

Those operations listed below shall be equipped with the following control devices which shall achieve the control efficiencies specified.

Weld cutting - Four HEPA filters - 99.95% control
Weld Dressing - Four HEPA filters - 99.95% control
Metallography - Four HEPA filters - 99.95% control

Control efficiency shall be verified by weekly HEPA filter pressure drop tests and quarterly HEPA filter challenge tests. A copy of the quarterly HEPA tests, a log of the weekly tests and quarterly test results, and a control equipment maintenance log shall be kept for a minimum of two years. This documentation shall be provided upon request to the Department for their inspection.

Condition 3 has been placed in the permit in accordance with AQCR 702, Part Two K.1, K.2.b, and K.2.c which provides that the contents of the application specifically identified shall become terms and conditions of the permit and to ensure that the requirements of the Air Quality Control Act and the federal Clean Air Act are met.

c) During compliance tests operational parameters shall be monitored and recorded. The parameters to be recorded shall be agreed upon between the Department and the DOE at the time of the pretest meeting. This recorded information shall be included with the test report that is required to be furnished to the Bureau and will be used to assist in determining future compliance status. The test shall be conducted at the maximum potential of the operation being tested.

d) Where necessary to prevent cyclonic flow in the stack, flow straighteners shall be installed.

e) The compliance test reports shall be submitted to the Department within thirty (30) days after completion of testing.

Uncontrolled emissions shall be determined as follows:

a) weigh each unit to be machined during the source test before processing;
b) weigh all the unit pieces remaining after processing;
c) subtract the weight after processing from the weight before processing;
d) assume that the difference was exhausted out the ventilation system and constitutes uncontrolled emissions;
e) perform the following calculations to determine control efficiency:

$$\text{control efficiency} = \left(1 - \frac{\text{measured emissions of stack test}}{\text{uncontrolled emissions}}\right) \times 100$$

NOTE: Two copies of the compliance test results are to be sent to the Bureau, one to the Technical Analysis and Permit Section and one to the Surveillance and Enforcement Section.

Condition 4 has been placed in the permit in accordance with AQCR 702, Part Two N and 40 CFR 61 Subpart A, 61.13.

Compliance with this condition will be determined by satisfactory completion of the compliance tests and submittal of the results to the Department within the time periods specified.

5. Revisions and Modifications

Any future physical changes or changes in the method of operation may constitute a modification as defined by AQCR 702, Permits, and shall be preceded by the submittal of a

cleared Department personnel. Nothing in this permit condition shall be construed to deny access authorized by the Air Quality Control Act.

Condition 7 has been placed in the permit in accordance with AQCR 702, Part Two K.2.d and K.5 and AQCR 703.1, Part Two D to allow the Department to determine compliance with the terms and conditions of the permit.

Compliance with this condition will be determined by Department inspections of the facility, production of records and information required to be maintained, and non-restricted entry to the property.

8. Posting of the Permit

A copy of this permit shall be readily available in Technical Area 55 in the administrative office adjacent to building 4 and a copy shall be kept at the Los Alamos Area Office of the DOE in Los Alamos, New Mexico. The permit shall be made available to Department personnel for inspection upon request.

Condition 8 has been placed in the permit in accordance with AQCR 702, Part Two K.2.d to allow Department personnel to properly identify the equipment that constitutes the plant when conducting inspections and to keep plant personnel aware of the applicable conditions that apply to this plant.

Compliance with this condition will be determined by Department inspections of the facility which show that a copy of the permit has been posted.

9. Recordkeeping and Reporting

Emission test results and facility operating parameters shall be retained at the source for a minimum of two (2) years. These records shall be made available to Department personnel upon request. Reports may be required to be submitted to the Department if inspections of the source indicate non-compliance with this permit or as a means of determining compliance.

Condition 9 has been placed in the permit in accordance with AQCR 702, Part Two K.2.d and K.5.

Compliance with this condition will be based on the adequacy of the records and timely submission of the reports if required.

ADDITIONAL REQUIREMENTS

Program Manager, Surveillance and Enforcement Section
New Mexico Environment Department
Air Quality Bureau
1190 St. Francis Drive, Runnels Bldg.
P.O. Box 26110
Santa Fe, New Mexico 87502

APPEAL PROCEDURES

AQCR 702, Part Two H, Permit Decisions and Appeals, paragraph 5, provides that if the applicant is dissatisfied with the action taken by the Department, a hearing may be requested before the Environmental Improvement Board. The request must be made in writing to the Secretary of the New Mexico Environment Department within thirty (30) days after notice of the Department's action has been received by the applicant. Unless a timely request for a hearing is made, the decision of the Department shall be final. Requests for a hearing shall be sent to:

Secretary, New Mexico Environment Department
1190 St. Francis Drive, Runnels Bldg.
P.O. Box 26110
Santa Fe, New Mexico 87502

If you have any questions regarding this permit please contact Jim Shively in Santa Fe at 827-0068.

Sincerely,

Cecilia Williams
Bureau Chief
Air Quality Bureau

CW/js

xc: Garth Graves, District I Manager, Albuquerque
David Tomko, Health Program Manger, Farmington
Debby Brinkerhoff, Program Manager, Surveillance & Enforcement Section
Jole Luehrs, U.S. EPA Region VI, Dallas

NATIONAL EMISSIONS STANDARD FOR HAZARDOUS AIR POLLUTANT AIR QUALITY PERMIT APPLCIATION FOR THE BERYLLIUM MACHINING OPERATIONS IN TECHNICAL AREA 55 BUILDING 4

OWNER:

U. S. DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE
LOS ALAMOS, NEW MEXICO 87544

OPERATOR:

Los Alamos National Laboratory
P. O. Box 1663
Los Alamos, New Mexico 87544

March 1992

Weld Bead Dress Machining Operations

A standard numerically controlled lathe will be purchased for beryllium machining outside of the glovebox line in Wing 300. After beryllium parts are welded (Figure 2-3) the weld bead will be "dressed". This involves running the lathe tool across the weld bead and/or beryllium surface and machining off any excess material. The shavings are large enough in size that almost no material will become airborne.

The weld bead operation will be performed on a non-routine basis. For estimating emissions, it will be assumed that operations will be conducted on 2 subsequent days, with none occurring for the rest of the month.

The weld bead dress operation will be conducted in a hood equipped with a HEPA filter. The filter will have a minimum removal efficiency of 99.95 percent when measured before installation and will be tested annually. The air from the hood will then be exhausted into the room; the room air passes through a three-stage HEPA filter system. Therefore, the beryllium-contaminated material captured by the hood will pass through a total of four HEPA filters in series before release to the ambient air through the south building stack. The extremely small quantity not captured by the hood will be released to the room and pass through three HEPA filters before release.

All waste from the weld bead dress operation is mixed low level waste (LLW). This designation means that the waste is potentially contaminated with very small amounts of plutonium and contains non-radioactive hazardous materials. The mixed LLW items are segregated from all other LLW,

3.0 PROJECT SITE DESCRIPTION

3.1 Topography

LANL is located in Los Alamos County, in north central New Mexico, approximately 25 miles northwest of Santa Fe. The laboratory is situated on the Pajarito Plateau, consisting of a series of finger-like mesas separated by deep east-west canyons cut by intermittent streams. Mesa tops range in elevation from 7,800 feet in the western portions of the site to 6,200 feet to the east. The Jemez Mountains rise rapidly west of the site to peak in excess of 10,000 feet. The topography near the proposed facility is shown on the attached contour map Figure 3-1.

3.2 Land Use

Most development at the site is confined to mesa tops. The land surrounding LANL is largely undeveloped and consists primarily of the Santa Fe National Forest and Bandelier National Monument. The area is considered rural in nature for dispersion modeling purposes.

3.3 Climate

Los Alamos has a semiarid, temperate mountain climate. Average annual precipitation is about 18 inches. Summers are generally sunny with moderately warm days and cool nights. Maximum temperatures are usually below 90 °F. Winter temperatures typically range from about 15 to 25 °F during the night and from 30 to 50 °F during the day.

Surface winds in Los Alamos often vary dramatically with time of day and with location because of the complex terrain. A diurnal upslope/drainage wind cycle often occurs, particularly in the western portions of the Laboratory near the Jemez Mountains. Light southeasterly

4.0 AIR QUALITY ASSESSMENT

This section describes the air quality dispersion modeling analysis for the weld cutting, metallographic specimen preparation, and weld bead dress operations and the calculated beryllium impacts.

4.1 Emissions Data

Under NESHAP, controlled beryllium emissions must not exceed 10 grams in a 24 hour period. In each of the regulated beryllium operations, aluminum and silicon could potentially be emitted to the atmosphere. Aluminum metal and oxides are regulated as a toxic air pollutant with allowable emissions of 0.667 pounds per hour (303 grams per hour); thus the amount of aluminum that could be emitted is more than an order of magnitude higher than allowable beryllium emissions. To provide the most conservative estimate, it was assumed that all of the particles generated by TA-55-4 beryllium operations would be pure beryllium.

Beryllium operations are conducted during the working hours of 8 am to 5 pm. Very occasionally, beryllium operations could be performed during overtime hours, from 5 pm to 8 pm.

Weld Cutting Operations

The amount of material lost during weld cutting varies considerably. If the cut-off wheels are used, the particles generated may be fairly small and could become airborne. If the lathe is used, the shaving are a large enough size the almost no material becomes airborne. For the purposes of this conservative analysis, it was assumed that all materials cut would become entrained in the glovebox atmosphere.

Weld Bead Dress Operation

The amount of material lost during the weld bead dress operations will vary considerably. Depending on the amount of excess weld buildup, the amount shaved off could vary from 0-10 grams. The shavings are large enough in size that almost no material will become airborne. For the purpose of estimating maximum emissions, it will be assumed that 10 grams is produced during each operation.

The assumptions made to conservatively calculate maximum daily emissions are:

- 2 kg can be processed during a 24 hour period, with a maximum loss of 20 grams;
- All of the material machined would consist only of beryllium (instead of a composite of beryllium, aluminum, and silicon);
- All of the machined material would be entrained in the glovebox atmosphere; and
- The glovebox atmosphere would pass through only one HEPA filter (instead of the four filters located in series through which the glovebox atmosphere actually passes).

Using these assumptions the uncontrolled maximum release rate per day would be 20 g.

Assuming only one HEPA filter is in place with a 99.95 percent removal efficiency, controlled emissions would be:

20 g/24 hours x (1-0.9995) = 0.01 g/24 hours

The impacts at discrete distances were also modeled. The nearest public access is Pajarito Road, located 150 meters from the stack. The site boundary is 1200 meters from the stack.

4.2.4 30-Day Average Concentration Estimates

Because SCREEN calculates only a maximum 1-hour average concentration, the maximum 30-day concentration had to be estimated by applying Equation 4.12 from Turner's Workbook of Atmospheric Dispersion Estimates (Revised) (1969). This equation conservatively estimates concentrations for longer time intervals using known short-term concentration estimates. This equation is:

$$X_s = X_k * (t_k / t_s)^p$$

where:

X_s = the concentration estimate for the desired sampling time (t_s);

X_k = the concentration for the shorter sampling period (t_k); and

p = is a constant ranging from 0.17 to 0.2. The p value used for this analysis was 0.17, since this yields the highest ambient impact estimates.

Applying this equation to the one-hour predicted concentration to estimate a 30-day concentration yields:

$$X_{720\text{-hr}} = X_{1\text{-hour}} * (1/720)^{0.17} \quad \text{or}$$

$$X_{720\text{-hr}} = X_{1\text{-hr}} * 0.327$$

The use of this equation requires that an average hourly concentration be calculated for the entire 30-day period.

The maximum potential emissions during malfunctions startup, and shutdown should be no greater than those calculated during routine operations because:

- the HEPA filters are operational during startup and shutdown, and
- credit has only been taken for one HEPA filter rather than the four HEPA filters that actually control emissions from each process. The failure of all four HEPA filters is not considered to be a credible accident.

Return to:

EID-AIR QUALITY BUREAU
NEW SOURCE REVIEW UNIT
P.O. BOX 968
SANTA FE, NM 87504-0968
TELEPHONE: 505- 827-0070

Revised: 2/80

FOR EID USE ONLY
Application No.:
App. Rec'd. Date:
Date App. Complete:
Reviewed by:
Approved/Disapproved:
Date:
AQCR: County:
Date St. Operation:
Date Perf. Test/Insp:

APPLICATION FOR PERMIT AND CERTIFICATE OF REGISTRATION

GENERAL FORM

FOR

SOURCES LOCATED WITHIN THE STATE OF NEW MEXICO [1]

Please answer all questions applicable to your specific business, operation, and products.
Use the abbreviation "N.A." for "not applicable" wherever appropriate.
Submittal of process flow sheets, equipment descriptions, and other information may be required to complete this application. [2]

SECTION I - GENERAL DATA

1. Name of Company: U. S. Department of Energy, Los Alamos Area Office 2. Date Submitted:

3. Company Address: Los Alamos, New Mexico 87544 Phone (505) 667-5105

Person to Contact: Jerry L. Bellows Title: DOE/Los Alamos Area Office, Area Manager Phone (505) 667-5105

4. Name, Address and location of new plant or modification: Technical Area 55, Building 4, Room 115 and Wing 300

Is U.S.G.S. quadrangular map or equivalent attached? [3] Yes

5. Describe briefly the type and capacity of the plant and nature of modifications (if applicable) and products: [3] Beryllium parts are processed with cuts typically being made over welds containing Beryllium, Aluminum, and Silicon. Beryllium and beryllium oxide samples are cut and ground. Beryllium welds are dressed.

Date of Anticipated Start of Construction: Receipt of permit

6. Class of land at plant site (private, State, Federal, Indian, etc.): Federal

7. Is this permanent? Yes If not, how long is it expected to be occupied? Date of Anticipated Startup: Receipt of permit

see project description in support documentation

8. Normal operating schedule: hours per day, days per week, weeks per month, months per year.

9. Specify maximum operating periods: Same as normal operating conditions

10. Specify percent annual production by quarters: Dec. - Feb. 25, Mar. - May 25, June - Aug. 25, Sep. - Nov. 25

Notes: [1] Submitted in accordance with Air Quality Control Regulation No. 702, Permits, or Regulation No. 701, Registration.
[2] Notification of the need for other additional information required to complete this application will be given to the applicant by the Air Quality Bureau within 10 days after the receipt of the application. Filing of the application will not be considered to be complete until the date of submittal of such additional information. The granting or denial of the permit will be made within 30 days after this completion date.
[3] Regulation No. 702, Section D, Item 5 requires that this [illegible]
Geological Sur[illegible]

SECTION 2 - FUEL USAGE

Unit No. (1)	Type of Fuel Burning Equipment (2)	Equipment Manufacturer	Rated Capacity Million Btu/Hr. (3)	Fuel Type (4)	FUEL DATA (5), (6) Amount Per Year (7)	Heating Value (8)	Percent Sulfur (9)	Percent Ash (9)
2	None							

Notes: (1) Give a different number to represent each unit; give corresponding data opposite the same number in Sections 3 through 9
(2) Boiler, oven, furnace, gas engine, gas turbine, etc. Include model number, configuration, etc., attach separate sheets if necessary
(3) Give maximum rate as well as normal rate, if different.
(4) If auxiliary fuel or different fuel used "on standby", also give data for that fuel.
(5) Natural gas; bituminous coal; No. 6 fuel oil; refinery gas; etc. Include condition of fuel (pulverized, slurry, etc. if applicable)
(6) Million cubic feet of gas; tons of coal; gallons of fuel oil; pounds of LPG; etc.
(7) Higher heating value; Btu/lb, Btu/gal or Btu/MCF (MCF = 1000 std. cu. ft.)
(8) Sulfur and ash contents should be maximum percentages by weight. Sulfur and ash contents are not required if sweet natural gas is used as the fuel.
(9) Attach process flow sheet, including material balance for the combustion plant, if available.

SECTION 3 - MATERIALS PROCESSED AND PRODUCED

A. RAW MATERIALS PROCESSED

Unit No. (1)	Type	Composition (2)	Condition (3)	Quantity (4) (Specify Units)
2	Beryllium and beryllium oxide samples	commercially pure Be and Be O	solid samples and dust	Maximum of 5 samples per day of Be 1 sample per week of Be O

B. MATERIALS PRODUCED (DO NOT INCLUDE EMISSIONS AND PRODUCTS LISTED IN SECTIONS 4, 8, AND 9)

2	Beryllium and Beryllium oxide samples	commercially pure Be and Be O	solid samples and dust	Maxium of 5 samples per day of Be 1 sample per week of Be O

Section 4 - UNIT EMISSIONS (PRIOR TO AIR POLLUTION CONTROL EQUIPMENT, OR TO ATMOSPHERE, IF UNCONTROLLED)

(1)

Unit No. (1)	Process or Operation (2)	Quantity of Gases Dis-charged to Air Pollution Con-trol Equipment (3)	ESTIMATES OF AIR POLLUTANTS: Pollutant No. 1 Type (4)	Pollutant No. 1 Quantity (5)	Pollutant No. 2 Type (4)	Pollutant No. 2 Quantity (5)	Pollutant No. 3 (7) Type (4)	Pollutant No. 3 (7) Quantity (5)	Basis of Estimate (7)
1	Be machining	see stack data	Be	2×10^{-2} lb/hr 4×10^{-3} T/yr	Al	2×10^{-2} lb/hr 4×10^{-3} T/yr		lb/hr T/yr	process material balance
2	Metallography	see stack data	Be	4×10^{-3} lb/hr 3×10^{-3} T/yr		lb/hr T/yr		lb/hr T/yr	process material balance
3	Weld dressing	see stack data	Be	2×10^{-2} lb/hr 1×10^{-4} T/yr	Al	2×10^{-2} lb/hr 1×10^{-4} T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr	

Notes: (1) Give a different number to each unit corresponding to unit numbers in Sections 2 through 9.
(2) Smelter furnace, asphalt plant drier, iron-melting cupola, cement manufacture-dry process, solvent cleaner, etc.
(3) Give flow rate in actual cubic feet per minute, if applicable. State temperature (°F), pressure, (psia) and percent moisture (if applicable). Enter "see stack data" if discharge gases directly to the stack.
(4) Particulate matter (give chemical description), Sulfur Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Oxides, etc.
(5) Quantities at maximum production rates. T = tons (2000 lb.)
(6) If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(7) From process material balances, field tests by plant or equipment manufacturer, EPA emission factors (AP-42), other.

Section 5 - AIR POLLUTION CONTROL EQUIPMENT, EMISSIONS TO ATMOSPHERE(1)

Also attach process flow sheets and equipment layout and assembly drawings necessary to describe all air pollution control equipment.

(1)

Unit No. (2)	Air Pollution Control Equipment: Type (3)	Manufacturer and Model No.	EMISSIONS TO ATMOSPHERE (4): Pollutant No. 1 Type (5)	Pollutant No. 1 Quantity (6)	Pollutant No. 2 Type (5)	Pollutant No. 2 Quantity (6)	Pollutant No. 3 (7) Type (5)	Pollutant No. 3 (7) Quantity (6)	Air Pollution Control Equipment Collection Efficiency: % by Weight	How Determined (8)
1	Four HEPA Filters	Flanders models 007-4-04-00-NU 007-8-04-00-NU	Be	1×10^{-5} lb/hr 2×10^{-8} T/yr	Al	1×10^{-5} lb/hr 2×10^{-8} T/yr		lb/hr T/yr	99.95	DOS testing
2	Four HEPA Filters	Flanders models 007-4-04-00-NU 007-8-04-00-NU	Be	2×10^{-6} lb/hr 1.5×10^{-6} T/yr		lb/hr T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		
3	Four HEPA Filters	Flanders models 007-4-04-00-NU 007-8-04-00-NU	Be	1×10^{-5} lb/hr 5×10^{-8} T/yr	Al	1×10^{-5} lb/hr 5×10^{-8} T/yr		lb/hr T/yr		
				lb/hr T/yr		lb/hr T/yr		lb/hr T/yr		

Notes: (1) Attach additional sheets as needed, to list all control equipment.
(2) Corresponding to numbers in Sections 2 through 9.
(3) Cyclone, scrubber, electrostatic precipitator, baghouse, etc.
(4) Estimated emissions after gases have passed through control equipment.
(5) Particulate matter, etc. (See Note 4, Section 4)
(6) Quantities at maximum production rates. T = tons (2000 lbs.)
(7) If more than 3 types of pollutants are expected, use 2 or more spaces for the same unit, or attach additional sheets if required.
(8) Field test results, manufacturers rating, etc.

(1) See assumptions for unit emissions and emissions to the atmosphere in Summary

SECTION 8 - HAZARDOUS AIR POLLUTANTS[a] OTHER TOXIC CHEMICALS, AND ODORS

A. Describe any hazardous air pollutants and toxic chemicals used or emitted in plant processes.[1]

Unit[2]	Description of Chemicals[3]	Quantity Emitted to Atmosphere [4]	How, Where Emitted [5]
1	Beryllium	See Section 4	See project description in support documentation
1	Aluminum	See Section 4	See project description in support documentation

Notes: [1] Asbestos, beryllium, mercury, vinyl chloride, benzene, radionuclides, any others specified by federal EPA.
[2] List other chemicals considered harmful in small amounts of concentrations and not covered in Sections 4 & 5. (E.g., Arsenic and cadmium cpds.)
[3] Give unit number from Section 4 if previously listed; if not, describe source of toxic emissions.
[4] Give trade name or common name and chemical composition if known.
[5] Give in lb. per hr., and tons (2000 lb) per year.
[6] If emitted in separate stack, give stack conditions; if part of another stack flow, specify which one.

B. Describe sources and characteristics of any odors emitted from plant processes: _____

SECTION 9 - WASTE PRODUCT DISPOSAL (SOLID AND LIQUID WASTES, AND AUXILIARY INCINERATION EMISSIONS NOT COVERED IN SECTIONS 4 OR 5)

A. Auxiliary Incineration Operations:
Normal on site combustion operating schedule: _____ hours per day, _____ days per week, _____ weeks per year.
Seasonal or peak combustion operating periods (specify): _____

B. Waste Products or Emissions

Unit No.[1]	Waste Material Type[2]	Waste Material Amount[3]	Method of Disposal[4]	Incinerator Capacity lb. per Hr.	Auxiliary Fuel Used[5]	Type and Efficiency of Air Cleaning Equipment[6]	Estimate of Air Pollutants, if any Type[7]	Quantity per Year[8]
1	Mixed Tru	N/A /hr. 25 lb /yr.	WIPP	N/A	N/A	N/A	None	/hr. /yr.
1	Mixed LLW	N/A /hr. 25 lb /yr.	On - Site Landfill	N/A	N/A	N/A	None	/hr. /yr.
		/hr. /yr.						/hr. /yr.

Notes: [1] Corresponding to numbers in Sections 2 through 9.
[2] Waste paper, wood chips, rubbish, garbage, acids, oils, etc.
[3] Pounds, tons, or gallons.
[4] Incinerator, single chamber, incinerator, double chamber; sanitary landfill; etc.
[5] Give type and quantity used in incinerator or other burner.
[6] Give general type (cyclone, scrubber, etc.) if any, weight efficiency.
[7] Give major pollutants (soot, smoke, SO_2, etc.)

EMISSIONS SAMPLING FOR BERYLLIUM PARTICULATES

AT
LOS ALAMOS NATIONAL LABORATORY
TA-55, BLDG 4 BERYLLIUM MACHINING: SOUTH STACK

LOS ALAMOS, NEW MEXICO

KRAMER & ASSOCIATES
ALBUQUERQUE, NEW MEXICO

CERTIFICATION

The following report has been reviewed and approved to accurately represent the sampling and analyses actually performed. The results reported are accurate to the best of our knowledge.

Gary R. Kramer, PE

TABLE 1

BERYLLIUM EMISSIONS DATA SUMMARY

TA-55, BUILDING 4 SOUTH STACK

TEST NUMBER		STACK FLOW RATE, DSCFM	BERYLLIUM EMISSION LB/HOUR x 10-6
Background:	1	18543	<2.5
	2	19138	<2.4
	3	17716	<2.4
Machining:	1	16381	<2.5
	2	16177	<2.4
	3	16418	<2.5

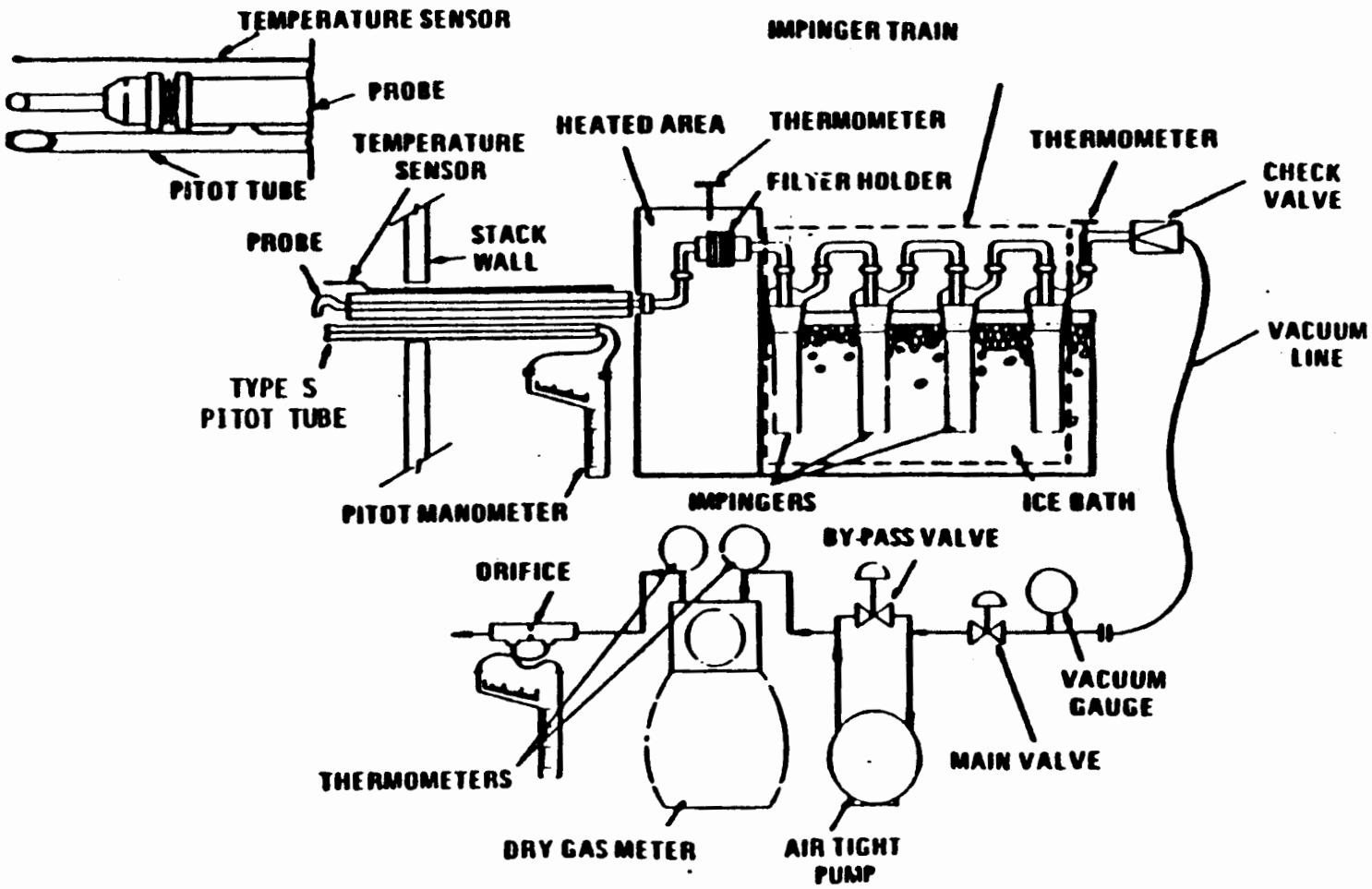


FIGURE 2

METHOD 5 SAMPLING TRAIN SCHEMATIC

KRAMER & ASSOCIATES
ENGINEERS / ENVIRONMENTAL CONSULTANTS

```
2 REM
3 REM ********  K R A M E R   &   A S S O C I A T E S  ***********
4 REM
6 REM ******* BERYLLIUM SAMPLING DATA ANALYSIS PROGRAM ********
8 REM
10 REM ---------------------------------------------------------------
12 REM ***NOMENCLATURE: RN(I) = RUN NUMBER                            *
14 REM                 H2O(I) = ML OF WATER COLLECTED                 *
16 REM                CUFT(I) = CUBIC FEET OF GAS SAMPLE              *
18 REM                 CO2(I) = % CARBON DIOXIDE IN STACK GAS         *
20 REM                  O2(I) = % OXYGEN IN STACK GAS                 *
22 REM                  MG(I) = MILLIGRAMS BERYLLIUM COLLECTED        *
26 REM ---------------------------------------------------------------
28 REM
30 FOR I = 1 TO 3  STEP 1
32 READ RN(I), H2O(I), CUFT(I), CO2(I), O2(I), MG(I)
34 REM
36 REM ---------------------------------------------------------------
38 REM ** NOMENCLATURE: PTS(I) = TOTAL NUMBER OF SAMPLING POINTS    *
40 REM                   BP(I) = BAROMETRIC PRESSURE, IN. HG        *
42 REM                   SP(I) = STACK STATIC PRESSURE, IN. HG      *
44 REM                   CP(I) = ORIFICE COEFFICIENT                *
46 REM                 AREA(I) = STACK CROSS SECTIONAL AREA, SQ FT *
48 REM                  TPD(I) = NOZZLE DIAMETER, INCHES            *
50 REM                 TIME(I) = SAMPLING TIME, MINUTES             *
52 REM ---------------------------------------------------------------
54 REM
56 REM
58 READ PTS(I), BP(I), SP(I), CP(I), AREA(I), TPD(I), TIME(I)
60 REM
2 REM *********** CALCULATE AVERAGES OF SAMPLING DATA **************
64 REM
66 A=0:B=0:C=0:D=0:E=0
68 FOR Z=1 TO PTS(I)
70 REM
72 REM ---------------------------------------------------------------
74 REM ** NOMENCLATURE: DELP = VELOCITY PRESSURE AT A SAMPLING POINT, IN H2O
76 REM                  DELH = ORIFICE DELTA P, IN. H2O
78 REM                   TMI = DRY GAS METER INLET TEMP. F:  (AVG. IS ATM)
80 REM                   TMO = DRY GAS METER OUTLET TEMPERATURE, F
82 REM                  STKT = STACK TEMPERATURE, DEG. F
84 REM ---------------------------------------------------------------
86 READ DELP, DELH, TMI, TMO, STKT
90 REM
92 A=A+SQR(DELP): B=B+DELH: C=C+TMI: D=D+TMO: E=E+STKT
94 NEXT Z
96 REM
98 REM *** A(  ) REFERS TO "AVERAGE" PARAMETER IN 74-82 ABOVE ****
100 ADELP(I) = INT(10000*A/PTS(I))/10000
105 ADELH(I) = INT(1000*B/PTS(I))/1000
110 ATM(I) = INT(100*(C+D)/(2*PTS(I)))/100
115 ASTKT(I) = INT(100*E/PTS(I))/100
120 REM
122 REM
124 REM ---------------------------------------------------------------
26 REM ** NOMENCLATURE: VMSTD = DRY STD CUBIC FEET OF GAS SAMPLE      *
128 REM                   VW = STD CUBIC FEET OF WATER VAPOR COLLECTED *
130 REM                  BWO = PERCENT WATER VAPOR IN STACK GAS        *
132 REM                   N2 = PERCENT NITROGEN IN STACK GAS           *
134 REM                   MW = MOLECULAR WEIGHT OF STACK GAS           *
136 REM                  DMW = DRY MOLECULAR WEIGHT OF STACK GAS       *
138 REM                  VSA = AVERAGE STACK GAS VELOCITY, FPM         *
140 REM                  [illegible] = AVERAGE STACK GAS [illegible]
```

```
2009 DATA 0.30,1.40,57,47,69
2010 DATA 0.58,2.65,53,47,71
2011 DATA 0.68,3.10,60,48,69
2012 DATA 0.64,2.90,62,48,69
2500 REM ******************* END OF RUN #2 DATA ********************
2501 REM
2550 REM
2590 REM ******** RUN #3 DATA ********
2999 DATA 3,3.5, 46.330,0  ,20.9,0.00004
3000 DATA 12,23.72,23.72,0.848,10  ,.251,60
3001 DATA 0.25,2.50,47,49,71
3002 DATA 0.63,2.80,58,50,70
3003 DATA 0.54,2.40,62,50,70
3004 DATA 0.37,1.65,56,50,70
3005 DATA 0.35,1.55,59,52,69
3006 DATA 0.33,1.45,60,51,69
3007 DATA 0.21,0.94,59,51,70
3008 DATA 0.21,0.94,61,53,69
3009 DATA 0.10,0.45,60,55,69
3010 DATA 0.52,2.30,58,53,72
3011 DATA 0.41,2.30,58,53,72
3012 DATA 0.42,1.90,63,53,70
3500 REM ******************* END OF RUN #3 DATA ********************
3525 REM
3535 PRINT ISO(1),ISO(2),ISO(3) :STOP
3550 REM
3575 REM ********  PRINTING COMMANDS  ********
3585 REM
3605 LPRINT CHR$(10)CHR$(14)"                          BACKGROUND SAMPLES DATA S
ARY"
3610 LPRINT CHR$(10)CHR$(14)"                         BLDG 4, TA-55 BERYLLIUM PF
SING"
3612 LPRINT CHR$(10)CHR$(14)"                          LOS ALAMOS NATIONAL LABOF
RY"
3615 LPRINT CHR$(10)
3620 LPRINT CHR$(10)
3625 LPRINT CHR$(10);TAB(7)"SAMPLING DATA";TAB(36)"TEST #1        TEST #2
 TEST #3"
3627 LPRINT TAB(7)"--------------";TAB(36)"-------        -------          ----
"
3630 LPRINT CHR$(10)
3635 LPRINT "ACTUAL METERED CUBIC FEET            ";CUFT(1);TAB(50);CUFT(2);TAB
);CUFT(3)
3640 LPRINT "BAROMETRIC PRESSURE, (IN HG)         ";BP(1);TAB(50);BP(2);TAB(66)
(3)
3645 LPRINT "AVERAGE GAS METER TEMPERATURE (F)    ";ATM(1);TAB(50);ATM(2);TAB(66
ATM(3)
3650 LPRINT "MILLILITERS WATER COLLECTED          ";H20(1);TAB(50);H20(2);TAB(66
H20(3)
3655 LPRINT "MILLIGRAMS BERYLLIUM COLLECTED     <";INT(100000!*MG(1))/100000!;T
(49);"<";INT(100000!*MG(2))/100000!;TAB(65);"<";INT(100000!*MG(3))/100000!
3660 LPRINT "CARBON DIOXIDE IN STACK GAS, %       ";CO2(1);TAB(50);CO2(2);TAB(66
CO2(3)
3665 LPRINT "OXYGEN IN STACK GAS, %               ";O2(1);TAB(50);O2(2);TAB(66);
(3)
3670 LPRINT "NITROGEN IN STACK GAS, %             ";N2(1);TAB(50);N2(2);TAB(66);
 3)
3675 LPRINT "STATIC PRESSURE IN STACK  (IN HG)    ";SP(1);TAB(50);SP(2);TAB(66);
(3)
3680 LPRINT "AVERAGE STACK TEMPERATURE, (F)       ";ASTKT(1);TAB(50);ASTKT(2);TA
66);ASTKT(3)
3685 LPRINT "S-PITOT CORRECTION FACTOR            ";CP(1);TAB(50);CP(2);TAB(66);
(3)
3690 LPRINT "AVG SQUARE ROOT [illegible]
```

BACKGROUND SAMPLES DATA SUMMARY

BLDG 4, TA-55 BERYLLIUM PROCESSING

LOS ALAMOS NATIONAL LABORATORY

SAMPLING DATA	TEST #1	TEST #2	TEST #3
ACTUAL METERED CUBIC FEET	46.036	48.62	46.33
BAROMETRIC PRESSURE, (IN HG)	23.72	23.72	23.72
AVERAGE GAS METER TEMPERATURE (F)	48.54	49.91	55.04
MILLILITERS WATER COLLECTED	.5	2	3.5
MILLIGRAMS BERYLLIUM COLLECTED	< .00004	< .00004	< .00004
CARBON DIOXIDE IN STACK GAS, %	0	0	0
OXYGEN IN STACK GAS, %	20.9	20.9	20.9
NITROGEN IN STACK GAS, %	78.1	78.1	78.1
STATIC PRESSURE IN STACK (IN HG)	23.72	23.72	23.72
AVERAGE STACK TEMPERATURE, (F)	70	69.58	70.08
S-PITOT CORRECTION FACTOR	.848	.848	.848
AVG SQUARE ROOT VEL PRES (IN H2O)	.6123	.6326	.587
AREA OF STACK, (SQ.FT)	10	10	10
SAMPLING TIME, (MINUTES)	60	60	60
NOZZLE DIAMETER, (INCHES)	.251	.251	.251
AVG ORIFICE DELTA P, (IN H2O)	1.669	1.884	1.764

CALCULATED RESULTS			
CORRECTED METER VOLUME (DSCF)	38.08	40.14	37.85
VOLUME H2O COLLECTED (SCF)	.02	9.000001E-02	.16
PERCENT H2O IN STACK GAS	0	.2	.4
MOLE WT STACK GAS (WET)	28.95	28.93	28.91
MOLE WT STACK GAS (DRY)	28.95	28.95	28.95
MOLE FRACTION DRY STACK GAS	1	.998	.996
AVG STACK VELOCITY, (FPM)	2339	2417	2244
AVG STACK FLOW (DSCFM)	18543	19138	17716
AVG STACK FLOW (ACFM)	23390	24121	22350
ISOKINETIC RATIO, %	99.9	102.1	104
BERYLLIUM EMISSION, (GR/DSCF)	< 1.6E-08	< 1.5E-08	< 1.6E-08
BERYLLIUM EMISSION, (LB/HR)	< .0000025	< .0000024	< .0000024

PARTICULATES SAMPLING DATA

Plant Name and Location Los Alamos TA 55 Blank Run No. 1

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
West 1	0	40.141	0.58	2.50	2.5	44	44	1	127	43	72	
at 2	5	—	0.65	2.75	2.75	51	47	2	141	40	72	
to 3	10	50.03	0.57	2.40	2.40	56	46	2	105	44	70	
	15	54.772										
4	15	54.772	0.37	1.60	1.60	49	45	<1	118	43	70	
5	20	—	0.24	1.05	1.05	52	45	<1	124	43	69	
6	25	61.64	0.27	1.15	1.15	52	46	<1	142	42	70	
	30	64.827										
7	0	64.827	0.27	1.15	1.15	50	45	<1	134	44	69	
8	5	68.0	0.30	1.30	1.30	51	46	<1	124	42	69	
9	10	71.37	0.16	0.69	0.69	53	46	<1	138	44	69	
	15	74.00										
East 10	0	74.00	0.49	2.1	2.1	50	46	<1	136	45	70	
11	5	—	0.40	1.75	1.75	54	46	<1	146	45	70	
12	10	82.32	0.37	1.6	1.60	55	47	<1	144	45	70	
	15	86.177										
		46.036	$\sqrt{0.612}$	1.67		51.3	45.8				70	
						48.5						

PARTICULATES SAMPLING DATA

Plant Name and Location Los Alamos TA 55 Blank Run Run No. B2

Point	Time	Gas Meter Rdg. Ft^3	ΔP Pitot Rdg. "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Vacuum "Hg. gauge	Hot Box Temp. °F	Impinger Temp. °F	Stack Temp. °F	ΔP "H_2O
1	0	86.78	0.55	2.5	2.5	45	46	2	70	43	72	
2	5	–	0.42	1.9	1.9	53	46	2	107	41	70	
3	10	95.1	0.38	1.7	1.7	54	46	<1	135	45	69	
	15	98.95						<1				
4	0	98.95	0.27	1.2	1.2	51	46	<1	126	46	69	
5	5	102.21	0.25	1.15	1.15	52	46	<1	125	44	69	
6	10	105.5	0.18	0.82	0.82	52	46	<1	135	44	69	
	15	108.28									–	
7	0	108.28	0.38	1.7	1.7	48	46	<1	112	45	70	
8	5	112.14	0.35	1.6	1.6	53	46	<1	113	43	69	
9	10	116.1	0.30	1.4	1.4	57	47	<1	173	45	69	
	15	119.612										
10	0	119.612	0.58	2.65	2.65	53	47	3	128	46	71	
11	5	124.5	0.68	3.1	3.1	60	48	4	127	48	69	
12	10	129.7	0.64	2.9	2.9	62	48	4	128	48	69	
	15	134.75										
	60min	48.62	0.63	1.885		53.3	46.5					
						49.9						

A P P E N D I X 2

BERYLLIUM MACHINING SAMPLES FIELD DATA

COMPUTER LISTINGS

PARTICULATES SAMPLING AND ANALYSIS DATA

Plant Name and Location Los Alamos BE Processing TASS #.

Run No. R1 Date 2/18/92 Time 0930 Ambient Temp. °F 40

Bar. Press., in. Hg. 23.73 Stack Location BE Process South Side

Stack Diameter, in. 30" x 43" Stack Pressure, in Hg 23.73

Plant Operator _____ P_s/P_m 1.0

Processing Rate _____

Test Equipment I.D. MSCO .7269

Filter No. 7 Acetone Jar No. R-1 Acetone Bkr No. R1

Probe Tip Diameter, in. 0.251 Assumed Moisture, % 0

Probe Length, Ft. 5' Cp 0.848 Δ H@ 1.9

Calculator Setting 0.1 .40

Orsat Analysis Data			
CO_2		Air	
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Moisture Content	
Impinger #1	93
Impinger #2	103
Impinger #3	1
Total initial H_2O	205
Net Impinger H_2O	-3
Net H_2O in Silica Gel	8
Total H_2O Collected	5

Leak Test

Initial _____

Final <0.005 cfm @ 8" Hg

Plant Name and Location Los Alamos TASS PFL BE Processing

Run No. 2R Date 2/3/93 Time 1215 Ambient Temp. °F 50

Bar. Press., in. Hg. 23.73 Stack Location South Stack

Stack Diameter, in. 30" x 49" Stack Pressure, in Hg 23.73

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7249

Filter No. 6 Acetone Jar No. R2 Acetone Bkr No. _____

Probe Tip Diameter, in. 0.251 Assumed Moisture, % 0

Probe Length, Ft. 5' Cp 0.848 Δ H@ 1.9

Calculator Setting _____ _____

Orsat Analysis Data

CO_2	air		
$CO_2 + O_2$			
$CO_2 + O_2 + CO$			

Leak Test

Initial _____

Final <0.005 cfm @ 8" Hg

Moisture Content

Impinger #1	92
Impinger #2	104
Impinger #3	—
Total initial H_2O	200
Net Impinger H_2O	-4
Net H_2O in Silica Gel	8
Total H_2O Collected	4

Plant Name and Location Los Alamos PFL South Stack TA 55

Run No. 3R Date 2/8/93 Time 1440 Ambient Temp. °F 50

Bar. Press., in. Hg. 23.73 Stack Location South Stack

Stack Diameter, in. 30" x 48" Stack Pressure, in Hg 23.73

Plant Operator _____ P_s/P_m 1.00

Processing Rate _____

Test Equipment I.D. MISCO 7209

Filter No. 5 Acetone Jar No. R3 Acetone Bkr No. R3

Probe Tip Diameter, in. 0.251 Assumed Moisture, % 0

Probe Length, Ft. 5' Cp 0.843 Δ H@ 1.9 3.7% lost to LANL

Calculator Setting _____ _____

*NOTE: 2 mls of 54 ml. Total Acetone wash was given to LANL for Radiological use

Orsat Analysis Data				Moisture Content	
CO_2				Impinger #1	91
$CO_2 + O_2$				Impinger #2	103
$CO_2 + O_2 + CO$				Impinger #3	—
				Total initial H_2O	200
Leak Test				Net Impinger H_2O	−6
Initial				Net H_2O in Silica Gel	8.5
Final	<0.005 cfm @ 8" Hg			Total H_2O Collected	2.5

```
2 REM
3 REM ********  K R A M E R   &   A S S O C I A T E S  ***********
4 REM
5 REM ******* BERYLLIUM SAMPLING DATA ANALYSIS PROGRAM ********
8 REM
10 REM ---------------------------------------------------------------
12 REM ***NOMENCLATURE: RN(I) = RUN NUMBER                            *
14 REM                 H2O(I) = ML OF WATER COLLECTED                 *
16 REM                CUFT(I) = CUBIC FEET OF GAS SAMPLE              *
18 REM                 CO2(I) = % CARBON DIOXIDE IN STACK GAS         *
20 REM                  O2(I) = % OXYGEN IN STACK GAS                 *
22 REM                  MG(I) = MILLIGRAMS BERYLLIUM COLLECTED        *
26 REM ---------------------------------------------------------------
28 REM
30 FOR I = 1 TO 3  STEP 1
32 READ RN(I), H2O(I), CUFT(I), CO2(I), O2(I), MG(I)
34 REM
36 REM ----------------------------------------------------------------
38 REM ** NOMENCLATURE: PTS(I) = TOTAL NUMBER OF SAMPLING POINTS    *
40 REM                   BP(I) = BAROMETRIC PRESSURE, IN. HG        *
42 REM                   SP(I) = STACK STATIC PRESSURE, IN. HG      *
44 REM                   CP(I) = ORIFICE COEFFICIENT                *
46 REM                 AREA(I) = STACK CROSS SECTIONAL AREA, SQ FT *
48 REM                  TPD(I) = NOZZLE DIAMETER, INCHES            *
50 REM                 TIME(I) = SAMPLING TIME, MINUTES             *
52 REM ----------------------------------------------------------------
54 REM
56 REM
58 READ PTS(I), BP(I), SP(I), CP(I), AREA(I), TPD(I), TIME(I)
60 REM
62 REM *********** CALCULATE AVERAGES OF SAMPLING DATA **************
64 REM
66 A=0:B=0:C=0:D=0:E=0
68 FOR Z=1 TO PTS(I)
70 REM
72 REM ---------------------------------------------------------------------
74 REM ** NOMENCLATURE: DELP = VELOCITY PRESSURE AT A SAMPLING POINT, IN H2O
76 REM                  DELH = ORIFICE DELTA P, IN. H2O
78 REM                   TMI = DRY GAS METER INLET TEMP. F:  (AVG. IS ATM)
80 REM                   TMO = DRY GAS METER OUTLET TEMPERATURE, F
82 REM                  STKT = STACK TEMPERATURE, DEG. F
84 REM ----------------------------------------------------------------
86 READ DELP, DELH, TMI, TMO, STKT
90 REM
92 A=A+SQR(DELP): B=B+DELH: C=C+TMI: D=D+TMO: E=E+STKT
94 NEXT Z
96 REM
98 REM *** A(  ) REFERS TO "AVERAGE" PARAMETER IN 74-82 ABOVE ****
100 ADELP(I) = INT(10000*A/PTS(I))/10000
105 ADELH(I) = INT(1000*B/PTS(I))/1000
110 ATM(I) = INT(100*(C+D)/(2*PTS(I)))/100
115 ASTKT(I) = INT(100*E/PTS(I))/100
120 REM
122 REM
124 REM ---------------------------------------------------------------------
126 REM ** NOMENCLATURE: VMSTD = DRY STD CUBIC FEET OF GAS SAMPLE            *
128 REM                    VW = STD CUBIC FEET OF WATER VAPOR COLLECTED     *
130 REM                   BWO = PERCENT WATER VAPOR IN STACK GAS            *
132 REM                    N2 = PERCENT NITROGEN IN STACK GAS               *
134 REM                    MW = MOLECULAR WEIGHT OF STACK GAS               *
136 REM                   DMW = DRY MOLECULAR WEIGHT OF STACK GAS           *
138 REM                   VSA = AVERAGE STACK GAS VELOCITY, FPM             *
```

```
2009 DATA 0.08,0.35,65,57,70
2010 DATA 0.44,1.95,61,56,71
2011 DATA 0.38,1.70,69,58,71
2012 DATA 0.38,1.70,70,59,70
2500 REM ******************* END OF RUN #2 DATA *******************
2501 REM
2550 REM
2590 REM ******** RUN #3 DATA ********
2999 DATA 3,2.5, 41.362,0  ,20.9,0.00004
3000 DATA 12,23.73,23.73,0.848,10  ,.251,60
3001 DATA 0.45,2.00,52,53,72
3002 DATA 0.37,1.65,58,53,70
3003 DATA 0.35,1.55,61,53,70
3004 DATA 0.11,0.49,58,53,69
3005 DATA 0.30,1.35,60,53,69
3006 DATA 0.09,0.40,61,54,69
3007 DATA 0.20,0.90,58,54,69
3008 DATA 0.24,1.05,61,55,69
3009 DATA 0.12,0.54,63,56,70
3010 DATA 0.46,2.05,60,55,72
3011 DATA 0.70,3.10,67,56,70
3012 DATA 0.45,2.00,70,57,70
3500 REM ****************** END OF RUN #3 DATA *******************
3525 REM
3535 PRINT ISO(1),ISO(2),ISO(3) :STOP
3550 REM
3575 REM ********  PRINTING COMMANDS  ********
3585 REM
3605 LPRINT CHR$(10)CHR$(14)"                          MACHINING SAMPLES DATA S
RY"
3610 LPRINT CHR$(10)CHR$(14)"                         BLDG 4, TA-55 BERYLLIUM P
,SING"
3612 LPRINT CHR$(10)CHR$(14)"                          LOS ALAMOS NATIONAL LABO
RY"
3615 LPRINT CHR$(10)
3620 LPRINT CHR$(10)
3625 LPRINT CHR$(10);TAB(7)"SAMPLING DATA";TAB(36)"TEST #1        TEST #2
 TEST #3"
3627 LPRINT TAB(7)"--------------";TAB(36)"-------        -------          ---
"
3630 LPRINT CHR$(10)
3635 LPRINT "ACTUAL METERED CUBIC FEET           ";CUFT(1);TAB(50);CUFT(2);TA
);CUFT(3)
3640 LPRINT "BAROMETRIC PRESSURE, (IN HG)        ";BP(1);TAB(50);BP(2);TAB(66
(3)
3645 LPRINT "AVERAGE GAS METER TEMPERATURE (F)   ";ATM(1);TAB(50);ATM(2);TAB(
ATM(3)
3650 LPRINT "MILLILITERS WATER COLLECTED         ";H2O(1);TAB(50);H2O(2);TAB(
H2O(3)
3655 LPRINT "MILLIGRAMS BERYLLIUM COLLECTED     <";INT(100000!*MG(1))/100000!;
(49);"<";INT(100000!*MG(2))/100000!;TAB(65);"<";INT(100000!*MG(3))/100000!
3660 LPRINT "CARBON DIOXIDE IN STACK GAS, %      ";CO2(1);TAB(50);CO2(2);TAB(
CO2(3)
3665 LPRINT "OXYGEN IN STACK GAS, %              ";O2(1);TAB(50);O2(2);TAB(66
(3)
3670 LPRINT "NITROGEN IN STACK GAS, %            ";N2(1);TAB(50);N2(2);TAB(66
 3)
3675 LPRINT "STATIC PRESSURE IN STACK  (IN HG)   ";SP(1);TAB(50);SP(2);TAB(66
(3)
3680 LPRINT "AVERAGE STACK TEMPERATURE, (F)      ";ASTKT(1);TAB(50);ASTKT(2);T
66);ASTKT(3)
3685 LPRINT "S-PITOT CORRECTION FACTOR           ";CP(1);TAB(50);CP(2);TAB(66
(3)
3690 LPRINT "AVG SQUARE ROOT VEL PRES (IN HG)    ";[illegible]
```

A P P E N D I X 3

EQUIPMENT CALIBRATION DATA

TYPE S PITOT CALIBRATION DATA

Reference: CFR-40 Pt. 60, AA. A, Method 2

Calibration Date: March 21,1991 by Marv McIntyre

Nozzle Used 0.031 inches

Probe Length	Usable Length	Degrees *				Length in Inches		
		alpha1	alpha2	beta1	beta2	z**	w***	PT
14" SS	12'2"	<1	<1	<1	<1	<0.001	0.025	.
8'6" SS	7'3	<1	<1	<1	<1	<0.001	<0.001	.
8'1" Glass	6'4"	<1	<1	<1	<1	<0.001	0.029	.
6'1" SS	4'3"	<1	<1	<1	<1	0.073	<0.001	.
6'1" Glass	4'3"	<1	<1	<1	<1	<0.001	<0.001	.

Pitot Tube-Thermocouple Spacing Requirement is 0.75-1.0 inches

* Requirement for alpha is < 10 degrees
Requirement for beta is < 5 Degrees

** Requirement is <0.125 inches

*** Requirement is <0.0313 inches

APPENDIX C

JANUARY 7, 1991 CORRESPONDENCE REGARDING T-3-35 BERYLLIUM OPERATIONS

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Craig Eberhart, HSE-8, K-490

DATE: January 7, 1991

FROM: Joe Mitchell

MAIL STOP/TELEPHONE: G770/7-5479

SYMBOL: MST-DO-91-002

SUBJECT: TA-3, SM-35, Beryllium Permit

MST currently has no plans for any Beryllium operations in SM-35. The loss of a utility restoration project for the upgrade of the ventilation system has curtailed any planned operations in this facility.

In the event funding is restored, we will notify your office before any modifications are made or work commences.

cys
Alan Patterson, MST-6, G770
Paul Stanek, MST-6, G770
Loren Jacobson, MST-6, G770
Don Sandstrom, MST-DO, G756
Theresa Cull, MST-DO, G756
Sigma File

APPENDIX D

PENETRATION TESTS

HSE Number: 7290 ENG Number: FE-6 TA: 3 BLDG: 39 Group: WX-13

Fil change date: Qtr.: 2 System Flow(CFM): 2100

Test Date: 06/28/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Process System type: AERO-95 Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 2.7E-3	"(H2O): 0.50	(um): 0.200
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H2O):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: G.HELLAND GDH

HSE Number: 7290 ENG Number: FE-6 TA: 3 BLDG: 39 Group: WX-13

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 02/24/92 Inst. Type: Laser Spec. Cal. Date: 03/11/91

Process: Process System type: AERO-95 Test Agent: DOS

Penetration:	Resistance:	Particulate Size:
1st Stage: 2.1E-2	"(H2O): 0.18	(um): 0.200
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: SYSTEM MET THE MINIMUM PENETRATION CRITERIA.

Tested By: JPO

HSE Number: 7290 ENG Number: FE-6 TA: 3 BLDG: 39 Group: WX-13

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 03/18/91 Inst. Type: Laser Spec. Cal. Date: 03/11/91

Process: Process System type: AERO-95 Test Agent: DOS

Penetration:	Resistance:	Particulate Size:
1st Stage: 3.0E-2	"(H2O): 0.18	(um): 0.180
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: SYSTEM MET MINIMUM PENETRATION TEST CRITERIA.

Tested By: JPO

HSE Number: 7290 ENG Number: FE-6 TA: 3 BLDG: 39 Group: MEC-1

Fil change date: 05/14/91 Qtr.: 2 System Flow(CFM): 2000

Test Date: 05/21/91 Inst. Type: Laser Spec. Cal. Date: 03/11/91

Process: Process System type: AERO-95 Test Agent: DOS

Penetration:	Resistance:	Particulate Size:
1st Stage: 3.9E-2	"(H2O): 0.15	(um): 0.180
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.

Tested By: JPO

HSE Number: 2990 ENG Number: FE-1 TA: 35 BLDG: 213 Group: MST-7

Fil change date: Qtr.: 1 System Flow(CFM): 1000

Test Date: 02/24/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Main System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 4.5E-6	"(H2O): 1.80	(um): 0.170
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA
FICATE

Tested By: D.BARNEY GDH

HSE Number: 2990 ENG Number: FE-1 TA: 35 BLDG: 213 Group: MST-7

Fil change date: Qtr.: 4 System Flow(CFM): 1000

Test Date: 10/06/92 Inst. Type: Laser Spec. Cal. Date: 06/20/91

Process: Main System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Particulate Size:
1st Stage: 5.5E-5	"(H2O): 1.70	(um): 0.170
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.

Tested By: JPO

HSE Number: 1430 ENG Number: FA-852 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 03/31/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 7.4E-5	"(H2O): 0.10	(um): 0.130
2nd Stage:	"(H2O): 0.20	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 1.8E-8	"(H20): 0.200	(um): 0.100
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: HELLAND GDH

HSE Number: 1430 ENG Number: FA-852 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 3 System Flow(CFM): 2000

Test Date: 07/01/93 Inst. Type: Laser Spec. Cal. Date: 02/23/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 6.9E-5	"(H2O): 0.35	(um): 0.090
2nd Stage:	"(H2O): 0.20	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 3.5E-8	"(H20): 0.200	(um): 0.200
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: G.HELLAND GDH

HSE Number: 1440 ENG Number: FA-853 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 03/31/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 5.8E-5	"(H2O): 0.30	(um): 0.100
2nd Stage:	"(H2O): 0.30	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 1.0E-8	"(H20): 0.400	(um): 0.100
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: HELLAND GDH

HSE Number: 1440 ENG Number: FA-853 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 3 System Flow(CFM): 2000

Test Date: 07/01/93 Inst. Type: Laser Spec. Cal. Date: 02/23/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 4.7E-5	"(H2O): 0.35	(um): 0.200
2nd Stage:	"(H2O): 0.30	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 5.4E-9	"(H20): 0.300	(um): 0.090
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: G.HELLAND GDH

HSE Number: 1450 ENG Number: FA-854 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 03/31/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 2.0E-4	"(H2O): 0.40	(um): 0.150
2nd Stage:	"(H2O): 0.30	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 1.6E-8	"(H20): 0.300	(um): 0.110
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: ORTIZ HELLAND GDH

HSE Number: 1450 ENG Number: FA-854 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 3 System Flow(CFM): 2000

Test Date: 06/30/93 Inst. Type: Laser Spec. Cal. Date: 02/23/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 7.8E-5	"(H2O): 0.30	(um): 0.200
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 2.5E-9	"(H20): 0.300	(um): 0.420
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: G.HELLAND GDH

HSE Number: 1460 ENG Number: FA-855 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 03/31/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 5.6E-4	"(H2O): 0.30	(um): 0.140
2nd Stage:	"(H2O): 0.30	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 1.2E-8	"(H20): 0.300	(um): 0.110
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM FAILED THE FIRST STAGE PENETRATION TEST. RECOMMEND THE FILTERS BE READJUSTED. THE PENETRATIONS ACROSS STAGES 2&3 MET THE CRITERIA

Tested By: ORTIZ HELLAND GDH

HSE Number: 1460 ENG Number: FA-855 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 1 System Flow(CFM): 2000

Test Date: 04/06/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 2.0E-5	"(H2O): 0.10	(um): 0.140
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 8.5E-9	"(H20): 0.300	(um): 0.110
Stage(3&4):	"(H2O):	(um):

Comments: THIS WAS A RETEST. THIS SYSTEM MET THE MINIMUM PENETRATION TEST TA.

Tested By: ORTIZ HELLAND GDH

HSE Number: 1460 ENG Number: FA-855 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 3 System Flow(CFM): 2000

Test Date: 06/30/93 Inst. Type: Laser Spec. Cal. Date: 02/23/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 8.1E-4	"(H2O): 0.30	(um): 0.200
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3): 5.5E-9	"(H20): 0.280	(um): 0.300
Stage(3&4):	"(H2O):	(um):

Comments: STAGE 1 OF THIS SYSTEM DID NOT MEET THE MINIMUM PENETRATION TEST CR
. STAGES 2&3 DID MEET THE MINIMUM PENETRATION TEST CRITERIA. STAGE 1 FILTER
Tested By: JPO&GDH GDH

HSE Number: 1460 ENG Number: FA-855 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: Qtr.: 3 System Flow(CFM): 2000

Test Date: 06/30/93 Inst. Type: Laser Spec. Cal. Date: 02/23/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 8.8E-4	"(H2O): 0.30	(um): 0.200
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEMS FILTERS WERE TIGHTENED AND THIS TEST WAS PERFORMED. SYSTEM AGAIN DID NOT MEET THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: JPO&GDH GDH

HSE Number: 1460 ENG Number: FA-855 TA: 55 BLDG: PF-4 Group: NMT-8

Fil change date: 07/06/93 Qtr.: 3 System Flow(CFM): 2000

Test Date: 07/06/93 Inst. Type: Laser Spec. Cal. Date: 02/23/93

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 2.7E-7	"(H2O): 0.20	(um): 0.200
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM MEETS THE MINIMUM PENETRATION TEST CRITERIA.
Tested By: DB &GDH GDH

HSE Number: 6150 ENG Number: FE-1 TA: 3 BLDG: 141 Group: MST-6

Fil change date: Qtr.: 1 System Flow(CFM): 16000

Test Date: 03/16/93 Inst. Type: Laser Spec. Cal. Date: 01/28/93

Process: Main System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Penetration Size:
1st Stage: 9.2E-5	"(H2O): 0.80	(um): 0.130
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: THIS SYSTEM HAS MET THE MINIMUM PENETRATION TEST CRITERIA.
CERTIFICATE.
Tested By: Helland gdh

HSE Number: 6150 ENG Number: FE-1 TA: 3 BLDG: 141 Group: MST-6

Fil change date: Qtr.: 1 System Flow(CFM): 12000

Test Date: 03/16/92 Inst. Type: Laser Spec. Cal. Date: 03/11/91

Process: Process System type: HEPA Test Agent: DOS

Penetration:	Resistance:	Particulate Size:
1st Stage: 4.2E-4	"(H2O): 0.80	(um): 0.170
2nd Stage:	"(H2O):	(um):
3rd Stage:	"(H2O):	(um):
4th Stage:	"(H2O):	(um):
Stage(1&2):	"(H2O):	(um):
Stage(2&3):	"(H20):	(um):
Stage(3&4):	"(H2O):	(um):

Comments: SYSTEM MET THE MINIMUM PENETRATION TEST CRITERIA.

Tested By: JPO

APPENDIX E

BERYLLIUM SOURCE REGISTRATIONS

Beryllium Source Registration for TA-3-29 (CMR Building)

1. **Name and Address:**
   U.S. Department of Energy
   Los Alamos Area Office
   Los Alamos, New Mexico 87545

2. **Location of Source:**
   Los Alamos National Laboratory
   Technical Area 3, Building SM-29
   (map attached)

3. **Type of Hazardous Pollutant:**
   Beryllium

4. **Operation Description:**

The first cutting of beryllium (Be) or beryllium oxide (BeO) is made in Wing 3 when the samples initially arrive at CLS-1. This cutting procedure, utilizing small cutting tools, takes place in a well ventilated hood. The original bulk samples are cut into smaller pieces which are weighed according to required cut specifications, placed in vials, capped, and delivered to various task areas for analysis.

In Wing 7, small pieces (<1 gram (g)) of Be or BeO are cut in half. The cutting is performed in a hood using metal snippers. The samples of Be and BeO are then dissolved and solutions analyzed for trace metal impurities by either ICP-MS (Inductively Coupled Plasma-Mass Spectrometry) or ICP-AES (Inductively Coupled Plasma-Atomic Emission Spectrometry) analysis.

In Wing 2, small Be metal specimens (from <100 milligrams (mg) to <1 gram) are exposed to molten plutonium and reaction rates are measured to temperatures up to the melting point of BE (approximately 1287° C). After testing the metal samples are examined using metallographic procedures, developed for the characterization of plutonium metal and include cutting and/or grinding of the samples. This entire operation takes place in a glovebox.

Also in Wing 2, Be metal (from <100 mg to <5.253 g) is used in direct alloying with other metals such as barium, thorium, gallium, tin, lead, scandium, lithium, bismuth, cadmium, zinc, thallium, tellurium, uranium, plutonium, selenium, indium, magnesium, tellurium, and aluminum. Heating temperatures during alloying range from 400° C to 1900° C using the methods of induction melting in a furnace, electrodeposition, thermochemical reduction, elevated chemical filtration, or powder pressing followed by sintering. Metallographic techniques involving cutting, grinding, and polishing are performed on samples cut from the newly created alloys. Induction melting operations involving plutonium are carried out in a glovebox. The other alloying operations are carried out in fume hoods with strong face velocity drafts.

030 004167

5. **Average Weight Per Month of Beryllium Processed Over Last 12 Months:**

Operations in Wing 3 have processed no more than one gram per month of either Be or BeO during the last 12 months.

Operations in Wing 7 have processed less than one gram per month of either Be or BeO during the last 12 months.

No Be was processed in Wing 2 during the last 12 months.

6. **Description of Existing Control Equipment:**

The cutting operation in Wing 3 is conducted in a hood. The hood exhaust passes through an Aerosol-95 system (rigid air filter) with a 68% test efficiency before exiting the building.

The snipping operation in Wing 7 is conducted in a hood. The hood exhaust passes through a two-stage HEPA filter system with a 99.9% test efficiency before exiting the building.

The melting operation in Wing 2 are performed in hoods or glovebox enclosures which meet the minimum requirements for the handling of radioactive materials. All cutting and grinding operations are performed wet, thereby minimizing the formation of airborne particulates. The total amount of beryllium dust actually produced as a consequence of cutting or grinding from all operations since 1990 is estimated below 0.3 grams. Since this dust was contaminated with plutonium metal, it was sent to recovery for reprocessing.

7. **Compliance to Standards Within 90 Days:**

Source currently complies with beryllium emission standards.

Beryllium Source Registration for TA-3-66

1. **Name and Address:**
   U. S. Department of Energy
   Los Alamos Area Office
   Los Alamos, NM 87544

2. **Location of Source**
   Los Alamos National Laboratory
   Technical Area 3, Building SM-66
   (map attached)

3. **Type of Hazardous Pollutant:**
   Beryllium

4. **Operation Description:**

Final polishing of Metallographic Specimen:

The final polishing of the metallographic specimen is the last step in an operation which is done in TA 3, building 141 and currently operating under NMED permit 634-M-1. This polishing is done using a diamond wheel covered with an abrasive cloth treated with an ethylene glycol lubricant which prevents beryllium particles from becoming airborne. The cloth and ethylene glycol lubricant is disposed of as beryllium waste after each operation. These specimen are polished once per day, several times per month.

5. **Average Weight Per Month of Beryllium Processed For Last 12 Months:**

During the previous 12 months, 1 lb per month of beryllium has been processed.

6. **Description of Existing Control Equipment:**

The final polishing is done using ethylene glycol as a lubricant to trap beryllium particulate. No airborne emissions are generated from this source.

7. **Compliance To Standards Within 90 Days:**

Source currently complies with beryllium emission standards.

030 004018

Beryllium Source Registration for TA-3-66

1. **Name and Address:**
   U. S. Department of Energy
   Los Alamos Area Office
   Los Alamos, NM 87544

2. **Location of Source**
   Los Alamos National Laboratory
   Technical Area 3, Building SM-66
   (map attached)

3. **Type of Hazardous Pollutant:**
   Beryllium

4. **Operation Description:**

Final polishing of Metallographic Specimen:

The final polishing of the metallographic specimen is the last step in an operation which is done in TA 3, building 141 and currently operating under NMED permit 634-M-1. This polishing is done using a diamond wheel covered with an abrasive cloth treated with an ethylene glycol lubricant which prevents beryllium particles from becoming airborne. The cloth and ethylene glycol lubricant is disposed of as beryllium waste after each operation. These specimen are polished once per day, several times per month.

5. **Average Weight Per Month of Beryllium Processed For Last 12 Months:**

During the previous 12 months, 1 lb per month of beryllium has been processed.

6. **Description of Existing Control Equipment:**

The final polishing is done using ethylene glycol as a lubricant to trap beryllium particulate. No airborne emissions are generated from this source.

7. **Compliance To Standards Within 90 Days:**

Source currently complies with beryllium emission standards.

Proposed Beryllium Source Registration for TA-3-1819-115

1. **Name and Address:**
   U. S. Department of Energy,
   Los Alamos Area Office,
   Los Alamos, NM 87544

2. **Location of Source:**
   Los Alamos National Laboratory,
   Current Location: Technical Area 3, Building 29,
   New Location: Technical Area 3, Building 1819 (map attached)

3. **Type of Hazardous Pollutants:**
   Beryllium

4. **Operation Description:**
   Beryllium metal (<1 gram) is alloyed to another metal (typically a rare earth metal, uranium, or titanium) in an arc melter. The arc melter chamber is made of copper and has a volume of about 2 liters.

   The chamber volume is filled with argon before beginning the operation and the chamber outside surface is water cooled. The arc is started by a foot peddle that turns on the power supply and power is stopped immediately when foot pressure is removed. There is no chance of a runaway temperature from nonattendance. Any metal losses are contained inside the chamber and accounted for by pre and post weighing. No emissions are expected. The maximum capacity of the system is 10 grams of metal, however, the maximum beryllium constituent has been < 1 gram per operation. No more than one operation is conducted per day with a maximum of 8 operations being conducted in one month. Typically, no more than 2 of these operations are carried out in a month. The new alloy is then glued to a brass plate and lowered into a kerosene bath. Longitudinal cuts about 8 mils thick are then made using an electro discharge machine (spark eroded). Alloy particles are contained in the kerosene which is continually pumped through a filtering system. If airborne material were to be released it would be captured by the local exhaust system that is equipped with a HEPA filter.

5. **Average Weight/Month of Beryllium Processed For Last 12 Months:**

   One-sixth of a gram/month over the past 12 month period.

Beryllium Source Registration for TA-16-450

1. **Name and Address:**
0 U. S. Department of Energy
Los Alamos Area Office
Los Alamos, NM 87544

2. **Location of Source**
Los Alamos National Laboratory
Technical Area 16, Building 450
(map attached)

3. **Type of Hazardous Pollutant:**
Beryllium

4. **Operation Description:**
Beryllium is used in this building in two applications. One application is mounting blocks for instrumentation diagnostics and the other application is for integral parts in special nuclear components. In both applications pre-machined beryllium parts are used and only incidental wet sanding is done to remove surface oil, dirt and oxidation to facilitate bonding of the beryllium surfaces. During the instrumentation process a beryllium piece will occasionally require the placement of metal shim stock on the surface of the part for lead wire retention. This is accomplished by wet sanding the mounting surface as described above and spot welding the shim stock to the surface using a low power resistance spot welder. All beryllium contaminated abrasives and wetting agents are disposed of as hazardous waste. These operations vary in frequency but average one day per month per year.

5. **Average Weight Per Month of Beryllium Processed For Last 12 Months:**

During the previous 12 months, approximately 5 kg per month of beryllium has been processed.

6. **Description of Existing Control Equipment:**

Wet sanding of the beryllium surfaces involves using a fine grit abrasive along with alcohol or a mixture of 80% distilled water, 15% isopropanol, 5% ammonia or a mixture of 90% distilled water and 10% phosphoric acid. No airborne emissions are generated from this source.

7. **Compliance To Standards Within 90 Days:**

Source currently complies with beryllium emission standards.

APPENDIX F

MOVEMENT OF BERYLLIUM ACTIVITIES FROM TA-3-29 TO TA-3-1819

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE October 18, 1990
IN REPLY REFER TO ADO:90-776
MAIL STOP A120
TELEPHONE (505) 667-9091
(FTS) 843-9091

Mr. Jerry L. Bellows
Area Manager
U. S. Department of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

Dear Mr. Bellows:

BERYLLIUM ALLOYING OPERATION MOVE FROM TA-3-29 TO TA-3-~~23~~ 1819

Attached is a draft letter for your review and approval/disapproval requesting a determination from the New Mexico Environmental Improvement Division (EID) concerning the need to register a beryllium alloying operation. During previous telephone discussions in 1987 with staff of the EID, it was determined that this operation did not require permitting or registration. Recently, the operating group decided to move the operation to a new location. Since we do not have any written documentation from the State on their previous permitting and registration determination, we are requesting the State review the information and provide a formal reply. The requirements for registration are in 40 CFR 61.10.

If there are any questions or comments regarding this correspondence, please contact Craig Eberhart of my staff at (505) 665-0456.

Sincerely,

L H Gritzo for

Allen J. Tiedman
Associate Director
of Operations

AJT:DGM/gr

Attachment: a/s

Cy: C. Eberhart, (HSE-8:90-898), HSE-8, MS K490
CRM-4, MS A150
Circ. File

DRAFT
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Bruce Nicholson
Air Quality Bureau
Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, NM 87504

Dear Mr. Nicholson:

In May 1987, telephone discussions between staff from the Laboratory's Environmental Protection Group (HSE-8) and the Air Quality Bureau resulted in the decision that neither a permit nor registration was required for a beryllium alloying operation involving small quantities (<1 gram) of beryllium at the CMR Building (TA-3-29). The only documentation of this discussion is a reference made in a memorandum from David Nochumson to the operating group (memorandum enclosed). In addition, Craig Eberhart of HSE-8 also spoke to you on the telephone on April 4, 1989, concerning this operation. Recently the operating group proposed moving this operation to a new location, ERDC (TA-3-1819). In the review of the proposed move, HSE-8 raised the concern that there is no written confirmation of the EID conclusion related to permitting and registration. Although HSE-8 received a verbal confirmation that permitting was not required, there are registration requirements for existing sources under 40 CFR 61.10. Therefore we are submitting the registration information to formally comply with the registration requirements. To aid you in this evaluation, a summary of the operation is provided in the enclosure: "Proposed Beryllium Source Registration, TA-3-1819-115."

It is important to note that this operation has been conducted for approximately 38 years and the move would not involve an increase in the amount of beryllium being used or in the operating parameters.

If you need further information please contact Paul Schumann at 667-5288.

Sincerely,

Jerry L. Bellows
Area Manager

JBL:DGM/gr

Enclosure: a/s

Cy: A. Tiedman, LANL, ADO, MS A120
K. Hargis, (HSE-8:90-898-1), LANL, HSE-8, MS K490
C. Eberhart, LANL, HSE-8, MS K490
CRM-4
Circ. File

Proposed Beryllium Source Registration for TA-3-1819-115

1. **Name and Address:**
   U. S. Department of Energy,
   Los Alamos Area Office,
   Los Alamos, NM 87544

2. **Location of Source:**
   Los Alamos National Laboratory,
   Current Location: Technical Area 3, Building 29,
   New Location: Technical Area 3, Building 1819 (map attached)

3. **Type of Hazardous Pollutants:**
   Beryllium

4. **Operation Description:**
   Beryllium metal (<1 gram) is alloyed to another metal (typically a rare earth metal, uranium, or titanium) in an arc melter. The arc melter chamber is made of copper and has a volume of about 2 liters.

   The chamber volume is filled with argon before beginning the operation and the chamber outside surface is water cooled. The arc is started by a foot peddle that turns on the power supply and power is stopped immediately when foot pressure is removed. There is no chance of a runaway temperature from nonattendance. Any metal losses are contained inside the chamber and accounted for by pre and post weighing. No emissions are expected. The maximum capacity of the system is 10 grams of metal, however, the maximum beryllium constituent has been < 1 gram per operation. No more than one operation is conducted per day with a maximum of 8 operations being conducted in one month. Typically, no more than 2 of these operations are carried out in a month. The new alloy is then glued to a brass plate and lowered into a kerosene bath. Longitudinal cuts about 8 mils thick are then made using an electro discharge machine (spark eroded). Alloy particles are contained in the kerosene which is continually pumped through a filtering system. If airborne material were to be released it would be captured by the local exhaust system that is equipped with a HEPA filter.

5. **Average Weight/Month of Beryllium Processed For Last 12 Months:**

   One-sixth of a gram/month over the past 12 month period.

6. **Description of Existing Control Equipment:**

   a. Arc melting emissions are controlled by a closed/contained chamber that has a water cooled surface which condenses the hot alloy particles onto the inside of the vessel surface if they occur. When the chamber is opened to remove the alloy, any alloy particles that were generated are found on the inside surface of the chamber. This surface is wiped clean with acetone moistened Kimwipes, and the melting region cleaned using dilute nitric acid. The wipes are treated as hazardous waste.

   b. Electro discharge machining is conducted under kerosene which is continually pumped through a filter system. If airborne alloy particles or mist were to be released it would be captured by the local exhaust system that is equipment with a HEPA filter.

7. **Compliance To Standards Within 90 Days:**
   Source currently complies with beryllium emission standards.

APPENDIX G

OPEN BURNING PERMITS

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DEPARTMENT

APPLICATION FOR AN OPEN-BURNING PERMIT

Name of Applicant Mr. Jerry L. Bellows Telephone (505) 667-5105

Address U. S. Department of Energy, Los Alamos Area Office, Los Alamos, New Mexico 87544

Date(s) burning requested See Enclosure A

Exact location and direction to site See Enclosure A

Type and quantity of material to be burned See Enclosure A

Method of ignition and how burning will be maintained and controlled See Enclosure A

Why is burning necessary? See Enclosure A

List alternatives to burning and reasons why alternatives to burning are not feasible See Enclosure A

I herewith make application to the Environmental ~~Improvement Division~~ Dept for an open-burning permit under the requirements of Air Quality Control Regulation 301, Sub-section F. I agree to meet all conditions set forth by the Environmental ~~Improvement Division~~ Dept.

Signed Jerry L. Bellows Date 1-29-91
Applicant

This application has been received by the Environmental Improvement Division and is ☒ APPROVED ☐ DENIED
or the following reasons:

Testing or modeling as requested in letter 8/30/9 for radon nuclide.

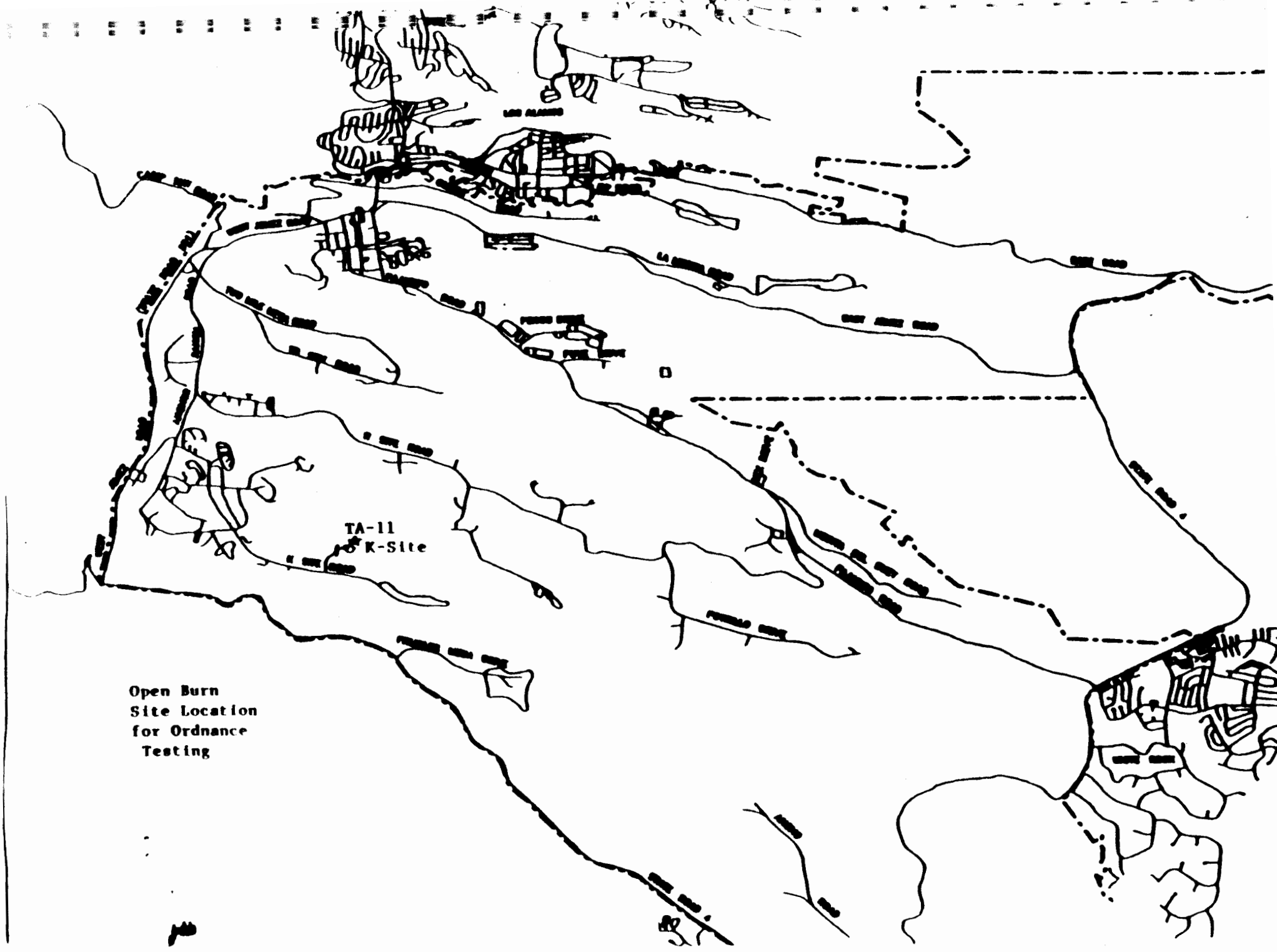
This permit is approved for the following dates: Dates to be specified by DOE
and is subject to the following conditions:

1. All burning must take place during the time period of three hours after sunrise to one hour before sunset.
2. The wind direction at the site of burning must be such that the smoke will generally be carried away from public roads and areas of human habitation.
3. All burning will cease when atmospheric conditions are such that an air stagnation advisory is issued for your area by the U.S. Weather Service.
4. All material to be burned shall be as dry as possible and amount of dirt must be minimized on material being burned.
5. ~~No natural or synthetic rubber products or petroleum products shall be burned.~~ as per request
6. All applicable restrictions, codes and ordinances (*e.g., fire codes or ordinances*), whether temporary or permanent, of other governmental bodies must be complied with.
7. Other conditions:

The ~~Division~~ Dept reserves the right to cancel this permit at any time if the public interest so warrants it. If such action occurs, an alternati method of disposal must be used. The holder of this permit is therefore cautioned and charged that he/she, and he/she alone, assumes full responsibility to exercise the utmost care and judgment before setting any fires. The Environmental ~~Improvement Division~~ Dept hereb disclaims any and all liability of itself or it's agents that might be incurred by petitioner's acts.

Signed John K. Vand Eng Engr Dist. No. ____ Date 8/30/91
Name and Title

EID 088 Revised 9/86 *WHITE - Applicant; CANARY - EID District Office; PINK - Air Quality Section, Santa F*



Open Burn
Site Location
for Ordnance
Testing

ENCLOSURE A
LOS ALAMOS NATIONAL LABORATORY
APPLICATION OR OPEN-BURNING PERMIT

DATES BURNING REQUESTED:

Approximately four burn tests are expected to occur during the next 12 months as part of ordnance and shipping container development projects. The exact dates of burning will be dependent on the development schedule of the devices being designed and certified. Because specific dates cannot be assigned at this time, Los Alamos National Laboratory, through its Environmental Protection Group, will notify Environmental Improvement Division one or more working days in advance of the expected burn date.

EXACT LOCATION AND DIRECTION TO SITE:

The burns will be conducted within Los Alamos National Laboratory boundaries at Technical Area 11, also known as K-Site. The site can be accessed via K-Site Road, off Anchor Ranch Road (map enclosed).

TYPE AND QUANTITY OF MATERIAL TO BE BURNED:

Each test will require approximately 500 gallons of diesel or JP-4 aviation fuel or approximately 20 pounds of flaked TNT explosive.

METHOD OF IGNITION AND HOW BURNING WILL BE MAINTAINED AND CONTROLLED:

The Safe Operating Procedures (SOPs) that will be followed during the burns are enclosed (Enclosures B and C). These SOPs are standard for fire test facilities and are based on proven operational experience. They cover the hazards involved and precautions to be taken during the test setup, the test, and the post test recovery. These enclosures also describe the ignition method which is a remotely operated nichrome wire silicon igniter (section XIII of Enclosure B).

WHY IS BURNING NECESSARY:

Los Alamos National Laboratory is continually upgrading the design of ordnance devices and shipping containers to enhance safety. The fire tests that are to be conducted are required to verify and refine fire resistant structural designs. Because transportation accidents may lead to fuel fires, it is essential to ensure that structural components remain intact if exposed to such fires. In some cases, test units containing explosives may be too badly damaged to remove safely to the disassembly site. In this event, the explosive remaining in the test unit must be burned before the test unit can be moved.

ALTERNATIVES TO BURNING AND REASONS WHY ALTERNATIVES ARE NOT FEASIBLE:

The alternatives to fire testing are theoretical calculations and data from actual accidents. Theoretical calculations are used extensively during the preliminary design stages. However, calculations alone are not sufficient. Not all parameters are known well enough to be simulated. At critical points during the design process, tests on the actual hardware must be conducted to verify the calculations.

To await data from actual accidents is an unacceptable alternative. The primary objective of these tests is to mitigate the consequences of accidents before they occur.

ENCLOSURE 3

BURNING HE TEST ASSEMBLIES, TA-11 DROP TOWER AREA USING JP-4 JET FUEL

I. SCOPE

This SOP governs the task of performing simulated transportation accident tests where spillage and ignition of fuel has occurred. Occasionally other types of tests are performed at the burn site. These may include other thermal tests or controlled and uncontrolled explosive tests.

II. LOCATION

A. Burn area east of drop tower (TA-11-25) at TA-11 (K-Site).

B. Drop tower, TA-11-25,

C. Control building, TA-11-3 (K-3)

D. Shelter buildings, TA-11, K2, K3, K4, and K30.

III. ALLOWABLE EXPLOSIVES

A. Burns will be made of assemblies or components that contain only those explosives and detonators listed in group WX-3 SOP 1.1.0.

B. Electroexplosive devices (EED) and electrically initiated pyrotechnics that are sealed integral parts of an assembly such as squibs and torches are allowed in test assemblies to be burned.

IV. EXPLOSIVES LIMIT

A. Burn area and drop tower area - 45 kg.

B. Building K-3 - no explosives are allowed in this building.

V. PERSONNEL LIMITS

No more than three people will be in the area east of building K-3 during setup activities when HE is present in the test area or fuel is in the burning tank. During the burn, all personnel must be in building K-2, K-3, K-4, or K-30.

VI. **ALLOWABLE METALS**

A. Tuballoy and alloys or compounds containing depleted uranium may be in units to be burned. The quantity of these heavy metals in any single burn operation will not exceed 45 kg.

B. Common metals, such as steel, copper, and aluminum, and combinations of these metals usually used in weapon development may be present in assemblies to be burned.

VII. **EQUIPMENT**

A. Boom truck

B. HE van

C. Fork lift

D. Crane truck

E. Flatbed truck

F. Triplett multimeter

G. Data acquisition system and thermocouples; movie cameras

H. Closed circuit tv system

I. Special temperature measurement instruments

VIII. **WEARING APPAREL**

See WX-3 SOP's 12.1.0 v.c. and 12.3.10 VIII.

IX. **HANDLING**

Mechanized and manual handling will be done in accordance with WX-3's SOP 14.1-1 through 14.1.5, 13.1.0, and 13.2.2.

X. **AREA CLEARANCE**

The appropriate hazard area will be cleared before the setup operations and during the burn, and opened after the burn in accordance with WX-11 SOP 19.1.1.

XI. NOTIFICATION

When conducting a fire test, the following organizations will be notified of the duration and type test.

WX-3 Transportation	667-6792
Fire Department	667-7026
WX-Division Office	667-4306

XII. FIRE TEST PROCEDURES

A. The person responsible for the burn test will call group HSE-1 (7-4127) before noon of the working day preceding the planned burn. HSE-1 will provide a health physics surveyor for the burn and clean up operations and air sampling equipment for the burn, and, in conjunction with group HSE-5 will prescribe the proper protective clothing.

B. The responsible person will also arrange in advance for fire department standby in the vicinity of the test at a mutually agreed upon position. The quantity of JP-4 jet fuel and heavy metals to be burned will be given when the call is made.

C. Setup of the data acquisition system, thermocouples, cameras, and auxiliary instrumentation will be directed by personnel of the WX-11 dynamic test section.

XIII. INITIATION

A. Before testing, instrumentation integrity will be verified on a channel-by-channel basis and the acquisition system will be activated. The video cameras will be adjusted to get full view of the test system. Water will be poured into the fuel containment tank to a depth of about 0.4 m and the fuel will be layered on top of the water. The thickness will depend on the desired length of burn. A cadweld filled plastic bag will be ignited with a remotely operated nichrome-wire silicone igniter. The test will commence once the area has been cleared of personnel. An audible warning will be sounded five minutes prior to starting. The fire ignition shall be made from within building K-3. The fire test terminates when all the fuel is consumed. The person responsible for the test shall indicate that the test is over and announce that personnel may leave the buildings and proceed with post burn activities.

XIV. **CLEAN-UP**

A. If metals listed in Item VI. A, above are present in the devices exposed to the JP-4 jet fuel, no subsequent test burns shall be made in the burn area for at least 24 hours. This is to allow time for monitoring and cleanup should the vessels that contain uranium or thorium be breached in the test. This time interval does not apply if no thorium or uranium is present in the test.

B. Collection and disposition of residues shall be as agreed upon by participants in the burn experiment and as approved by the group HSE-1 health physics surveyor.

XV. **SPECIAL NOTES**

A. This SOP is also applicable to situations in which test burns of JP-4 jet fuel are made with no thorium or uranium present. For such burns, HSE-1 assistance and fire department standby may not be required and the sections applicable to their participation may be disregarded.

B. No more than 15 escorted people shall be permitted to observe each test. The escort shall be a member of the WX-11 Dynamic Testing Section.

FIRE TESTING

I. SCOPE

This SOP applies to the fuel fire testing facility, structure designation TA-11-65, located to the east of the K-Site drop tower. The facility consists of an eight foot diameter, three foot deep open tank surrounded by two concentric, slatted chain link fence wind screens. A test unit is placed on a grate in the center of the tank. Liquid fuel is floated upon water in the tank and ignited remotely.

II. HAZARDS

A. The test unit may contain high explosive (HE) that could detonate during the test. A test unit that detonates may generate shrapnel or larger energetic fragments. HE in the test unit may not be completely consumed by the fire.

B. The test unit may contain radioactive material. Procedures for handling such test units are specified in WX-11 SOP 19.4.1. The tank in which tests are conducted is contaminated to a low level with depleted uranium residues.

C. Fuel for the test could be ignited accidently during storage, transfer, or test set up.

D. Vegetation in the vicinity of the burn could be ignited.

E. The drop tower may be struck by lightning while people are in the vicinity working with a fire test.

F. The fire releases a plume of combustion products into the atmosphere.

G. The water and the burned test unit may constitute hazardous waste that requires proper disposal.

III. PROCEDURES

A. TEST UNITS WITH EXPLOSIVES

1. Only those explosives and detonators listed in Group WX-3 SOP 1.1.0 shall be permitted.

2. No more than 45 kilograms of explosive is permitted in the drop tower area or in the burn facility.

3. The K-Site Reduced Hazard Area, as defined by

Gate 10, shall be secured before transfer of fuel into the tank during tests of up to 4.5 kilograms of explosive. The K-Site Hazard Area, as defined by Gate 8, shall be secured during tests of from 4.5 kilograms to 45 kilograms of explosive.

4. Before placing an explosive test unit in the tank, hoisting equipment and rigging to be used shall be exercised using a test weight comparable to the weight of the test unit.

5. No more than three people shall be in the drop tower area east of Buildings K2 and K3 while a test unit containing explosives is being handled before a test or when there is fuel and an explosive device in the tank. During a test, all personnel shall be in shelter in Building K2, K3, K4, or K30. The test shall be monitored with CCTV from the control room in Building K3.

6. After all fuel is consumed, as indicated by the absence of flame, wait 30 minutes before releasing personnel from shelters. No one shall be east of Buildings K2 and K3 until at least two hours after the last flame is visible or until thermocouples in the test unit indicate the internal temperature of the test unit is below 78 C.

7. Initial approach to the test unit shall be by one testing person accompanied, if required, by a health physics monitor. The initial approach team shall visually confirm that all HE in the unit has been consumed. If a hazardous quantity of HE remains, the test unit shall be reburned in place after all debris has reached ambient temperature. Should the test unit remain sufficiently intact that visual confirmation of HE consumption is not possible, the test unit shall be opened remotely using explosive charges (WX-11 SOP 19.4.9) and then reburned in place to consume the HE.

B. TEST UNITS WITH HAZARDOUS METALS

1. Test units may contain depleted uranium. No fissile material or beryllium is permitted.

2. Test planning for burn of a test unit containing depleted uranium shall include coordination with

radiation protection (HSE-1) and industrial hygiene (HSE-5) organizations.

C. FUEL HANDLING AND IGNITION

1. Fuel is delivered by the vendor in a two cubic meter (500 gallon) portable tank. Delivery shall be arranged such that the fuel arrives no sooner than a few days before the test. The tank shall be placed on the drop tower pad and grounded.

2. All instrumentation shall be connected and given its final check before fuel is transferred to the tank.

3. No more than three people shall be inside the fire test facility fence while fuel is being transferred to the tank. Suitable fuel proof fittings and hose shall be used for the transfer. Put about fifteen centimeters of water in the tank to check for leaks, then add the fuel, then add water to bring the fuel to the desired level.

4. The fire shall be ignited remotely using a CadWeld filled plastic bag and a Nichrome wire igniter. The power plug to the ignition train shall be locked out and the key kept in the possession of the leader of the arming crew while the ignition train is being set. No more than three people shall be in the area east of Buildings K2 and K3 while the ignition train is being set.

5. A fifteen second warning shall be sounded on the K-Site siren 5 minutes before ignition. No one shall be east of Buildings K2 and K3 while the fire is burning.

6. In the event of a misfire, wait ten minutes, lock the power plug to the ignition train in the lockout box, and reset the ignition train.

D. BRUSH FIRE HAZARD

1. Arrangements shall be made to have brush and weeds cut and removed within 15 meters of the outer fire facility fence within a few weeks of any test conducted during a high fire hazard season.

2. Arrangements shall be made to have the fire

department stand by with an engine or tanker during the test at a mutually agreed upon location. The fire department shall be alerted to the presence of explosives, depleted uranium, or other materials in the test unit that may present a hazard to fire fighters.

E. LIGHTNING HAZARD

1. Operations shall be suspended and no person shall remain to the east of Buildings K2 and K3 when there is thunderstorm activity in the K-Site area. This is a judgement call and shall be made on the side of caution.

2. If a lightning storm appears with little warning after an explosive test unit and the fuel have been placed in the tank, all personnel at K-Site shall take shelter in Building K2, K3, K4, or K30 until the lightning threat has passed.

F. AIR EMISSIONS

1. These tests are conducted under the provisions of an air emissions permit issued to the DOE and the Laboratory by the State of New Mexico. The permit requires that WX-11, through the Laboratory's environmental surveillance organization (HSE-8), inform the State of a proposed burn five working days in advance. Such contact shall be initiated several weeks in advance, if possible.

2. Assistance shall be given to the Laboratory's industrial hygiene (HSE-5) and environmental surveillance (HSE-8) organizations should they wish to monitor emissions from a test.

G. WASTE DISPOSAL

1. All waste from these tests must be considered suspect of radioactive contamination. A health physics monitor shall be present during all test unit recovery and waste clean up operations.

2. The HSE-7 radioactive liquid waste disposal organization shall be requested to pump the waste water from the tank for removal and disposal.

3. The remaining few millimeters of water shall be soaked up in an absorbent (e.g. corn cob fractions) and the wet absorbent and solid waste material placed in metal drums or plastic bags for disposal. The HSE-7 radioactive solid waste disposal organization shall be contacted to coordinate proper transport and documentation of the waste containers.

4. The empty tank shall be cleaned as required to leave it at a satisfactory low level of radioactive contamination. The empty tank shall be kept covered to keep rain and snow from accumulating in it.

IV. EMERGENCY PROCEDURES

A. Fire in or near explosives, fire away from explosives, fire or detonation in radioactive material, or personal injury shall be dealt with in accordance with established K-Site Emergency Instructions and the S-Site Emergency Response Plan.

B. In the event of a fuel spill, the fuel shall be confined to the drop tower pad sump from which it shall be pumped and disposed of by the WX-3 HE waste disposal team. In the event of a fuel spill off of the paved drop tower pad, the fuel contaminated soil shall be placed in metal containers for disposal at the WX-3 HE waste disposal facility.

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Matt Stableton
Air Quality Bureau
New Mexico Environment Department
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, NM 87504

Dear Mr. Stableton:

Enclosed are the open-burning permit applications for the flashing operations conducted at Technical Area (TA) 16 and the burning operations at TA-14. Open-burning is conducted in order to diminish the safety risks associated with High Explosives (HE) contaminated waste generated at these areas.

After a recent conversation with Steve Fong of my staff, you requested permit applications for their open-burning operations. Your reasoning for requiring a permit was that the New Mexico Air Quality Bureau had permitted similar flash burning of HE contaminated material in the past.

Additionally, three open-burning operations are conducted at TA-16 which are not included in the attached permit application. These three open-burning operations burn HE material and not HE contaminated waste. Permitting of HE burning operations is not required under New Mexico Air Quality Control Regulations (AQCR) 301 part B.3. AQCR 301 part B.3 allows the open-burning of HE material as a disposal means in order to eliminate the hazards associated with transportation of HE to a disposal facility.

The three HE burning operations which involve almost pure HE materials either alone or as a mixture and, therefore, are not subject to permitting under AQCR 301 include:

- Open Burn Tables: Discarded bulk HE parts are burned in pits 38~~8~~ and 3~~99~~77.
- Liquid Burn Tray: Solvent solubilized HE from the analysis and preparation facilities are burned at unit 394, along with hydraulic oil contaminated with bulk HE from HE fabrication processes.

- Filter Vessels: Sludge dried HE particles collected from the cleaning of HE contaminated machining tools are burned in filter vessels 401 and 406.

If you have any questions concerning the permit applications for TA-14 and TA-16, please contact Steve Fong of my staff at 665-5534.

Sincerely,

Joseph C. Vozella, Acting Chief
Environment, Safety, and Health
Branch

LESH:7SF-032

Enclosures

cc w/o enclosures:
T. Gunderson, EM-DO, LANL,
MS-J591
[redacted], [redacted]-8, LANL,
MS-K490
S. Goel, EPD, AL

ATTACHMENT A

LOS ALAMOS NATIONAL LABORATORY APPLICATION FOR OPEN-BURNING PERMIT IN TECHNICAL AREA 16, PIT 387

DATES BURNING REQUESTED:

Approximately 24 burns are expected to occur over the next 12 months to mitigate the safety hazards posed by high explosive (HE) contaminated unburnable materials. The burn dates will be dependant on the amount of accumulated explosives-contaminated unburnable material. It is anticipated that the number of burns mentioned above will be required to keep these wastes from accumulating to dangerous levels. Because specific dates cannot be assigned at this time, Los Alamos National Laboratory (LANL) will notify NMED 24 hours in advance of the expected burn dates.

EXACT LOCATION AND DIRECTION TO SITE:

The burns will be conducted within Los Alamos National Laboratory boundaries at Technical Area 16, in burning pits 387, just north of the Control Shelter 389 and located within a 100-foot by 100-foot cyclone fence. The sites can be accessed by escorted personnel through security station 560, off state road 501. A reference map is found in attachment B.

TYPE AND QUANTITY OF MATERIALS TO BE BURNED:

The burns consist of approximately 800 to 1600 pounds of wood pallets or scrap lumber (used as kindling wood) placed on the bottom grill of the burning ground stand or on and around the flash pile. The amount of wood used is determined by the type and quantity of material to be flashed. The kindling wood quantity determination is made in order to insure that flashing of the HE contamination will be complete leaving no significant HE contamination remaining on the flashed material. Each burn requires approximately one-half gallon of kerosene and excelsior as starter aiding in the ignition of the wood. In addition, when available, 20-50 pounds of HE contaminated rags, paper, cardboard, plastics, packing material, and combustible firing site debris are mixed with the wood to aid in ignition and act as a combustion source. The amount of unburnable material flashed in each burn is approximately one and a half tons and consists primarily of metal and glass (machine tools, filing cabinets, metal chairs, glass containers, etc.).

METHOD OF IGNITION AND HOW BURNING WILL BE MAINTAINED AND CONTROLLED:

The Standard Operating Procedures (SOPs) that will be followed during the burns are enclosed (Attachments C and D). The SOPs cover the hazards involved and precautions to be taken during the burn setup, the post burn observation period, unburnable inspection procedures, receiving and placement for the burns, and disposal of the flashed material. The SOPs also describe the ignition method which is a remotely operated ignition train made from excelsior and kerosene.

WHY IS BURNING NECESSARY:

The burning is necessary to mitigate the hazards associated with HE contaminated material generated during HE research and development operations. Open fire flashing is very effective in eliminating HE contamination of non-burnable waste so burial disposal can be accomplished safely.

ALTERNATIVES TO BURNING AND REASONS WHY ALTERNATIVES ARE NOT FEASIBLE:

There are two alternatives to open burning. First, the direct burial of HE contaminated material is possible. However, this practice is contrary to the Laboratory's policy not to transport or move material resulting from any process associated with high explosives for safety reasons. For HE research and development generated waste, this policy prevents accidents which might occur from the presence of HE residue remaining on the unburnable materials. While this scenario is unlikely, there is a finite probability of its occurrence.

The second option would be to thermally treat the waste material in a thermal treatment oven or an incinerator. Due to the size of some of the waste materials (large filling cabinets, etc.) an extremely large treatment unit would have to be built. Because of the possibility of an explosion occurring from contamination on the waste, the treatment unit would have to be constructed of special materials. Because of the risk of destroying the unit due to an explosion, the cost of building such a unit is not justified.

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION

APPLICATION FOR AN OPEN-BURNING PERMIT

Name of Applicant Mr. Joseph Vozella, Chief, ES&H Branch Telephone (505) 667-5288

Address U.S. Department of Energy, Los Alamos Area Office, Los Alamos, NM 87544

Date(s) burning requested See Attachment A

Exact location and direction to site See Attachment A

Type and quantity of material to be burned See Attachment A

Method of ignition and how burning will be maintained and controlled See Attachment A

Why is burning necessary? See Attachment A

List alternatives to burning and reasons why alternatives to burning are not feasible See Attachment A

I herewith make application to the Environmental Improvement Division for an open-burning permit under the requirements of Air Quality Control Regulation 301, Sub-section F. I agree to meet all conditions set forth by the Environmental Improvement Division.

Signed _____ Date _____
Applicant

This application has been received by the Environmental Improvement Division and is for the following reasons: ☐ APPROVED ☐ DENIED

This permit is approved for the following dates: _____ _____
and is subject to the following conditions:

1. All burning must take place during the time period of three hours after sunrise to one hour before sunset.
2. The wind direction at the site of burning must be such that the smoke will generally be carried away from public roads and areas of human habitation.
3. All burning will cease when atmospheric conditions are such that an air stagnation advisory is issued for your area by the U.S. Weather Service.
4. All material to be burned shall be as dry as possible and amount of dirt must be minimized on material being burned.
5. No natural or synthetic rubber products or petroleum products shall be burned.
6. All applicable restrictions, codes and ordinances (*e.g., fire codes or ordinances*), whether temporary or permanent, of other governmental bodies must be complied with.
7. Other conditions: _____

The Division reserves the right to cancel this permit at any time if the public interest so warrants it. If such action occurs, an alternative method of disposal must be used. The holder of this permit is therefore cautioned and charged that he/she, and he/she alone, assumes full responsibility to exercise the utmost care and judgment before setting any fires. The Environmental Improvement Division hereby disclaims any and all liability of itself or it's agents that might be incurred by petitioner's acts.

Signed _____ Dist. No. ____ Date _____
Name and Title

LOS ALAMOS NATIONAL LABORATORY
APPLICATION FOR OPEN-BURNING PERMIT
ATTACHMENT A

DATES BURNING REQUESTED:

Approximately 24 burns are expected to occur over the next 12 months to mitigate the safety hazards posed by high explosive (HE) contaminated unburnable materials. The burn dates will be dependant on the amount of accumulated explosives-contaminated unburnable material. It is anticipated that the number of burns mentioned above will be required to keep these wastes from accumulating to dangerous levels. Because specific dates cannot be assigned at this time, Los Alamos National Laboratory (LANL) will notify NMED 24 hours in advance of the expected burn dates.

EXACT LOCATION AND DIRECTION TO SITE:

The burns will be conducted within Los Alamos National Laboratory boundaries at Technical Area 16, in burning pits 387, just north of the Control Shelter 389 and located within a 100-foot by 100-foot cyclone fence. The sites can be accessed by escorted personnel through security station 560, off state road 501. A reference map is found in attachment B.

TYPE AND QUANTITY OF MATERIALS TO BE BURNED:

The burns consist of approximately 20 to 40 standard size wood pallets (used as kindling wood or scrap lumber) placed on the bottom grill of the burning ground stand. The amount of wood used is determined by the type and quantity of material to be flashed. The kindling wood quantity determination is made in order to insure that flashing of the HE contamination will be complete leaving no significant HE contamination remaining on the flashed material. Each burn requires approximately one-half gallon of kerosene or excelsior as the starter fluid aiding in the ignition of the wood. The amount of unburnable material flashed in each burn is approximately one and a half tons and consists of metal and glass (filing cabinets, metal chairs, and glass containers).

METHOD OF IGNITION AND HOW BURNING WILL BE MAINTAINED AND CONTROLLED:

The Standard Operating Procedures (SOPs) that will be followed during the burns are enclosed (Attachments C and D). The SOPs cover the hazards involved and precautions to be taken during the burn setup, the post burn observation period, unburnable inspection procedures, receiving and placement for the burns, and disposal of the flashed material. The SOPs also describe the ignition method which is a remotely operated ignition trail made from excelsior and kerosene.

WHY IS BURNING NECESSARY:

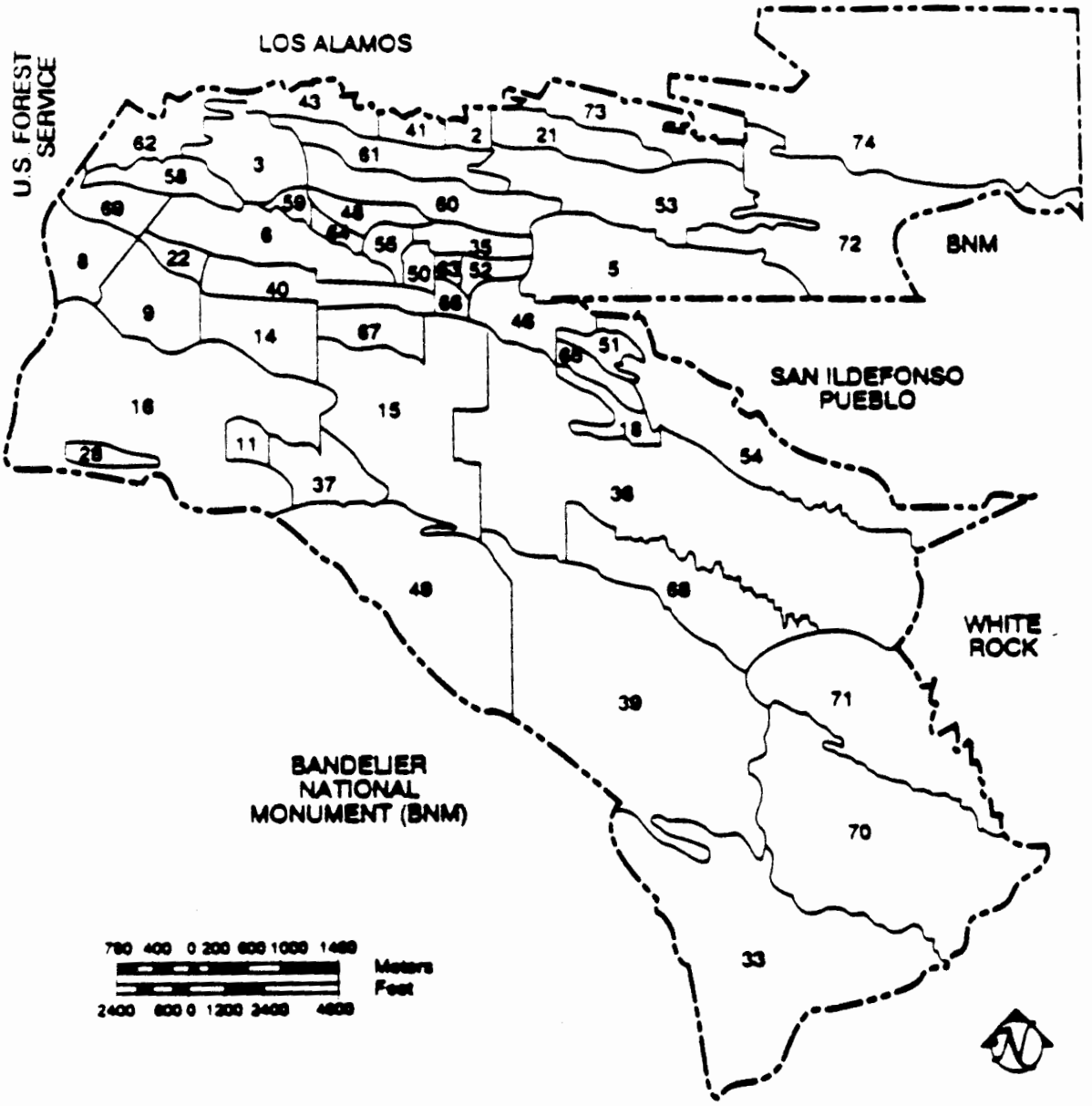
The burning is necessary to mitigate the hazards associated with HE contaminated material generated during HE research and development operations. Open fire flashing is very effective in eliminating HE contamination of non-burnable waste so burial disposal can be accomplished safely.

ALTERNATIVES TO BURNING AND REASONS WHY ALTERNATIVES ARE NOT FEASIBLE:

There are two alternatives to open burning. First, the direct burial of HE contaminated material is possible. However, this practice is contrary to the Laboratory's policy not to transport or move material resulting from any process associated with high explosives for safety reasons. For HE research and development generated waste, this policy prevents accidents which might occur from the presence of HE residue remaining on the unburnable materials. While this scenario is unlikely, there is a finite probability of its occurrence.

The second option would be to thermally treat the waste material in a thermal treatment oven or an incinerator. Due to the size of some of the waste materials (large filling cabinets, etc.) an extremely large treatment unit would have to be built. Because of the possibility of an explosion occurring from contamination on the waste, the treatment unit would have to be constructed of special materials. The cost of building and operating such a unit would be extremely high.

ATTACHMENT B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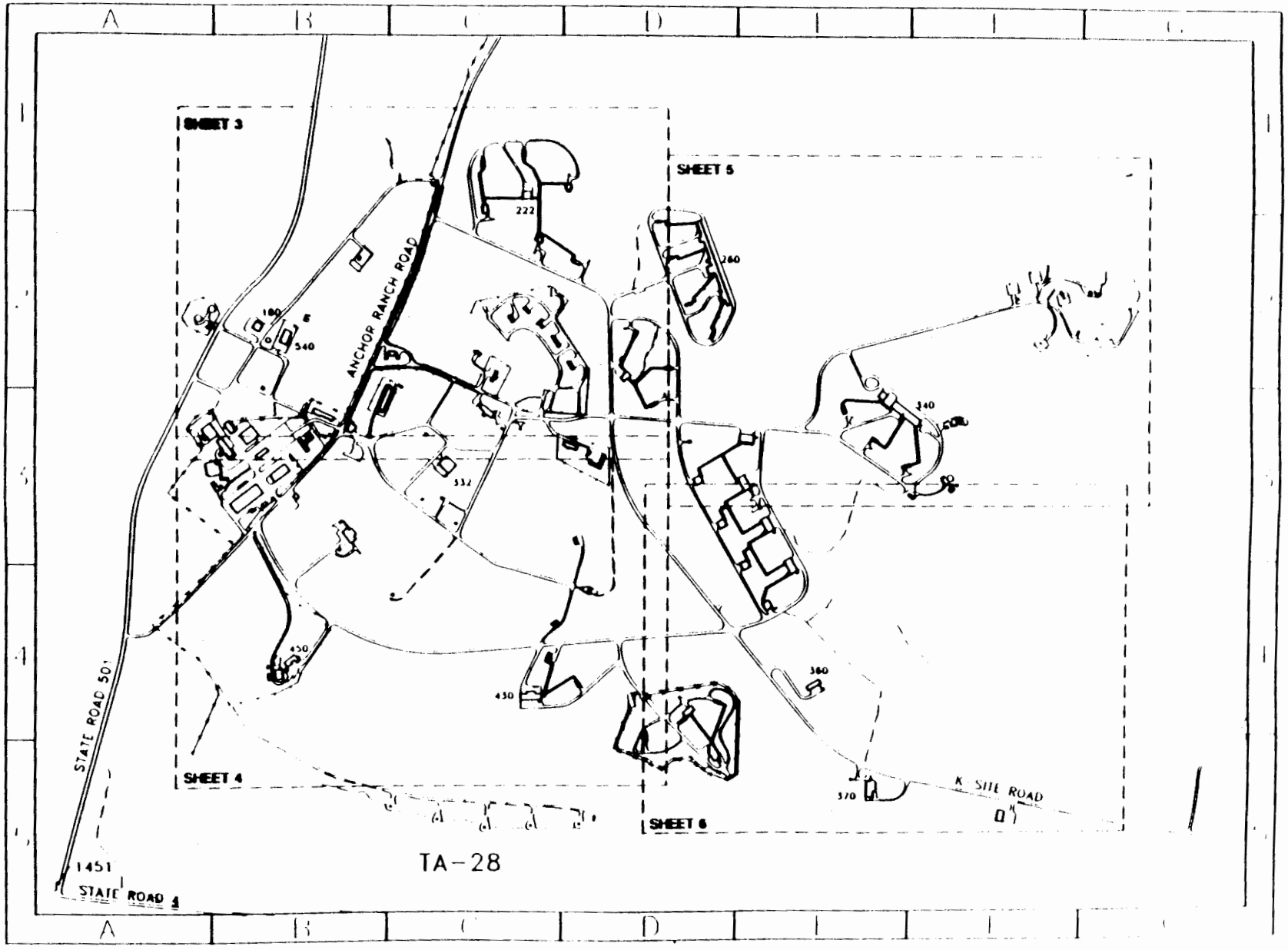
TA-16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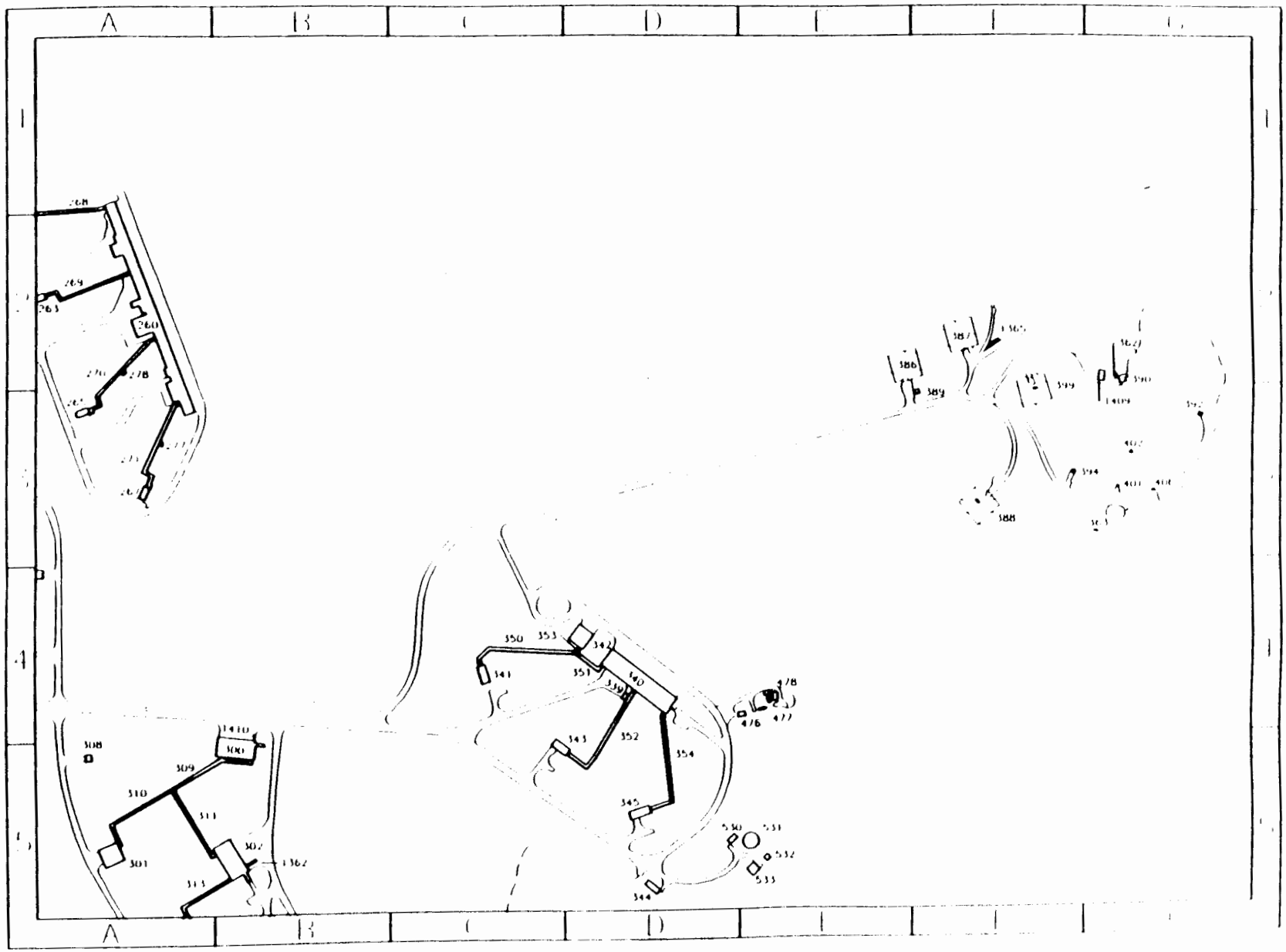
TA-16



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SCALE 1:2400

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FEET

ATTACHMENT C

FLASHING AND DISPOSAL OF UNBURNABLE MATERIALS

I. LOCATION

Burning Pits TA-16-386 and 387; Control Shelter TA16-389; and gate, Structure TA-16-349

II. EQUIPMENT

A. Burning ground stands (SK-4377 D-1)

B. Wire screen (SK-4377 D-1, Item D)

C. Kindling wood or scrap lumber

D. Kerosene or Excelsior

E. Chain Link Fencing

III. LIMITS

A. Explosives

HE-contaminated unburnable materials

B. Personnel

1. Four at Burning Pit 387

2. Five at Control Shelter 389

IV. PROCEDURE

A. HE-Contaminated Materials

1. Preparation and Inspection

* Materials to be flashed will be inspected for presence of reservoirs of oils, other fluids and excessive deposits of explosives which will be removed. Inspection covers will be removed as appropriate. Suspected materials such as asbestos or other insulating materials will be identified and/or removed in accordance with lab procedures. Any sealed containers should have their valves opened or removed.

*Indicates change

IV. A. (cont.)

2. Receiving and Placing

a. Group WX-3 disposal personnel will deliver explosives-contaminated unburnable materials to the burning ground. Any other personnel involved in the delivery will be supervised by the Disposal Crew Leader. Burning Pit 386 may be used (less than 90 days) to store HE-contaminated unburnable materials until enough have been collected to justify a flashing operation.

b. Kindling wood or scrap lumber will be placed on the bottom grill of the burning ground stands. The total amount of wood to be used will be determined by the type and quantity of materials to be flashed. In all cases, there must be a sufficient quantity of wood to ensure that the flashing will be complete and no significant HE contamination will remain.

c. The Disposal Crew Leader will supervise the unloading of trucks and placing of the materials on the stands. For small items, such as valves, a wire screen will be placed on top of the stands. This will hold the materials above the fire for proper flashing.

* d. If it appears that it would be more convenient to place the materials on the sand for flashing, this is permitted. The Disposal Crew Leader must be sure that the placement of the wood will properly heat all the materials to ensure a satisfactory flashing job. If appropriate, chain link fencing may be placed under the material to be flashed. The fencing may be gripped at the corners to remove loose, flashed materials to the assembly pad.

e. The flashing operation, will be performed in accordance with WX-3 SOP 12.5.1.

3. Disposal

a. On the first workday after the flashing operation (a minimum of 24 hours must lapse), the Disposal Crew Leader will inspect the flashed materials to determine whether they have been completely flashed. If he is not satisfied with the flashing, he will repeat the appropriate steps of this SOP and WX-3 SOP 12.5.1 to ensure complete flashing.

IV. A. 3. (cont.)

b. Completely flashed materials may be stored (no time limit) at the burning grounds until a suitable quantity for disposal exists.

c. When sufficient quantities of flashed materials have accumulated the site certifying agent will inspect them and certify that they are non-RCRA wastes as defined by 40CFR.261 and that they are suitable for burial (Form No. WX-12-2).

d. A record of all flashing operations will be kept on Form WX-3-70.

B. Uncontaminated Materials

1. "Unburnable, Uncontaminated" materials that are sent to the burning ground through the regular trash collection system (see WX-3 SOP 12.1.2) will be examined by disposal personnel to make sure that no HE contamination is present. If there is any indication that HE contamination is present, the materials will be flashed in accordance with the appropriate sections of this SOP. After it has been determined by disposal personnel that no HE contamination is present, the materials may be held with flashed materials without being flashed. A record of all materials that are disposed of without being flashed will be kept on Form WX-3-70.

2. Open fire flashing is very effective in eliminating HE contamination of non-burnable waste. However, Laboratory policy dictates that these wastes remain under institutional control. Therefore, these materials will be disposed of by HSE-7 in a controlled burial site only.

FLASHING AND DISPOSAL OF UNBURNABLE MATERIALS

Page 1, Revision 7
Page 2, Revision 7
Page 3, Revision 8
Page 4, Revision 7

APPROVED M. J. Barr DATE 10-28-87
M. J. Barr, Unit Supervisor

APPROVED R. A. Hildner DATE 10-28-87
R. A. Hildner, Section Leader, WX-3

APPROVED J. L. Parkinson DATE 10/29/87
J. L. Parkinson, Group Leader, WX-3

APPROVED Wm. A. Bradley DATE 11/2/87
W. A. Bradley, Asst. Division Leader, WX

APPROVED NOT REQUIRED DATE
A. M. Valentine, Group Leader, HSE-1

APPROVED Jack L. Bacon for W. C. C. DATE 1/7/88
W. C. Courtright, Group Leader, HSE-3
RKG 12/23

ATTACHMENT D

IGNITION, BURNING AND FLASHING OF EXPLOSIVES AND EXPLOSIVE-CONTAMINATED MATERIAL

I. SCOPE

The procedures outlined in this SOP will be followed in igniting and burning or flashing all materials at the burning ground.

II. LOCATION

Burning Pits TA-16-387, 388, and 399; Filter Beds TA-16-392 and 394; Pressure Filters TA-16-401 and 406; Control Shelter TA-16-389; and Gate, Structure TA-16-349.

III. LIMITS

A. Personnel

Two

B. Explosives

See Group WX-3 SOP for particular disposal operation

IV. ALLOWABLE EXPLOSIVES

Explosives approved for disposal by WX-3 are those listed in Tables 1 and 2 of WX-3 SOP 1.1.0.

V. EQUIPMENT

A. Burning ground firing circuit (ENG-C-23444)

B. Periscope (13Y-101920)

* C. Blasting machine (10-cap capacity) Fidelity Electric Company (S/N 10-62SA).

D. Squibs (S-94) WX-3 Code Number 225-03, or similar DuPont S-series squibs.

E. Blaster's Multimeter, Model 101.

*Indicates Change

VI. MATERIALS

A. Excelsior

B. Kerosene

VII. AREA CLEARANCE

When the Disposal Crew Leader in charge of operations has determined that a burning area has been satisfactorily loaded and is ready to be burned, a check of the burning ground will be made. Personnel who are to remain during the burning operation will assemble in the control shelter. All others will leave the area. An operator will check to make sure that the gate on the access road (Structure 349) is closed. If it is open, he will notify the Disposal Crew Leader and another check of the area will be made before the burning operation continues. If it is closed, the operator will return to the control shelter.

VIII. PROCEDURE

A. A permanent selective firing circuit is installed at the burning ground. The master controls are located inside Control Shelter 389. Proper setting of the controls directs an electrical pulse that will fire the ignition squibs at any one of the burning areas. The permanent firing circuit will always be used for igniting the squibs at the burning ground except in cases of power outage or circuit failure. In that event, it will be permissible to use the blasting machine to ignite the squibs.

B. All motor vehicles at the burning ground will be parked at Control Shelter 389 with their radios turned off.

C. The Disposal Crew Leader will check the radio located in the control shelter to make sure that it is turned off.

D. Ignition and Burning

1. The Disposal Crew Leader will determine that the firing controls are locked in the OFF position. He will keep the key to the lock in his possession during the remainder of the burning operation.

2. Squibs, excelsior, and kerosene will then be collected at Control Shelter 389.

* 3. The Disposal Crew Leader or his delegate will proceed on foot to the material to be burned with the materials listed in Item D.2, above.

4. The Disposal Crew Leader will check the circuit breaker in the terminal box at the burning area to make sure it is in the GROUND position and that the alligator clips are disconnected from the two lead wire reels.

* 5. An ignition train will be prepared by building a 1 to 2 foot long strip of excelsior up to the material to be burned. The excelsior will be dampened with kerosene.

VIII. D. (cont.)

* 6. The Disposal Crew Leader will assure himself of the integrity of existing wire and if necessary, remove enough wire from the two reels located in the terminal box to reach the ignition train. He will return to the terminal box and connect the end of each lead wire to one of the two alligator clips in the box. The circuit is then ready for two squibs to be spliced in parallel to the end of the wires. The spliced wires must be kept separated. If there is danger of the splices touching the explosive or some conductor, it must be insulated with electrician's tape.

* 7. The squibs will be placed approximately one inch from the excelsior so that the squibs, when fired, will light the ignition train. Do not place squibs within the excelsior as there is a possibility of snuffing the squib before ignition.

8. The circuit breaker in the terminal box at the burning area will be thrown to the fire position.

9. A continuity check will be made on the squib circuit from the terminal box outside the fence of the burning pit by using the approved multimeter.

* 10. The Disposal Crew Leader will proceed to the control shelter.

11. The Disposal Crew Leader will follow the following sequence in firing the squibs:

a. Unlock the firing controls and rotate the selector switch to the number that corresponds to the identifying number of the area being burned.

b. Turn the circuit breaker switch behind the fire button to the ON position.

c. Press the fire button to energize the circuit.

* d. An observer should confirm squib firing and ignition by using the periscope located in the control shelter.

* 12. Squib failures will be handled as follows:

a. If no evidence of squib ignition was observed the Disposal Crew Leader will repeat the firing procedure.

b. If ignition is not obtained on a second attempt the firing circuit should be saved and the burn pad observed for a minimum of five minutes.

c. When the Disposal Crew Leader considers the pad area safe, he or his designate may proceed to the pad to review hook-up wire integrity. The Crew Leader may be accompanied by no more than one man when investigating a failure.

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION

APPLICATION FOR AN OPEN-BURNING PERMIT

Name of Applicant U. S. Department of Energy Telephone (505) 667-5288

Address Los Alamos Area Office, Los Alamos, N.M. 87544

Date(s) burning requested see Attachment A

Exact location and direction to site see Attachment A

Type and quantity of material to be burned see Attachment A

Method of ignition and how burning will be maintained and controlled see Attachment A

Why is burning necessary? see Attachment A

List alternatives to burning and reasons why alternatives to burning are not feasible see Attachment A

I herewith make application to the Environmental Improvement Division for an open-burning permit under the requirements of Air Quality Control Regulation 301, Sub-section F. I agree to meet all conditions set forth by the Environmental Improvement Division.

Signed Joseph C. Vozella Date 12/2/92

Joseph Vozella, Acting Chief, ES&H Branch
Applicant

This application has been received by the Environmental Improvement Division and is ☒ **APPROVED** ☐ **DENIED**
the following reasons:

See attached memo

This permit is approved for the following dates: June 14, 1993 - June 14, 1994
and is subject to the following conditions:

1. All burning must take place during the time period of three hours after sunrise to one hour before sunset.
2. The wind direction at the site of burning must be such that the smoke will generally be carried away from public roads and areas of human habitation.
3. All burning will cease when atmospheric conditions are such that an air stagnation advisory is issued for your area by the U.S. Weather Service.
4. All material to be burned shall be as dry as possible and amount of dirt must be minimized on material being burned.
5. No natural or synthetic rubber products or petroleum products shall be burned.
6. All applicable restrictions, codes and ordinances (*e.g., fire codes or ordinances*), whether temporary or permanent, of other governmental bodies must be complied with.
7. Other conditions:

The Division reserves the right to cancel this permit at any time if the public interest so warrants it. If such action occurs, an alternative method of disposal must be used. The holder of this permit is therefore cautioned and charged that he/she, and he/she alone, assumes full responsibility to exercise the utmost care and judgment before setting any fires. The Environmental Improvement Division hereby disclaims any and all liability of itself or it's agents that might be incurred by petitioner's acts.

Signed Mark Pettelon Env Specialist Central Office ~~Dist. No. 90~~ Date 6/14/93
Name and Title

EID 059 Revised 9/86 *WHITE - Applicant; CANARY - EID District Office; PINK - Air Quality Section, Santa Fe*

ATTACHMENT A
APPLICATION FOR OPEN-BURNING PERMIT

DATES BURNING REQUESTED:

Approximately 4-5 burns are expected to occur over the next 12 months to reduce the fire and safety hazards that the accumulation of firing site wastes are posing. The burn dates will be dependent on the detonation testing schedule for the Laboratory. It is anticipated that this many burns will be required to keep these wastes from accumulating to dangerous levels until an alternate method can be adopted to dispose of these wastes. Because specific dates cannot be assigned at this time, Los Alamos National Laboratory (LANL) will notify NMED 24 hours in advance of the expected burn date.

EXACT LOCATION AND DIRECTION TO SITE:

The burns will be conducted within Los Alamos National Laboratory boundaries at Technical Area 36, just south of Building 12. The attached maps show the burn site location. The site can be accessed by properly cleared or escorted personnel via Potrillo Drive, off Pajarito Road. However, the road is not accessible to the public.

TYPE AND QUANTITY OF MATERIALS TO BE BURNED:

The burns consist of approximately 150 to 300 cubic meters of loosely piled wood and 50 pounds of Lexan or Plexiglass depending on the time between burns and the detonation activities. Kimwipes and 5 to 10 gallons of diesel or kerosene will be used to aid in the ignition of the waste.

METHOD OF IGNITION AND HOW BURNING WILL BE MAINTAINED AND CONTROLLED:

The Standard Operating Procedure (SOP) to be followed during the burns is attached. The SOP is based on proven operational experience and covers the hazards involved and precautions to be taken during the burn setup, method of ignition (Kimwipes and diesel or kerosene), and the post burn observation period.

WHY IS BURNING NECESSARY:

The burning is necessary to reduce the volume of wastes that accumulates from the ordnance detonation experiments. LANL is actively studying other alternatives to dispose of these wastes. Until an effective and permanent method for disposal of these wastes has been adopted, a temporary solution needs to be continued to prevent the accumulation of the wood wastes to levels that become a fire and safety hazard.

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

DEC 7 - 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Matthew Stableton
Enforcement Section
Air Quality Bureau
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87502

Dear Mr. Stableton:

Enclosed please find a renewal application for an Open-Burning Permit for purposes of disposing of explosive waste and explosive-contaminated waste by the Explosives Applications Group (M-8) of Los Alamos National Laboratory (LANL). This permit application covers the open-burning operations at the Technical Area (TA) 36 burning area, which was permitted under a New Mexico Environment Department Burn Permit (October 1991-October 1992). This renewal application includes the revised Standard Operating Procedure (SOP), which was submitted on August 4, 1992, for your review.

As you are aware, the burning is necessary to reduce the volume of the wood wastes that accumulate from the ordnance detonation experiments. The wood is used in the test stands and may be imbedded with high explosive fragments from the detonation. The likelihood of high explosive ignition is slight, but it is LANL's policy not to reuse any wastes resulting from any process associated with high explosives for safety reasons. The accumulation of the wood wastes becomes a fire and safety hazard.

The burning practices include the use of 5 to 10 gallons of diesel of kerosene in addition to paper and/or Kimwipes to aid in the ignition of the wood wastes (see Section 5.6.1.5 of the SOP). This practice results in a faster and hotter burning fire, thereby reducing smoke generation and the burn time. Condition 5.6.1.5 of the enclosed permit application outlines our use of petroleum products to aid in the ignition of the waste.

0040083

United States Government

memorandum

Department of Energy
Albuquerque Field Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

DATE: JUN 23 1993

REPLY TO ATTN OF: LESH:6SF-054

SUBJECT: Open-Burning Permit at Technical Area (TA) 36

TO: Thomas Gunderson, EM-DO, LANL, MS-J591

This transmits a copy of the New Mexico Environment Department Open-Burning Permit covering the burning of wood wastes at LANL TA-36. Please arrange for distribution of this permit to appropriate LANL organizations and take steps to ensure that covered activities comply with all permit conditions. Potential noncompliance should be reported to this office as soon as the possibility is identified. Actual noncompliance, if any, should be reported immediately to this office with detail on circumstances. This report is separate from any required unusual occurrence reports. These requirements are intended to assist this office in oversight of LANL environmental compliance.

Please refer any unresolved questions or comments on this permit to Steve Fong of my staff at 665-5534.

Joseph C. Vozella, Chief
Environment, Safety and Health
Branch

Attachment

cc w/attachment:
D. Glenn, FOB, LAAO
J. Dewart, EM-8, LANL, MS-K490
S. Goel, EPD, AL

6-24-93
From: TG
To: KH
FYI

JUN 24 1993

VIII. D. 12. (cont.)

d. Should the cause of squib failure not be determined, the pad should be cleared and the HE and/or inert may be placed in a magazine or burned on the second pad. The responsible engineer should be notified.

* 13. Ignition train failures will be handled as follows:

* a. If there is evidence of squib initiation (flash upon squib initiation) but the excelsior train or HE does not appear to burn, the pad should be viewed from the control building for a minimum of 30 minutes past the last visual indication of smoke.

* b. The firing circuit should be saved and the Disposal Crew Leader and/or responsible engineer may then approach the burn pad. Ignition problems have occurred from.

* (1) Squib placement was too close (less than 1") or too far (greater than about 6-8") from the excelsior.

* (2) Inadequate wetting (from kerosene) of the excelsior.

* (3) HE or inert material did not sustain burning.

* (4) Squib position changed between setup and ignition (wind or movement of refractory brick.

* c. A new ignition train should be fabricated using new squibs and additional excelsior and kerosene as necessary.

14. When it has been determined that the ignition train has ignited, the Disposal Crew Leader will:

a. Rotate the selector switch to the OFF position,

b. Lock the firing controls, and

c. Turn the circuit breaker switch behind the fire button to the OFF position.

15. The vehicle radios and the radio located in the control shelter may then be turned on.

* 16. When the materials that are being burned have been reduced to a smoldering condition, the crew may leave the burning ground. A minimum of 24 hours must lapse after burning before ashes and other debris can be collected. Ashes will be disposed of in accordance with SOP 12.1.0., paragraph VI.R.1 and 2.

VIII. D. (cont.)

17. The key for the firing control circuit will be placed in the squib storage box in the storage room at the control shelter. The key will always be kept in this box when not in the possession of the Disposal Crew Leader.

18. A record of each burn will be noted on Form WX-3-70.

E. Use of Blasting Machine

1. Preparation

a. In the event that the burning ground selective firing circuit is inoperative and the explosive material is of such a nature that its destruction is urgent, the blasting machine may be used to ignite the squibs.

b. No part of the selective firing circuit will be used in conjunction with the blasting machine.

c. A temporary firing wire will be laid along the ground from the control shelter to the area to be burned. The Disposal Crew Leader will positively connect the bared ends of the firing wire at the control shelter and the burning area to get rid of any static electricity that may have accumulated in the wire.

d. The Disposal Crew Leader must have the blasting machine in his possession at all times during the rest of the burning operations, as described in the following paragraphs.

2. Ignition and Burning

a. The blasting machine, squibs, excelsior, and kerosene will be collected at Control Shelter 389.

* b. The Disposal Crew Leader or his delegate will proceed on foot to the material to be burned with the materials listed in Item E.2.a, above.

* c. An ignition train will then be prepared by putting a wad of excelsior about 1 to 2 feet long on the material to be burned. The excelsior will be dampened with kerosene. The ignition train must be arranged so that both it and the explosives burn toward the direction from which the wind is blowing.

d. The Disposal Crew Leader will then connect two squibs to the temporary firing line and will make sure that the squibs are wired in series. The spliced wires must be kept separated. If there is danger of the splices touching the explosive or some conductor, it must be insulated with electrician's tape.

VIII. E. 2. (cont.)

e. The squibs will then be placed in the excelsior so that the squibs, when fired, will light the ignition train.

* f. The Disposal Crew Leader will then proceed to the control shelter.

g. The Disposal Crew Leader will fasten the lead wires to the blasting machine and energize the circuit.

h. The Disposal Crew Leader, or his alternate, will then check to see whether the ignition train is ignited by using the periscope in the control shelter.

i. If the materials fail to burn, the Disposal Crew Leader shall proceed as follows:

(1) Disconnect the blasting machine and positively connect the bared ends of the wire to get rid of any residual electrical charge in the circuit.

(2) Repeat firing procedure.

(3) Wait 30 minutes and then, after surveying the area with the periscope, proceed to the area and inspect the squibs and other parts of the firing system.

(4) When necessary, the used squibs may be replaced by new ones, and the appropriate parts of Item VIII.E.2.a through g, above, may be repeated.

(5) Faulty squibs will be collected for subsequent disposal by flashing with other HE-contaminated unburnable material, in accordance with WX-3 SOP 12.3.6.

(6) Each time that a failure occurs, the Disposal Crew Leader will disconnect the bared ends of the wire to get rid of any residual electrical charge in the circuit. Wait 30 minutes before proceeding to inspect the squibs and other parts of the firing circuit.

* j. When the materials that are being burned have been reduced to a smoldering condition, the crew may leave the burning ground. A minimum of 24 hours must lapse after burning before the ashes and other debris can be collected. Ashes will be disposed of in accordance with SOP 12.1.0, paragraph VI.R.1 and 2.

k. The vehicle radios and the radio in the control shelter may then be turned on.

VIII. E. 2. (cont.)

l. The blasting machine will be placed in the squib storage box in the storage room at the control shelter. The blasting machine will always be kept in this box when not in the possession of the Disposal Crew Leader.

m. A record of each burn will be noted on Form WX-3-70.

IGNITION, BURNING, AND FLASHING OF
EXPLOSIVES AND EXPLOSIVE-CONTAMINATED MATERIAL

Page 1, Revision 7	Page 5, Revision 8
Page 2, Revision 7	Page 6, Revision 7
Page 3, Revision 8	Page 7, Revision 8
Page 4, Revision 8	Page 8, Revision 2

APPROVED M. J. Barr DATE 10-28-87
M. J. Barr, Unit Supervisor

APPROVED M J Barr for R.A.H. DATE 10-29-87
R. A. Hildner, Section Leader, WX-3

APPROVED J L Parkinson DATE 10/29/87
J. L. Parkinson, Group Leader, WX-3

APPROVED W. A. Bradley DATE 11/2/87
W. A. Bradley, Asst. Division Leader, WX

APPROVED Not Poos DATE _____
A. M. Valentine, Group Leader, HSE-1

APPROVED Jack T. Baumann DATE 11/25/87
W. C. Courtright, Group Leader, HSE-3
PWG 11/20

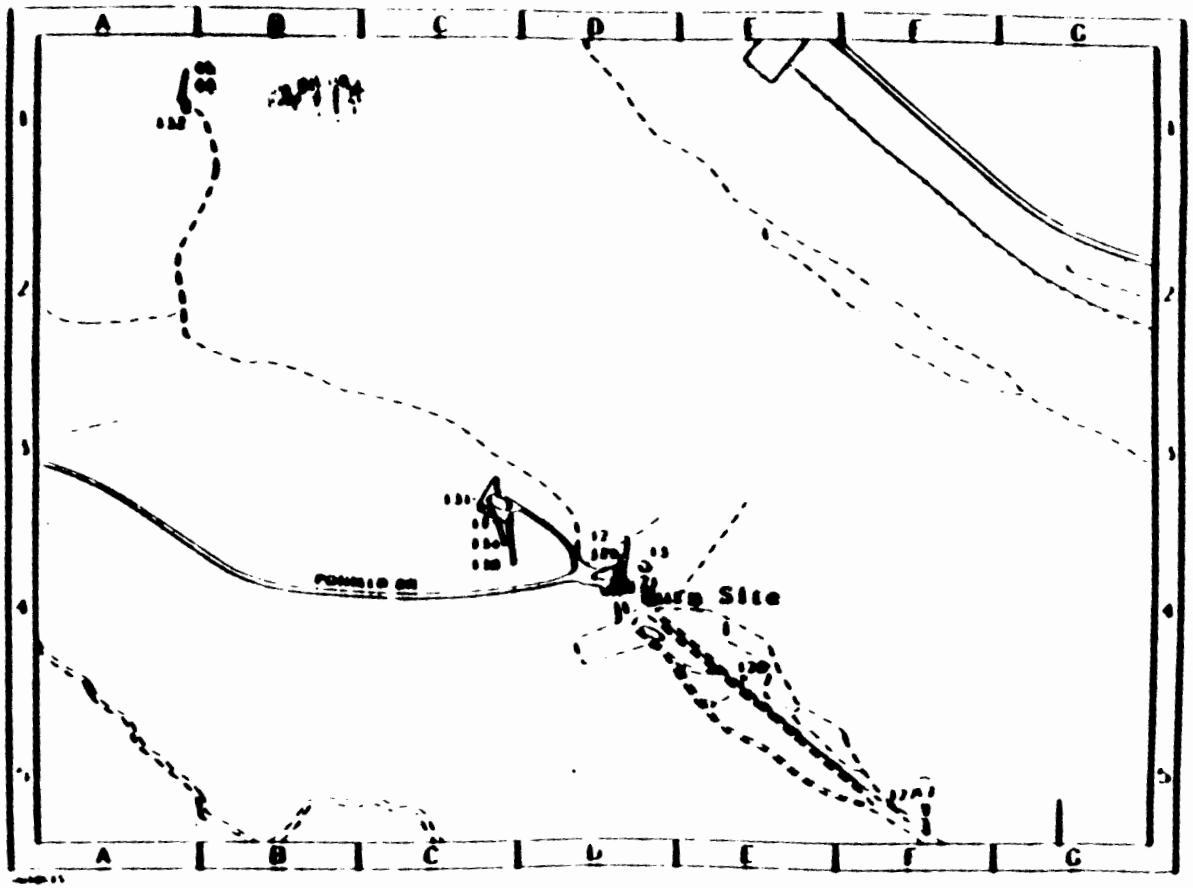
ALTERNATIVES TO BURNING AND REASONS WHY ALTERNATIVES ARE NOT FEASIBLE:

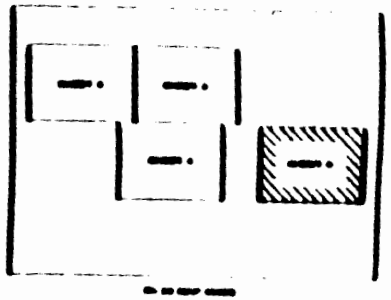
There are three alternatives to burning. First, the material can be reused or made available for firewood or glass replacements, but it has been the Laboratory's policy not to reuse any wastes resulting from any process associated with high explosives for safety reasons. For the ordnance detonation tests, this policy prevents accidents which might occur from the presence of high explosive fragments which could become buried in the wood used for the test stands or in the Lexan or Plexiglass used to allow filming during the ordnance test. While this scenario is not likely, there is a finite probability of its occurrence.

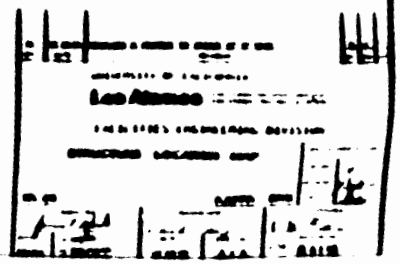
The second option would be to incinerate the wastes. LANL has been actively studying incineration as an option but many construction and regulatory issues must be addressed before implementation of this method is instituted. In the interim the wood wastes continue to accumulate to a level that poses a fire and safety hazard.

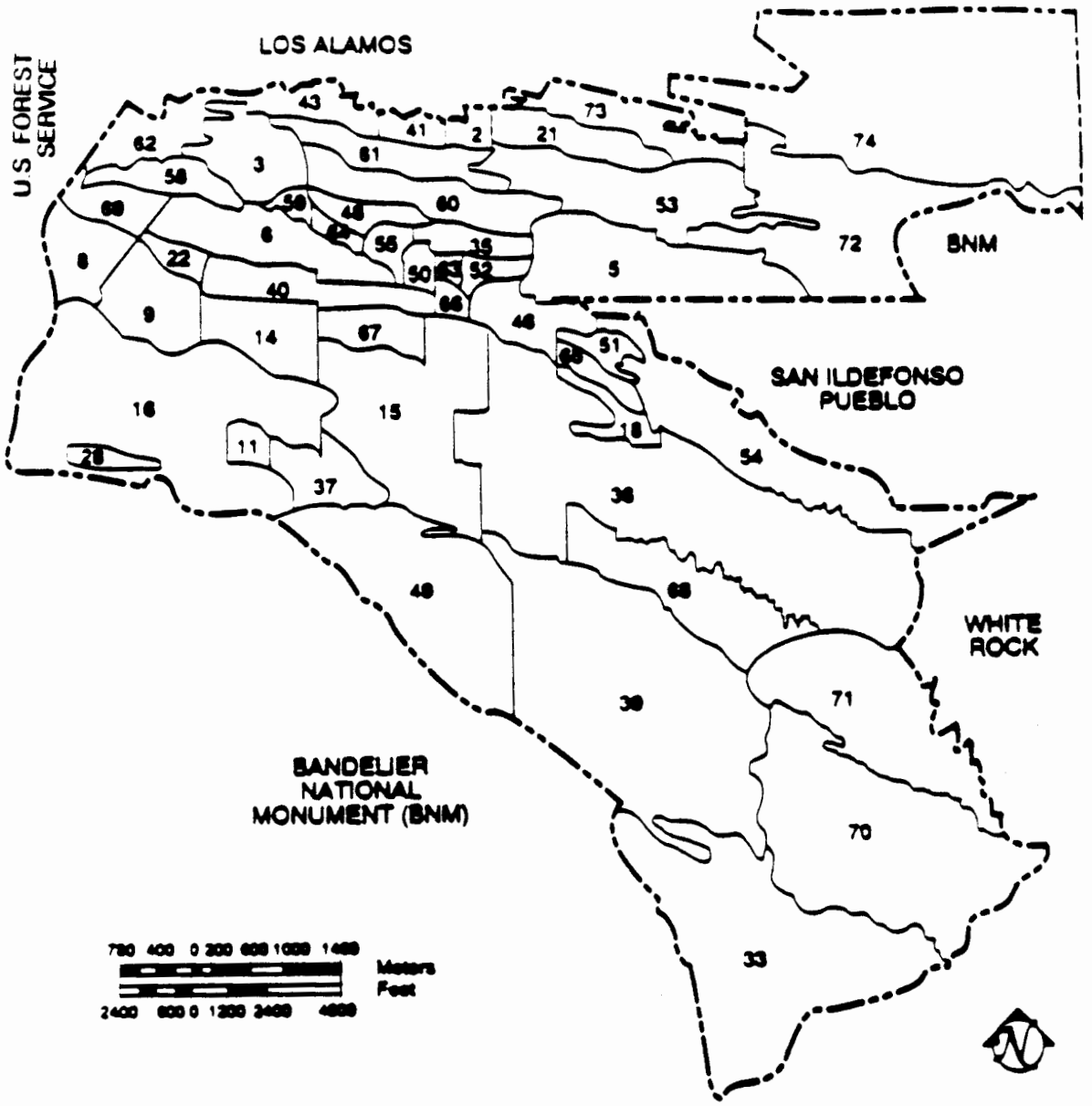
The final alternative would be to landfill these wastes. This is an alternative the Laboratory has already rejected. Landfilling such a large volume of waste accelerates the closure of the existing landfill and impedes the effective handling of solid wastes at Los Alamos.

TA-36





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STANDARD OPERATING PROCEDURE

FOR

DISPOSAL OF EXPLOSIVE WASTE AND

EXPLOSIVE-CONTAMINATED WASTE

AT THE

LOS ALAMOS NATIONAL LABORATORY

1.0 INTRODUCTION

Explosive waste and explosive-contaminated waste are generated as a result of M-8 firing-site operations involving high explosives (HE). A small percentage of the tests conducted by M-8 contain depleted-uranium (DU) components. M-8 may also be requested to dispose of explosive waste from other LANL groups, such as WX-3. Within this document, the materials are defined that comprise explosive waste and explosive-contaminated waste, and procedures are described for their disposal. This SOP governs the activities of all M-8 employees and the Johnson Control (JCI) employee working routinely with Group M-8, in regard to the handling and disposal of explosive waste and potentially explosive-contaminated waste for all M-8 explosives operations. The *DOE Explosives Safety Manual*, LANL ES&H requirements, and appropriate M-8 SOPs are the primary reference documents.

2.0 DEFINITIONS

Explosive waste is identifiable pieces of explosives that are either *excess explosive* or *scrap explosive*.

Excess explosive is identifiable pieces of explosive resulting from assembly operations or from explosive material that is no longer needed for programmatic reasons (and about which a decision has been made to remove it from inventory). This retains its original explosive storage compatibility classification.

Scrap explosive is identifiable pieces of explosive that have been damaged or potentially altered as a result of a misfire or incomplete detonation, or that result from severe test environments.

Potentially explosive-contaminated waste involves tools, objects, and materials used directly with explosives or used in charge preparation rooms or explosives magazines, or it can be *firing-mound debris*. In some cases, this must be destroyed *in situ* because of overriding safety considerations.

Firing-mound debris is material that results from energetic materials tests done by M-8. These materials are potentially contaminated by HE. Firing-site debris can be further divided into the following types.

- Type ①: wood scraps, cardboard, burlap, and plexiglass/lexan.
- Type ②: material such as plastic, glass, styrofoams, electrical cables, and metallic foils used for pin switches
- Type ③: metals, such as steel target plates.

TA-36-8 *destruct area* is located at Minie Site. It is permitted as an open-detonation site for the disposal of explosive waste.

TA-36-12 *burn area*, located at Lower Slobbovia Firing Site, is approved and has been issued a permit by the New Mexico Environment Department (NMED), formerly known as the Environmental Improvement Division (EID), for burning potentially HE-contaminated wood scraps, cardboard, and burlap.

TA-36-12, Area II, is located at Lower Slobbovia Firing Site. Type ③ firing-site debris material will be collected and placed in this area.

TA-36-103, Area III is located outside at Dogpatch Site, which is adjacent to Potrillo Drive between the turnoff to Meenie and Minie Firing Sites and the turnoff to the main magazines (ProMoe, Moe, and DetMoe). Type ❸ firing-site debris will be collected and stored at this location awaiting final disposition.

Completed burn is when the fire has extinguished itself to the point it is no longer a fire hazard. The Group Leader or Safety Officer make this determination.

3.0 RESPONSIBILITIES

3.1 Site Supervisor

Under the direction of the technical staff member or senior technician supervisor in charge, he is responsible for ensuring that firing-mound debris generated at his particular site is sorted, collected, and placed in the proper area or areas.

3.2 Group Waste Management Coordinator

This individual is available to assist M-8 personnel in determining how the material should be sorted, what area it should be placed in, and what the particular packaging and transportation requirements are to be used.

3.3 Group Leader or Safety Officer

These individuals will determine whether the explosive scrap presents a hazard and what the method of disposal should be, if any questions arise. They will also determine when a burn is completed.

3.4 Qualified Personnel

All M-8 operators (as defined in the M-8 Safety Charter) are qualified. A JCI employee routinely supplied to M-8 as a firing-site mound cleanup person is part of the normal operations and he is in the category of "knowledgeable visitor," which is also defined in the Safety Charter. The JCI employee is allowed to clean up the firing mound and transport debris from the firing mound to the appropriate collection area.

3.5 HE Inventory Coordinator

This individual is responsible for ensuring that HE and HE-contaminated materials sent to WX-3 for incineration are labeled and packaged properly, and that the appropriate documentation has been completed and sent with the materials.

4.0 HAZARDS

Identifiable hazards include the following: Handling and transport of HE and of other materials inseparable from or partially covered with high explosives.

Some explosive tests contain DU material and thus are potentially tainted with HE and/or DU contamination.

Heavy materials include steel plates ≥ 50 lbs.

5.0 PROCEDURES

5.1 Make-Up Room Wastes

Each make-up room has a satellite storage area. Explosive-contaminated waste, such as paper towels, swabs, and similar materials that contain no tangible pieces of explosive but are used in the preparation of shot in the make-up building, should be placed in a paper-lined cardboard box with a lid. A separate box for bits, pieces, and small chunks of excess explosive may also be stored at the satellite storage area for disposal at WX-3 by incineration or for detonation at TA-36-8 Mine Site destruct firing area. The paper liner in the boxes shall be closed and sealed with tape and transferred to a box sealed and labeled with the words "Explosive Hazardous Waste." If the boxes are to be transported to WX-3 for incineration, contact the M-8 HE Inventory Coordinator to ensure that the material is properly packaged and the Hazardous Material Transfer form has been properly completed. This material shall not be allowed to accumulate beyond a collective volume of the equivalent of a 55-gal drum. Refer any question to the M-8 Waste Coordinator.

5.2 Scrap Explosive Assemblies and Explosive to be Delivered to Other Groups Only if Authorized

If a group requests that their assembly be returned for their own examination, they must first receive proper authorization. After the authorization has been given, the responsible M-8 individual shall present the problem to the M-8 Safety Officer, who will work through the HE Inventory Coordinator. The HE Inventory Coordinator will arrange with the appropriate person in WX-3 for specific instructions on marking, packaging, and transportation to the receiving group. WX-3 is responsible for transporting explosive off-site onto public roads. If the material is sent to WX-3, it will be packaged and labeled according to hazardous materials packaging and transportation requirements. A Hazardous Material Transfer form shall be filled out by M-8 personnel to accompany the materials when they are transported on public roads to WX-3. The Group Leader or Safety Officer is responsible for determining that the explosive or explosive assembly presents no unusual hazard.

5.3 Scrap Explosive Assemblies and Explosives Unsafe to Handle

When a damaged explosive assembly or explosive on the firing mound is believed to be unsafe to transport or handle, it will be disposed of by detonation on the firing mound or by flash burning the assembly. The disposal method shall be approved by the Group Leader or the Safety Officer. Any heavy metals or foams containing toxic materials that become airborne during burning or detonation are quantified and reported in the monthly materials expended summaries to M-DO and EM-8.

5.4 Identifiable Scrap Explosive that is Safe to Handle

Scrap explosive is essentially damaged explosive and is defined as identifiable explosive pieces resulting from a misfire, an incomplete detonation, or an exposure to severe testing.

Pieces of explosive sufficiently large to be identified, whether resulting from a misfire, sensitivity experiment, incomplete detonation, or severe testing shall be collected in paper bags. Damaged explosive shall be collected separately from excess explosive. The maximum weight of material in one bag will be 110 g (=$^1/_4$ lb), subject to the hazard level of the material. Paper bags containing the explosive will be placed in cardboard boxes. Individual pieces larger than 2.5 by 2.5 by 2.5 cm (=1 cu. in.) shall be wrapped before being placed in the box to prevent rubbing during handling and transportation. Except when an individual piece is too large, the maximum weight of material in one box shall be limited to 12 kg. The box shall be sealed with tape to prevent escape of small fragments and shall be labeled with the words "Hazardous Waste." Pieces larger than 15 kg shall be destroyed in place. This weight limit shall be reduced if, in the opinion of the Firing-Site Leader or the M-8 Safety Officer, this large a quantity would create a hazard.

Unless the explosive scrap or damaged explosive is to be delivered to another group, as covered in Sec. 5.2, and if the scrap or damaged explosive is safe to handle, the scrap or damaged explosive shall be destroyed by detonation in the destruct firing area at TA-36-8 using a sufficiently large charge to ensure complete destruction of the scrap. TA-36-8 is permitted as a waste disposal open-detonation site. (This shall be carried out as described in SOP M-8-5.) Scrap or damaged explosive shall be destroyed as soon after its creation as possible.

When scrap explosive is generated as a result of a misfire or incomplete detonation of a charge on a firing mound, the Firing-Site Leader shall thoroughly search the firing mound and collect all identifiable pieces of explosive. The damaged explosive shall be weighed and an estimate of the amount of material remaining on the mound recorded in the Site Record Log Book. Every effort shall be made to minimize the quantity remaining on the mound.

Also, when damaged explosive is generated, tangible quantities of very small particulate explosives may remain in the firing area after the cleanup. At the discretion of the Site Leader and with the concurrence of the Group Leader, the firing area may be burned with a propane weed burner to complete the cleanup process. A burn permit is required for this operation.

5.5 Identifiable Booster Charge Scrap

When possible, booster explosive like PETN and XTX shall be packaged in separate containers from materials listed in Sec. 5.4 and labeled as "Hazardous Waste." The contents of a box shall be clearly identified. Boxes shall be disposed of as described in Sec. 5.3, if it is unsafe to handle, or in Sec. 5.4, if it is safe to handle.

5.6 Firing-Mound Debris

Before any firing-mound debris is collected for disposal, the Firing-Site Supervisor will ensure that the firing mound is examined for explosive scrap. Scrap explosive shall be handled appropriately (see

Secs. 5.2–5.4). This operation shall be carried out before JCI personnel are allowed on the mound, as covered in the following section.

Firing-site debris from firing operations shall be cleaned up either by M-8 personnel or by a JCI cleanup person (or both). This debris shall be transported and placed in the appropriate areas, depending on the type of material (see Sec. 2.0).

Heavy materials such as steel plates ≥ 50 lbs should not be lifted manually by individual M-8 operators and employees. Personnel should utilize the proper lifting equipment or seek assistance, if materials are too bulky or cannot be reasonably handled by one person.

5.6.1 Burning Operation at Burn Area (Type ① Material)

The burn area, which is located near TA-36-12 at Lower Slobbovia, is permitted only for wood, cardboard, burlap sandbags, and small amounts of plexiglass/lexan (an acrylic material).

M-8 is permitted to burn identifiable wood scraps, cardboard, burlap from the sandbags, and plexiglass or lexan used in shots because they can be contaminated with HE. We are not permitted to burn plastic and metal, even though they may be contaminated by HE.

The burn area shall be marked with a sign. Access shall be controlled by the Firing-Site Supervisor at TA-36-12 (Lower Slobbovia).

5.6.1.1 Burn Permits. An open burn permit will be obtained annually through EM-8 from the NMED. The Group Leader or his designee shall contact EM-8 to request permission to burn five or more days in advance of the expected burn date.

5.6.1.2 Notification Memo. In advance, the M-8 Safety Officer will send a memo of notification indicating the date, time, and place of the controlled burn to the following personnel:

1. HS-5 safety engineer assigned to TA-36
2. EM-8 Air-Meteorology section leader and coordinator
3. EMO (Emergency Management Office)
4. PA-1 (Public Information Group Leader)
5. Fire Department

5.6.1.3 Fire Department Notification. The Fire Department will be notified again, by telephone, one or more working days in advance of the burn date (date, approximate time of ignition, approximate length of time of burn, and location).

5.6.1.4 Area Control. The safety gate at the entrance to TA-36-12 will be closed and the area will be controlled by the Lower Slobbovia Firing-Site Supervisor. In addition, the safety chain at the entrance to the road that services the burn area and the sled track will be closed. The entire procedure for burning will be continually monitored by M-8 personnel.

5.6.1.5 Debris Ignition. The firing-site debris will be ignited 3 hours after sunrise, in accordance with NMED requirements.

The Group Leader will determine what ignition fuel or combination of ignition fuel will be used. Paper and/or Kimwipes® with diesel fuel or kerosene will be used to aid in the ignition of the wood. No more than 10 gal of diesel or kerosene will be used. A weed burner or matches will be used to ignite the paper and wood. Only M-8 personnel knowledgeable in explosives operations will be allowed to ignite the pile. Fire Department personnel will be present while the debris is being ignited but they will be located at a safe distance specified by the site supervisor. Firefighters will remain on site until the Fire Department supervisor at the scene determines that they may safely leave the burning material to be watched by our personnel. The Firing-Site Supervisor will determine the location where the Fire Department truck will park. This is usually near the TA-36-12 firing chamber at Lower Slobbovia, which is a safe distance from the burn area. Fire Department personnel will remain on site until the Fire Department supervisor on site determines that their service is no longer required. He will notify the firing-site supervisor before leaving the area.

5.6.1.6 Burn Completion. The Group Leader or Safety Officer will make the determination when the burn is completed.

5.6.1.7 After-Hours Control. If the burn has not been completed at the end of the workday, a minimum of two M-8 employees (knowledgeable in explosive operations) will remain on site until the burn has been completed.

If the burn is not complete, the Fire Department (7-4055), Station 100 (LANL Security Force Communications Center) (7-4673), and the M-Division Office (7-5653) must be notified before the end of the workday, that M-8 personnel will be present through the night to monitor burning debris.

When the burn is complete, the M-Division Office will be notified during normal working hours.

5.6.1.8 Ash and Residue Disposal. The Group Leader will determine when the remaining ash and residue will be collected and sent to the proper waste disposal site at TA-54 with the proper documentation, after the residue is monitored by HS-1 personnel for radioactivity.

5.6.2 Area II (Type ⊕ Materials)

All firing-site debris Type ⊕ material will be collected and placed in Area II. Type ⊕ materials that are not DU contaminated may be sent to WX-3 for incineration or flash burning. The Waste Management Coordinator will be responsible for coordinating the activities between M-8 and WX-3. Type ⊕ materials that have no explosive contamination may be sent to an EM-7 waste disposal site after HS-1 has monitored the material and the proper forms and documentation have been generated for transportation and disposal. There is a dumpster labeled for radioactive materials located at Area II, and Type ⊕ materials that are suspected to be DU contaminated are placed in the dumpster. The dumpster must be lined with plastic before any cables or materials

are placed inside. A copy of a Waste Profile Request form must be on file for Type ③ materials before they can be transported for disposal. See Attachment 1 for Disposal Checklist requirements.

5.6.3 Area III (Type ③ Material)

All firing-site debris Type ③ material will be collected and placed in Area III.

To dispose of Type ③ material, the following must be complete.

1. A Waste Profile Request form must be on file for the Type ③ material.
2. A Radioactive Solid Waste Disposal Request must be completed.
3. A Hazardous Material Transfer form must also be completed.

See Attachment 1 for low-level waste disposal requirements.

5.7 Transportation

5.7.1 Vehicle

The bed of the pickup truck used for transporting material to the burn area shall have no joints or cracks but must be of single-piece construction.

5.7.2 Documentation

WX-3 is responsible for transporting explosives off-site onto public roads. A Hazardous Material Transfer form shall be filled out by M-8 to accompany the transported materials on the public road to WX-3.

5.7.3 Transfer and/or Disposal of Contaminated Equipment from TA-36 Explosives Areas

Tools or objects used directly with explosives or used in charge preparation rooms or explosives magazines shall be decontaminated before they are taken into nonexplosives areas or before any repairs are made to them in an explosives-handling area. Any hazardous waste generated during the decontamination process will be packaged, labeled, and transported as "Hazardous Waste," as directed by AR 10-2.

Some tools and other objects are used in the explosives-handling areas of TA-36 but are not used in explosives magazines or charge preparation rooms; some tools and objects are used on the firing mounds but are not used directly on explosives, nor do they contain residue from explosives. These tools may be taken, at the discretion of the group personnel, into any building or room of TA-36 that is not used for the handling or storage of explosives. Items that can be certified as uncontaminated may be sent to Johnson Control salvage or may be buried in the county landfill after being monitored by HS-1 personnel to confirm the lack of radioactive contamination. Radioactive materials shall be packaged and transported to the TA-54 low-level waste landfill for burial after HS-1 personnel monitor them, as directed by AR 10-2 in the LANL *Environment, Safety and Health* manual. Ambiguities in the classification of items shall be resolved, if possible, by the Safety Officer, along with the site personnel and the staff member in charge of the shot. If doubts remain about the suitability of sending something off-site to be buried, it shall remain at TA-36.

State of New Mexico
ENVIRONMENT DEPARTMENT
AIR QUALITY BUREAU
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-0070

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

27 May, 1993

Steve Fong
Environment, Safety and Health
DOE, LAAO
Los Alamos, NM 87544

Dear Steve,

Thank you very much for sending me the results of your dose calculation for White Rock using uranium from wood burning at TA-36 as the source. The results give reasonable assurance that there are no health effects in White Rock from this source.

I noted a typo in Table 1 that might cause confusion to anyone reading the record, namely 2.8 kg of U^{238} in the wood burned, rather than 28kg.

I understand from Debbie Brinkerhoff that your application for an open burning permit for TA-36 is under review. Any questions on it should be addressed to her at 827-0062.

Thank you again for your cooperation.

Sincerely,

Larry Gay

Larry Gay
Program Manager

copy: Debbie Brinkerhoff, Enforcement

New Mexico DRUG FREE
It's a State of Mind!

Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

MAY 21 1993
MAY 1993

Mr. Larry Gay
Air Quality Bureau
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, NM 87502

Dear Mr. Gay:

I have requested that the University of California (UC), as co-operator of the Los Alamos National Laboratory (LANL), develop a response to your verbal request for additional information regarding a planned open burn operation. You indicated an interest in the potential calculated effective dose equivalent to the public from the aerosolization of depleted uranium (DU) from open burning of wood fuel at Technical Area (TA) 36 as described in our pending permit application. This information is currently regulated by the U. S. Environmental Protection Agency under the National Emissions Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities, 40 CFR Part 61, Subpart H, and not required under New Mexico Air Quality Control Regulation 301. I am now submitting the following UC-developed information as a courtesy to you.

Open Detonation Data

A total of 400 assemblies were detonated at TA-36 in 1992. Twelve of these assemblies contained 32.11 kilograms (kg) of DU. DU becomes airborne in the form of exploded particles and shrapnel released during the detonation of projectiles and explosive assemblies. The 12 assemblies containing DU roughly account for 3 percent of the shots. These DU shots are the main contributors to potential DU contamination of the fire site debris (wood waste). The 1989, 1990 Environmental Surveillance Reports (Enclosure A) issued by LANL indicate that 10 percent of the DU in an explosive assembly is aerosolized into particles smaller than 10 microns (um) upon detonation. Ten microns is the particle size range that is respirable and, therefore, most significant when assessing human toxicity from aerosolized DU. Airborne uranium concentrations were estimated using data from explosion cloud particle concentrations and explosion cloud volume measurements. Because ten percent of the DU is aerosolized by the detonation, it is not imbedded in the wood to be released during the burn.

The majority of explosive testing done at TA-36 involves projectile firing (90%). Projectiles containing DU are fired at metal targets for explosives research. When a projectile strikes the target, most of the contained DU mass is deposited inside the target. The M-8 group responsible for these tests estimate that approximately 99 percent of the DU mass fired at the metal targets adheres inside the target.

Wood stands and tables are used to support the explosive devices and as mounts for the metal targets during projectile firing. In a few cases these wood stands and tables may be used for several shots before they become non-functional and are burned. M-8 conducted three burns using wood waste from the 400 shots in 1992.

Air Modeling and Calculation Assumptions

- 32.11 kg of DU was expended in 1992.
- Only respirable particles less than or equal to (≤) 10 um in diameter will be evaluated.
- Ten percent of the DU mass is aerosolized upon high explosives (HE) detonation and not deposited in the wood and, therefore, not present during open burning.
- Since the DU deposition estimate of 99 percent on the metal targets surface has never been quantified, it will not appear in the calculations.

Open Burning

A study conducted by Pacific Northwest Laboratory found the fractional airborne release of uranium during controlled burning to be 0.05 to 0.003 percent of the uranium mass burned. A study using open burning was conducted at LANL in 1980 titled, "Oxidation of Depleted Uranium Penetrates and Aerosol Dispersal at High Temperatures," which measured the amount of aerosolized DU during open burning using wood and paper as fuel. This study indicated that at temperatures ranging from 500 to 1000 degrees centigrade (°C), aerosol concentrations of DU in the respirable size range is typically less than 10^{-1} percent of the DU mass burned during a 223 centimeters per second (cm/s) or 5 miles per hour (mph) wind.

Air Modeling and Calculation Assumptions

- For the most conservative estimate possible, we will assume the wind blew in the same direction (toward White Rock, the nearest resident) during the three burns.

- The wood contained all of the DU expended from the 12 shots less the ten percent found to aerosolize upon detonation.

  32.11 kg DU x 90% = 28.899 kg DU in wood

  This assumption leads to dose calculation values that are a factor of 100 higher than expected.

- An emission factor of 10^{-1} percent is used to determine the amount of aerosolization of DU particles ≤10 um in diameter.

  Note: The emission factor reported from the LANL study is used because the experimental conditions most closely represent the conditions associated with the TA-36 burns.

Depleted Uranium Deposition In Wood Waste

Information regarding the amount of DU which penetrates the wood during a HE detonation is not available.

Monitoring Data

Recent monitoring tests on a typical wood pile found only one plank of wood contaminated with DU when tested with a Geiger counter. The remaining wood in the pile showed only natural background DU levels. The DU detected during this test was not quantified.

Ash Sampling Data

A gamma liquid analysis ash test was also performed on the ash after a typical burn (Enclosure B). The results of this test indicated that no DU was present in the ash above background levels.

Plume Modeling

We used two dispersion modeling programs, *HOTSPOT 6.5* and *DISPERSION*, both of which use a gaussian plume dispersion equation. The *HOTSPOT 6.5* program included particle deposition while the *DISPERSION* program did not. Since DU is made up of 99.7 percent Uranium 238 (U^{238}), 0.3 percent U^{235}, and 0.002 percent U^{234} dose factors for each constituent were used to obtain the potential amount of radioactivity present in the wood waste (Table 1).

Table 1

Isotope Percentage	Weight (grams [g])	Amount of DU in Wood	Ci/g	Ci
U^{238} - 99.7	32013.67	2882.3	3.33E-7	9.96E-3
U^{235} - 0.3	96.33	86.7	2.10E-6	1.82E-4
U^{234} - 0.002	0.642	0.58	6.19E-3	3.58E-3

The nearest off-site receptors to the burn site are shown in table 2 along with their distances.

Table 2

Receptor	Distance (meters)
White Rock	2977
Bandelier	4109

Modeling was performed for the White Rock receptor situation because of its proximity. We estimated the wind speed to be 2 meters per second in the direction of White Rock with a smoke plume rise of 20 meters.

Air Modeling Plume Results

Data from the *HOTSHOT 6.5* modeling program which takes into account deposition is shown in table 3. Deposition of the particles are assumed to have a velocity or fall rate of 1 centimeter per second.

Table 3

Isotope	Effective Dose Equivalent at White Rock (rem)
U^{238}	7.7E-09
U^{235}	1.4E-10
U^{234}	3.0E-09
TOTAL	1.1E-08

Data from the *DISPERSION* modeling program which does not account for deposition is shown below in table 4.

Table 4

Isotope	Effective Dose Equivalent at White Rock (rem)
U^{238}	1.2E-08
U^{235}	2.2E-10
U^{234}	1.7E-08
TOTAL	2.9E-08

Conclusions

Air modeling data indicate a very low effective dose equivalent (1.1E-08 to 2.9E-08 rem) would result from the DU released during open burning of wood waste at TA-36. Data from LANL's air monitoring network, as reported in past Environmental Surveillance Reports (Enclosure C), confirms the calculated dose value which indicates no high level of airborne uranium exists at any receptor in or around the facility. By knowledge of process the operators estimate that approximately 99 percent of the DU adheres to the target materials and does not aerosolize. Furthermore, a very conservative approach was used to calculate the expected dose by assuming all of the expended wood waste DU aerosolizes, and all of the aerosolized DU is blown in one direction to a single off-site location. We estimate this conservative approach in calculating the effective dose equivalent results in DU levels that are a factor of 100 greater then expected.

If you have any questions, please call me at 665-5534.

Sincerely,

Steve Fong
Environment, Safety, and Health
Branch

LESH:7SF-029

Enclosures

cc w/enclosures:
C. Williams
Air Quality Bureau
New Mexico Environment
Department
1190 St. Francis Drive
Santa Fe, NM 87502
J. [redacted]EM-8, LANL,
MS-K490
S. Goel, EPD, AL

K490

ENCLOSURE A

Table G-6. Estimated Concentrations of Toxic Elements Aerosolized by Dynamic Experiments

Element	1989 Total Usage (kg)	Fraction Aerosolized (%)	Annual Average Concentration ($\mu g/m^3$) (4 km)[a]	Annual Average Concentration ($\mu g/m^3$) (8 km)[a]	Applicable Standard ($\mu g/m^3$)
Uranium	237	10	2.3×10^{-6}	9.3×10^{-6}	9[b]
Beryllium	0	2	0	0	0.01[c]
Lead	22	100[d]	2.3×10^{-5}	9.3×10^{-9}	1.5[e]
Heavy metals	309	100[d]	3.3×10^{-4}	1.3×10^{-4}	10[e]

[a]Distance downwind.

[b]DOE (1981).

[c]Standard for 30-day average, New Mexico Air Quality Control Regulation 201.

[d]No data are available; estimate was done assuming worst-case percentage was aerosolized.

[e]Standard for 3-month average (40 CFR 50.12).

Table G-7. Estimated Concentrations of Toxic Elements Aerosolized by Dynamic Experiments

Element	1990 Total Usage (kg)	Fraction Aerosolized (%)	Annual Average Concentration ($\mu g/m^3$) (4 km)[a]	Annual Average Concentration ($\mu g/m^3$) (8 km)[a]	Applicable Standard ($\mu g/m^3$)
Uranium	87	10	8.4×10^{-4}	3.4×10^{-4}	9[b]
Beryllium	0	2	0	0	0.01[c]
Lead	2	100[d]	2.1×10^{-4}	8.5×10^{-10}	1.5[e]
Heavy metals	234	100[d]	2.5×10^{-4}	9.8×10^{-5}	10[c]

[a]Distance downwind.
[b]DOE (1981).
[c]Standard for 30-day average, New Mexico Air Quality Control Regulation 201.
[d]No data are available; estimate was done assuming worst-case percentage was aerosolized.
[e]Standard for 3-month average (40 CFR 50.12).

ENCLOSURE B

. . . ALTICS
. Alamos National Laboratory
. s Alamos, New Mexico 87545

LIQUID ANALYSIS

Technical Area: 1-36 Building: 3-EN Room: 01-E

ANALYSIS REQUESTED FOR	TYPE OF ANALYSIS REQUESTED
☐ H2O ☐ Oil ☒ Other Ashes SOIL	☐ Tritium ☒ Alpha (U/Pu) 238 U ☐ Other

Sample Date: 2-11-91 HPS: GILBERT GARCIA
Analysis Date: 3/8/91 Analyzed By: (X) Maggie Vigil
CC TRS

SAMPLE IDENTIFICATION	LOCATION TAKEN	ALPHA COUNT (uCi/1)	BETA COUNT (uCi/1)
#1	Base WEST		
#2	Base EAST		
#3	TOP OF HEAP		
A gamma analyses was done on these samples			
utilizing a Ge(Li) detector and a ORCAM			
Multi-channel buffer.			
The analyses results showed No Detectable			
Activity on the samples.			
	MV		

Form Number HSE-1-OHP-OR-14 (1/91)

DISTRIBUTION 1 GILBERT GARCIA ECHO 1 BETEN NETIHANIC

ENCLOSURE C

Table G-10. Airborne Uranium Concentrations for 1989

Station Location[a]	Total Air Volume (m^3)	No. of Quarterly Samples	No. of Samples <MDL[b]	Concentrations (pg/m^3) Maximum[c]	Minimum[c]	Mean[c]	Mean as a Percentage of Guide[d]
Regional Stations (28–44 km), Uncontrolled Areas							
1. Española	44 759	3	0	244.2 (24.4)	82.9 (8.3)	178.5 (84.7)	<0.1
2. Pojoaque	65 098	4	0	476.1 (19.2)	219.9 (10.2)	319.7 (122.8)	<0.1
3. Santa Fe	61 514	4	0	362.1 (36.2)	124.4 (6.5)	209.3 (106.4)	<0.1
Group Summary		11	0	476.1 (19.2)	82.9 (8.3)	241.1 (115.8)	<0.1
Perimeter Stations (0–4 km), Uncontrolled Areas							
4. Barranca School	71 141	4	0	114.4 (5.0)	43.8 (4.4)	90.7 (33.0)	<0.1
5. Arkansas Avenue	73 771	4	0	63.0 (6.3)	30.7 (3.1)	41.5 (14.9)	<0.1
6. Philomena's	70 151	4	0	72.4 (7.2)	50.7 (2.3)	62.5 (8.9)	<0.1
7. 48th Street	68 559	4	0	67.3 (6.7)	34.9 (3.5)	48.4 (15.7)	<0.1
8. Los Alamos Airport	74 148	4	0	92.9 (9.3)	59.0 (5.9)	75.6 (18.5)	<0.1
10. Exxon Station	67 227	4	0	281.7 (12.2)	44.9 (4.5)	160.6 (117.0)	<0.1
11. Royal Crest Trailer Park	58 453	4	0	99.9 (10.0)	63.5 (3.1)	78.9 (15.2)	<0.1
12. White Rock	73 687	4	0	106.6 (10.7)	45.6 (4.6)	71.2 (28.3)	<0.1
13. Pajarito Acres	69 362	4	0	98.6 (4.4)	35.4 (3.6)	68.0 (34.8)	<0.1
14. Bandelier	65 079	4	0	80.0 (8.0)	28.1 (1.5)	44.5 (24.2)	<0.1
Group Summary		40	0	281.7 (12.2)	28.1 (1.5)	74.2 (50.1)	<0.1
On-Site Stations, Controlled Areas							
15. TA-21	72 098	4	0	100.0 (10.0)	71.5 (3.2)	82.0 (12.9)	<0.1
16. TA-6	67 252	4	0	87.4 (4.0)	39.0 (3.9)	65.7 (20.0)	<0.1
17. TA-53 (LAMPF)	80 440	4	0	92.4 (9.2)	49.9 (5.0)	71.8 (18.1)	<0.1
18. Well PM-1	65 787	4	0	80.3 (8.0)	43.9 (2.3)	59.2 (15.7)	<0.1
19. TA-52	80 783	4	0	131.6 (5.8)	42.0 (4.2)	77.6 (38.6)	<0.1
20. TA-16	63 901	4	0	117.1 (3.6)	32.6 (3.3)	75.4 (35.0)	<0.1
21. Booster P-2	72 472	4	0	153.2 (15.3)	36.5 (3.7)	86.9 (49.3)	<0.1
22. TA-54	75 845	4	0	186.5 (18.7)	48.9 (4.9)	93.3 (62.8)	<0.1
23. TA-49	76 839	4	0	66.0 (6.6)	27.7 (2.9)	44.6 (16.3)	<0.1
24. TA-33	75 894	4	0	76.6 (7.7)	42.4 (2.3)	52.8 (16.2)	<0.1
25. TA-2 (Omega)	60 178	4	0	108.5 (4.5)	29.4 (1.6)	64.4 (39.2)	<0.1
26. TA-16-450	77 757	4	0	66.4 (6.6)	25.2 (2.5)	42.4 (18.2)	<0.1
Group Summary		48	0	186.5 (18.7)	25.2 (2.5)	68.0 (32.4)	<0.1

[a]See Fig. 8 for map of local stations.

[b]Minimum detectable limit = 1 pg/m^3.

[c]Uncertainties are in parentheses (see Appendix B).

[d]Controlled area DOE Derived Air Concentration = 2×10^8 pg/m^3; uncontrolled area Derived Concentration Guide = 1×10^5 pg/m^3.

Note: One curie of natural uranium is equivalent to 3000 kg of natural uranium. Hence, uranium masses can be converted to the DOE "uranium special curie" by using the factor 3.3×10^{-13} µCi/pg.

Table G-12. Airborne Uranium Concentrations for 1990

Station Location[a]	Total Air Volume (m^3)	No. of Quarterly Samples	No. of Samples <MDL[b]	Concentrations (pg/m^3) Maximum[c]	Minimum[c]	Mean[c]	Mean as a Percentage of Guide[d]
Regional Stations (28—44 km), Uncontrolled Areas							
1. Española	71 260.70	4	1	102.9 (10.3)	0.0 (0.0)	50.9 (42.0)	<0.1
2. Pojoaque	75 979.10	4	1	270.7 (27.1)	0.0 (0.0)	138.1 (120.1)	<0.1
3. Santa Fe	70 463.30	4	0	392.6 (39.3)	42.9 (4.3)	153.1 (162.1)	<0.1
Group Summary		12	2	392.6 (39.3)	0.0 (0.0)	114.0 (117.4)	<0.1
Perimeter Stations (0—4 km), Uncontrolled Areas							
4. Barranca School	74 180.50	4	0	90.4 (9.0)	31.4 (3.1)	54.6 (25.2)	<0.1
5. Arkansas Avenue	79 898.00	4	0	45.1 (4.5)	14.1 (1.4)	26.4 (13.4)	<0.1
6. East Gate	84 848.40	4	0	40.5 (4.1)	29.1 (1.4)	35.6 (5.6)	<0.1
7. 48th Street	83 186.70	4	0	50.0 (5.0)	16.2 (1.6)	30.3 (15.2)	<0.1
8. Los Alamos Airport	84 295.10	4	0	63.2 (6.3)	32.7 (1.6)	43.6 (13.5)	<0.1
*10. Shell Station	76 526.70	4	0	86.6 (8.7)	50.7 (5.1)	70.8 (15.0)	<0.1
11. Royal Crest Trailer Park	73 869.41	4	0	48.0 (4.8)	23.0 (1.3)	39.7 (11.5)	<0.1
12. White Rock	75 533.90	4	0	94.4 (9.4)	30.1 (3.0)	49.3 (30.2)	<0.1
13. Pajarito Acres	77 823.70	4	0	52.0 (5.2)	20.7 (2.1)	30.8 (14.7)	<0.1
14. Bandelier	80 737.80	4	0	40.1 (4.0)	14.9 (1.5)	22.9 (11.6)	<0.1
33. McDonald's	44 054.00	2[e]	0	37.3 (3.7)	24.1 (2.4)	30.7 (3.0)	<0.1
34. White Rock Fire Station	19 852.40	1[f]	0	36.7 (3.7)	36.7 (3.7)	36.7 (3.7)	<0.1
35. White Rock Nazarene	23 012.20	1[f]	0	19.9 (2.0)	19.9 (2.0)	19.9 (2.0)	<0.1
Group Summary		44	0	94.4 (9.4)	14.1 (1.4)	37.8 (16.4)	<0.1

Table G-12 (Cont)

Station Location[a]	Total Air Volume (m^3)	No. of Quarterly Samples	No. of Samples <MDL[b]	Concentrations (pg/m^3) Maximum[c]	Minimum[c]	Mean[c]	Mean as a Percentage of Guide[d]
On-Site Stations, Controlled Areas							
15. TA-21	83 256.10	4	0	70.9 (7.1)	31.2 (1.6)	48.9 (17.4)	<0.1
16. TA-6	64 966.30	4	0	66.0 (3.0)	25.4 (2.5)	46.4 (18.0)	<0.1
17. TA-53 (LAMPF)	73 440.51	4	0	160.1 (16.0)	33.7 (3.4)	70.8 (59.8)	<0.1
18. Well PM-1	73 788.80	4	0	56.4 (5.6)	24.8 (2.5)	38.5 (14.3)	<0.1
19. TA-52	67 662.40	4	0	49.5 (4.9)	20.4 (1.3)	32.3 (12.4)	<0.1
20. TA-16	76 535.41	4	0	56.9 (5.7)	23.0 (2.3)	44.9 (15.2)	<0.1
21. Booster P-2	78 324.10	4	0	62.3 (6.2)	23.7 (2.4)	44.8 (17.7)	<0.1
22. TA-54	78 297.61	4	0	75.6 (7.6)	39.9 (4.0)	52.0 (16.5)	<0.1
23. TA-49	86 823.30	4	0	44.5 (4.5)	14.3 (1.4)	27.2 (12.6)	<0.1
24. TA-33	82 833.51	4	0	79.2 (3.4)	35.2 (3.5)	56.0 (21.1)	<0.1
25. TA-2 (Omega)	83 708.51	4	0	40.2 (4.0)	15.6 (1.6)	23.6 (11.4)	<0.1
26. TA-16-450	80 862.60	4	0	35.8 (3.6)	15.3 (1.5)	21.9 (9.4)	<0.1
Group Summary		48	0	160.1 (16.0)	14.3 (1.4)	42.3 (24.3)	<0.1

[a]See Fig. 8 for map of local stations.

[b]Minimum detectable limit = 1 pg/m^3.

[c]Uncertainties are in parentheses (see Appendix B).

[d]Controlled area DOE Derived Air Concentration = 2×10^8 pg/m^3; uncontrolled area Derived Concentration Guide = 1×10^5 pg/m^3.

[e]New station ran only 2 quarters in 1990.

[f]New stations ran only 1 quarter in 1990.

[g]Station 9 is no longer in operation.

Note: One curie of natural uranium is equivalent to 3000 kg of natural uranium. Hence, uranium masses can be converted to the DOE "uranium special curie" by using the factor 3.3×10^{-13} μCi/pg.

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Table IV-10. Airborne Uranium Concentrations for 1991

Station Location[a]	Total Air Volume (m^3)	No. of Quarterly Samples	No. of Samples <MDL[b]	Concentrations (aCi/m^3 [10^{-18} µCi/mL]) Maximum[c]	Minimum[c]	Mean[c]	Mean as a Percentage of Guide[d]
Regional Stations (28—44 km), Uncontrolled Areas							
1. Española	68,005	3	0	98.7 (9.8)	35.5(3.5)	60.8(6.1)	<0.1
2. Pojoaque	16,685	1	0	157.4 (15.7)	157.4(15.7)	157.4(15.7)	<0.1
3. Santa Fe	80,627	4	0	116.3 (11.6)	103.7(10.4)	108.3(10.8)	<0.1
Group Summary		8	0	157.4 (15.7)	35.5(3.5)	96.6(9.6)	<0.1
Perimeter Stations (0—4 km), Uncontrolled Areas							
4. Barranca School	74,783	3	0	92.1 (9.2)	32.5(3.2)	58.9(5.9)	<0.1
5. Arkansas Avenue	29,241	1	0	39.5 (3.9)	39.5(3.9)	39.5(3.9)	<0.1
6. 48th Street	96,046	4	0	66.2 (6.6)	22.4(2.2)	36.6(3.7)	<0.1
7. Shell Station	93,948	4	0	86.6 (8.6)	24.9(2.5)	51.9(5.2)	<0.1
8. McDonald's	92,392	4	0	109.2 (11.0)	18.3(1.8)	53.5(5.3)	<0.1
9. Los Alamos Airport	43,065	2	0	89.5 (8.9)	81.1(8.1)	85.3(8.5)	<0.1
10. East Gate	100,833	4	0	61.5 (6.2)	26.7(2.7)	42.9(4.3)	<0.1
11. Well PM-1	101,572	4	0	58.2 (5.8)	13.3(1.3)	30.4(3.0)	<0.1
12. Royal Crest Trailer Park	69,245	3	0	38.5 (3.8)	19.9(1.9)	28.6(2.8)	<0.1
13. White Rock Piñon School	43,721	2	0	17.4 (1.8)	13.2(1.3)	15.3(1.6)	<0.1
14. Pajarito Acres	52,932	2	0	37.0 (3.7)	14.5(1.5)	25.8(2.6)	<0.1
15. White Rock Fire Station	71,810	3	0	45.7 (4.6)	17.6(1.7)	34.7(3.5)	<0.1
16. White Rock Nazarene	101,544	4	0	51.4 (5.1)	11.4(1.2)	25.3(2.5)	<0.1
17. Bandelier	63,776	3	0	25.3 (2.5)	14.1(1.4)	20.5(2.0)	<0.1
Group Summary		43	0	109.2 (11.0)	11.4(1.2)	39.1(3.9)	<0.1

ROUGH DRAFT

Table IV-10 (Cont)

Station Location[a]	Total Air Volume (m^3)	No. of Quarterly Samples	No. of Samples <MDL[b]	Concentrations (aCi/m^3 [10^{-18} µCi/mL]) Maximum[c]	Minimum[c]	Percentage of Mean[c]	Mean as a Guide[d]
On-Site Stations, Controlled Areas							
19. TA-21, DP Site	99,917	4	0	98.2 (9.9)	23.5(2.3)	64.5(6.5)	<0.1
20. TA-21, Area B	9,602	1	0	44.4 (4.4)	44.4(4.4)	44.4(4.4)	
21. TA-6	77,254	4	0	83.3 (8.4)	32.0(3.2)	53.5(5.4)	<0.1
22. TA-53 (LAMPF)	69,279	3	0	62.3 (6.3)	22.5(2.2)	39.1(3.9)	<0.1
23. TA-52, Beta Site	98,083	4	0	128.5 (12.8)	20.0(2.0)	55.5(5.5)	<0.1
24. TA-16, S Site	101,140	4	0	62.2 (6.3)	24.7(2.5)	44.0(4.4)	<0.1
25. TA-16-450	28,566	1	0	35.1 (3.5)	35.1(3.5)	35.1(3.5)	<0.1
26. TA-49	101,596	4	0	39.7 (4.0)	11.4(1.2)	23.3(2.3)	<0.1
27. TA-54	74,297	3	0	100.4 (10.0)	34.7(3.4)	61.2(6.1)	<0.1
28. TA-33	46,522	2	0	18.6 (1.8)	6.2(0.6)	12.4(1.2)	<0.1
29. TA-2 (Omega)	71,968	4	0	67.8 (6.8)	25.5(2.5)	48.1(4.8)	<0.1
30. Booster P-2	65,812	3	0	66.5 (6.7)	35.0(3.5)	51.8(5.2)	<0.1
31. TA-3	39,568	2	0	79.3 (7.9)	40.6(4.0)	59.9(6.0)	
32. TA-48, County Dump	16,175	1	0	113.9 (11.4)	113.9(11.4)	113.9(11.4)	
Group Summary		40	0	128.5 (12.8)	6.2 (0.6)	48.7(4.9)	<0.1
Waste Site Stations, Controlled Areas							
33. Area AB	103,066	4	0	82.2 (8.2)	20.9(2.0)	50.7(5.1)	<0.0
34. Area G-1 Trailer	100,459	4	0	83.8 (8.4)	27.8(2.8)	48.7(4.9)	<0.1
35. Area G-2 Back Fence	97,618	4	0	83.2 (8.3)	30.3(3.0)	46.4(4.7)	<0.1
36. Area G-3 Main Office	24,100	1	0	34.1 (3.4)	34.1(3.4)	34.1(3.4)	<0.1
37. Area G-4 H_2O Tank	49,124	2	0	88.2 (8.8)	10.3(1.0)	49.2(4.9)	<0.1
Group Summary							

[a]See Fig. 8 for map of local stations.

[b]Minimum detectable limit = 1 pg/m^3.

[c]Uncertainties are in parentheses.

[d]Controlled area DOE Derived Air Concentration = 2×10^8 pg/m^3; uncontrolled area Derived Concentration Guide = 1×10^5 pg/m^3.

Note: One curie of natural uranium is equivalent to 3000 kg of natural uranium. Hence, uranium masses can be converted to the DOE "uranium special curie" by using the factor 3.3×10^{-13} µCi/pg.

APPENDIX H

1990 NON-RADIOACTIVE AIR EMISSION INVENTORY

Los Alamos National Laboratory

1990 Non-Radioactive Air Emission Inventory

Prepared By;

Air Quality and Meteorology Section
Environmental Protection (EM-8)
Environmental Management Division
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Overview

During 1990, the Environmental Protection Group at Los Alamos National Laboratory (LANL) initiated a program to develop a comprehensive database designed to inventory the non-radioactive air emissions at the Laboratory. The Regulated Air Pollutant Emissions Database (RAPS) is designed to track the air emissions of regulated chemicals, compounds and materials from LANL stationary sources. The Oracle based RAPS system's primary features include, 1) enhanced data storage, analysis and reporting tools, and 2) internal emission factor tools in order to automate the calculation of annual and maximum hourly air emissions. Emission factors were identified for inclusion in RAPS for 58 types of processes conducted at the Laboratory. The data was acquired from Laboratory groups and contractors through the mass mailing of standardized forms. The requested data included a description of operations, the amount and type of fuel and chemical use, type of control equipment, and other relevant data.

Methods

Data Acquisition. The 1990 emissions inventory includes information on use of more than 700 materials regulated under State of New Mexico AQCR 702, AQCR 752, or the 1990 Federal Clean Air Act Amendments as hazardous air pollutants (HAPS). No "de minimis" threshold was used in the emission inventory; if a material was regulated then it was reported no matter how minute the amount that was used. In addition, all compounds that contained regulated materials as constituents (e.g., WD-40, paints, etc.) had to be reported. Questionnaires were sent to all Laboratory Group Leaders requesting that chemical users in their groups provide information about the identification of all room/areas and the specific operations where regulated materials were used. The mailout resulted in approximately 1100 responses. Questionnaires were returned by the Group Leaders to the Air Quality and Meteorology Section of EM-8 at LANL.

Data Analysis and Management. Upon receipt of returned questionnaires initial quality assurance procedures were performed. Operating groups were contacted as necessary in order to provide additional technical information required to estimate emissions. All assumptions used in estimating emissions were documented. All activities at LANL were

categorized into 1 of 58 operations, each with a unique ID. This ID is used throughout RAPS to perform various procedures during the emission estimate process. A list of the operations identified at LANL can be seen below.

Surface Cleaning with Solvent	Storage Tank
Metal Machining with Shaping	Receiving and Inspection
Plastic Machining and Shaping	Maintenance and Repair
Wood Machining and Shaping	Graphic Arts
High Explosive Machining and Shaping	Decreasing
Ceramics Machining and Shaping	Chemical Etching
Glass Machining and Shaping	Sand or Bead Blasting
Mock HE Machining and Shaping	Pesticide Application
Lithium Hydride Machining and Shaping	Container Filling
Rock Machining and Shaping	Cooling Water Treatment(Water Drift)
Shielded Metal Arc Welding	Cooling Water Treatment(Chloroform)
GMAW-Flux Core/MIG Welding	Drinking Water Treatment
GTAW/TIG/Heliarc Welding	Wastewater Treatment
GAS Tungsten Arc	Ceramics Drying
Brazing	Ceramic Slip Casting
Oxyacetylene or Oxymethane Cutting	Biological Sample Ashing
Soldering	Asphalt Production (Batch Plant)
Metal Assembly/Production	Lead Pouring
Plastic Assembly/Production	Gasoline Burning Equipment
Wood Assembly/Production	Kerosene Burning Equipment
High Explosive Assembly/Production	Diesel Burning Equipment
Ceramics Assembly/Production	Propane Burning Equipment
Extraction Assembly/Production	Natural Gas Boilers > 100 MMBTU
Waste Neutralization	Natural Gas Boilers 10 - 100 MMBTU
Explosives Burning	Natural Gas Boilers < 10 MMBTU
Solvent Burning	HE/Mock HE Mixing
High Explosives Testing	Laboratory Operation
Ozalid Process Duplication	Photoprocessing
Electroplating	Surface Coating

For some processes, emissions are estimated using process-specific emission factors such as those found in EPA's AP-42: Compilation of Air Pollutant Emission Factors. The remainder

are activities for which no emission factors were identified, and emissions were estimated using the mass balance approach. (Amount emitted = Amount used - (Amount consumed in process + Amount disposed as waste)). Air pollution control equipment and control efficiencies were entered for applicable operations. For example, the asphalt batch plant contains water curtain particulate scrubbers and the Beryllium operations have HEPA and bag house type filters. Emissions are estimated for both uncontrolled emissions (upstream of air pollution control equipment) and controlled emissions (downstream of air pollution control equipment). The emissions reported in this report are estimates of *uncontrolled* emissions.

While not included in the RAPS data base, 1990 mobile source air emissions were estimated for this report. The mobile source emissions were calculated from total mileage figures obtained from LANL motor pool data. Mobile source emission estimates do not include regular commuter traffic by laboratory employees. Average emission factors used for high elevation summer and winter driving conditions were used (EPA Mobile Model 4.1) for the calculation of emission amounts for NO_2, CO, and hydrocarbons. The emission estimates from mobile sources are conservative because only gasoline powered vehicles were used in the estimate and the emission factors used for this estimation were relevant only for light duty cars and trucks. The emission factors were; hydrocarbons = 1.55 gram/mile, CO = 18.1 gram/mile, NO_2 = 1.2 gram/mile.

Results

Total 1990 non-radioactive air emissions from Los Alamos National Laboratory activities were calculated to be approximately 643,603 lbs. of regulated chemicals, compounds and materials. Table 1. summarizes the total air emission impact from mobile and stationary sources due to LANL activities.

TOTAL NON-RADIOACTIVE AIR EMISSIONS		
Source	**1990 Total (lbs.)**	**Percentage of Total**
Mobile	416,967	64%
Stationary	226,636	37%

Table 1. Summary of the total non-radioactive air emission sources at Los Alamos National Laboratory.

Mobile Sources: Mobile source air emissions account for approximately 64% of the total poundage of chemical air pollutants at the Laboratory. These emissions come from approximately 1400 government vehicles driven approximately 7.7 million miles in 1990. Table 2. summarizes the relative air emission of each constituent from mobile sources at the Laboratory.

AIR EMISSIONS FROM MOBILE SOURCES		
Species	**1990 Total (lbs.)**	**Percentage of Total**
Carbon Monoxide	361,972	86.8%
Hydrocarbons	30,997	7.4%
Nitrogen Dioxide	23,998	5.7%

Table 2. Summary of the mobile source air emission constituents.

Stationary Sources: Stationary source air emissions account for approximately 37% of the total air emissions at the Laboratory, Table 1. The 1990 RAPS emissions inventory of

stationary sources sorted by highest annual use in lbs of chemical species emitted can be seen in Appendix A. A summary of the major (>1000 lbs) air emission constituents can be seen in Table 3.

AIR EMISSION CONSTITUENTS FROM STATIONARY SOURCES		
Criteria Emissions	**1990 Emissions (lbs.)**	**Percentage of Total Stationary Emissions**
Nitrogen Dioxide	118,771	52.4%
Carbon Monoxide	47,581	20.9%
Nonmethane Hydrocarbons	6,377	2.8%
Particulate	5,629	2.5%
Sulfur Dioxide	1,534	0.7%
Toxic Air Emissions (AQCR Regulated)		
Toluene	5,474	2.4%
Methyl Ethyl Ketone	4,110	1.8%
Xylene (o-,m-,p-)	3,884	1.7%
Methylene Chloride	2,433	1.1%
1,1,2-Trichloroethane	2,044	0.9%
Ammonia	1,760	0.7%
Nitric Acid	1,457	0.6%
Hydrogen Chloride	1,407	0.6%
VM & P Naphtha	1,351	0.6%
Methyl Alcohol	1,298	0.6%
Isopropyl Alcohol	1,188	0.5%
Acetic Acid	1,184	0.5%
Chloroform	1,175	0.5%
Welding Fumes	1,127	0.5%
Wood Dust (Hard Woods)	1,003	0.4%

Table 3. Summary of major air emission constituents sorted as to total weight (lbs.) emitted in 1990.

The RAPS inventory, Appendix A, describes the air emissions from specific operations which are summed from many sources around the Laboratory. The criteria pollutants, NO_2, CO, Hydrocarbon, Particulate and SO_2 make up approximately 79% of the Laboratory stationary source emissions. The primary LANL operation contributing to the emission of these criteria pollutants is combustion sources, i.e. power plants, steam plants, asphalt plant and local space heating, Table 4.

CRITERIA EMISSIONS FROM STATIONARY SOURCES		
Emission Species	**Emissions lbs.**	**Percent Contributed by Combustion Sources**
Nitrogen Dioxide	118,771	97.2%
Carbon Monoxide	47,581	98.3%
Hydrocarbons	6,377	90.2%
Particulate	5,629	74.6%
Sulfur Dioxide	1,534	98.5%

Table 4. Summary of Criteria Emissions from stationary sources at LANL and the relative contribution combustion sources.

Toxic and other hazardous air pollutants regulated by NMED represent approximately 21% of emissions from stationary sources at the Laboratory. The majority of these materials are volatile organic chemicals, Table 5. The operations contributing the majority of volatile

AIR TOXICS CATEGORIES		
Pollutant	**1990 Total (lbs.)**	**Percentage of Total Stationary Emissions**
Organics	35,410	15.6%
Acid Gases	2,041	0.9%
Metals	756	0.3%

Table 5. Summary of the air toxics emission constituents.

organics include surface cleaning and coating. Acid gases and metals make up a relatively small fraction of emissions from the Laboratory. Other miscellaneous emissions such as wood dust, hazardous gases, and plastics make up the remaining emission types from LANL.

The 1990 Clean Air Act regulates 189 Hazardous Air Pollutants (HAPS). The Laboratory would be categorized as a Major Source if the emission of any one HAP ≥ 10 tons/year or if the total emissions of all HAPS ≥ 25 tons/year. The LANL 1990 emission inventory lists 70 HAPS used in Laboratory operations. Toluene is the HAP with the highest emission amount of 2.7 tons/year. Total uncontrolled emissions of all non-radioactive HAPS at the Laboratory are calculated to be approximately 11.1 tons.

Appendix A. 1990 Non-Radioactive Air Emission Inventory.

- Emissions are for stationary sources only.
- Emissions are sorted as to the compound with the highest Annual Total Poundage.
- Descriptions of operations are listed which contribute to the specific compound Annual Total Poundage. Each Operation Total (lbs) is a summation of all *uncontrolled* emissions from all sources at the Laboratory. Uncontrolled emissions are the estimated air emissions without credit given to air pollution control equipment.

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
NITROGEN DIOXIDE	118,771.991	NATURAL GAS BOILERS 10 - 100 MMBTU	51,080.400
		NATURAL GAS BOILERS < 10 MMBTU	49,645.900
		NATURAL GAS BOILERS > 100 MMBTU	14,475.213
		LABORATORY OPERATION	2,722.765
		HIGH EXPLOSIVES TESTING	357.312
		PROPANE BURNING EQUIPMENT	200.851
		ASPHALT PRODUCTION (BATCH PLANT)	186.300
		KEROSENE BURNING EQUIPMENT	67.422
		BIOLOGICAL SAMPLE ASHING	21.800
		CHEMICAL ETCHING	4.133
		DIESEL BURNING EQUIPMENT	3.638
		METAL ASSEMBLY/PRODUCTION	.500
		SURFACE CLEANING WITH SOLVENT	.147
CARBON MONOXIDE	47,581.723	NATURAL GAS BOILERS > 100 MMBTU	21,444.760
		NATURAL GAS BOILERS 10 - 100 MMBTU	12,770.100
		NATURAL GAS BOILERS < 10 MMBTU	9,929.180
		KEROSENE BURNING EQUIPMENT	2,604.340
		LABORATORY OPERATION	292.438
		HIGH EXPLOSIVES TESTING	210.870
		ASPHALT PRODUCTION (BATCH PLANT)	196.650
		BIOLOGICAL SAMPLE ASHING	43.600
		PROPANE BURNING EQUIPMENT	41.083
		RECEIVING AND INSPECTION	35.700
		METAL ASSEMBLY/PRODUCTION	11.230
		DIESEL BURNING EQUIPMENT	.791
		SOLDERING	.200
NONMETHANE HYDROCARBONS	6,377.535	NATURAL GAS BOILERS < 10 MMBTU	2,631.233
		NATURAL GAS BOILERS 10 - 100 MMBTU	2,116.188
		NATURAL GAS BOILERS > 100 MMBTU	911.402
		SURFACE CLEANING WITH SOLVENT	169.765
		ASPHALT PRODUCTION (BATCH PLANT)	144.900
		LABORATORY OPERATION	94.897
		KEROSENE BURNING EQUIPMENT	87.252
		METAL MACHINING AND SHAPING	56.770
		SHIELDED METAL ARC WELDING	55.440
		BIOLOGICAL SAMPLE ASHING	28.776
		SURFACE COATING	26.772
		GRAPHIC ARTS	18.347
		HIGH EXPLOSIVES TESTING	13.687
		PROPANE BURNING EQUIPMENT	10.727
		CONTAINER FILLING	6.261
		PHOTOPROCESSING	2.608
		MAINTENANCE AND REPAIR	2.200
		DIESEL BURNING EQUIPMENT	.291
		SOLVENT BURNING	.019

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
PARTICULATE MATTER	5,629.949	NATURAL GAS BOILERS > 100 MMBTU	1,608.357
		NATURAL GAS BOILERS < 10 MMBTU	1,489.377
		NATURAL GAS BOILERS 10 - 100 MMBTU	1,094.580
		HIGH EXPLOSIVES TESTING	853.244
		LABORATORY OPERATION	376.012
		ASPHALT PRODUCTION (BATCH PLANT)	172.172
		BIOLOGICAL SAMPLE ASHING	17.876
		PROPANE BURNING EQUIPMENT	6.162
		KEROSENE BURNING EQUIPMENT	4.277
		PLASTIC MACHINING AND SHAPING	4.200
		MAINTENANCE AND REPAIR	1.030
		NO OPERATION (NO EMISSION)	1.000
		METAL MACHINING AND SHAPING	.500
		METAL ASSEMBLY/PRODUCTION	.500
		DIESEL BURNING EQUIPMENT	.260
		CERAMICS MACHINING AND SHAPING	.217
		PLASTIC ASSEMBLY/PRODUCTION	.150
		HIGH EXPLOSIVE MACHINING AND SHAPING	.025
		ROCK MACHINING AND SHAPING	.010
TOLUENE (TOLUOL)	5,474.627	SURFACE COATING	5,282.412
		HE / MOCK HE MIXING	125.000
		LABORATORY OPERATION	45.014
		SURFACE CLEANING WITH SOLVENT	13.623
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	7.300
		GRAPHIC ARTS	1.126
		PHOTOPROCESSING	.066
		SOLVENT BURNING	.040
		METAL ASSEMBLY/PRODUCTION	.035
		PLASTIC ASSEMBLY/PRODUCTION	.010
ACETONE	4,881.189	SURFACE CLEANING WITH SOLVENT	3,572.873
		LABORATORY OPERATION	804.646
		HE / MOCK HE MIXING	235.000
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	173.200
		METAL MACHINING AND SHAPING	39.000
		SURFACE COATING	33.072
		MAINTENANCE AND REPAIR	13.200
		ROCK MACHINING AND SHAPING	4.000
		PHOTOPROCESSING	2.628
		GRAPHIC ARTS	1.560
		CERAMICS ASSEMBLY/PRODUCTION	1.000
		METAL ASSEMBLY/PRODUCTION	1.000
METHYL ETHYL KETONE (MEK)	4,110.411	SURFACE COATING	3,301.297
		SURFACE CLEANING WITH SOLVENT	375.948

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
METHYL ETHYL KETONE (MEK)	4,110.411	HE / MOCK HE MIXING	325.000
		DEGREASING	53.760
		LABORATORY OPERATION	41.906
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	11.400
		CERAMICS ASSEMBLY/PRODUCTION	1.000
		PLASTIC ASSEMBLY/PRODUCTION	.100
HEPTANE (N-HEPTANE)	4,075.696	SURFACE COATING	4,028.408
		LABORATORY OPERATION	44.317
		METAL MACHINING AND SHAPING	1.000
		NO OPERATION (NO EMISSION)	1.000
		SURFACE CLEANING WITH SOLVENT	.921
		PHOTOPROCESSING	.050
XYLENE (o-, m-, p-ISOMERS)	3,884.105	SURFACE COATING	3,433.529
		SURFACE CLEANING WITH SOLVENT	442.800
		LABORATORY OPERATION	7.526
		GRAPHIC ARTS	.137
		PHOTOPROCESSING	.067
		SOLVENT BURNING	.045
METHYLENE CHLORIDE	2,433.521	LABORATORY OPERATION	2,100.125
		SURFACE CLEANING WITH SOLVENT	302.900
		SURFACE COATING	18.883
		PLASTIC ASSEMBLY/PRODUCTION	7.196
		GRAPHIC ARTS	2.125
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	2.000
		PLASTIC MACHINING AND SHAPING	.293
1,1,2-TRICHLOROETHANE	2,044.220	SURFACE CLEANING WITH SOLVENT	1,923.100
		METAL MACHINING AND SHAPING	120.000
		DEGREASING	.713
		LABORATORY OPERATION	.407
AMMONIA	1,760.716	OZALID PROCESS DUPLICATION	1,180.000
		LABORATORY OPERATION	442.028
		PHOTOPROCESSING	120.155
		HIGH EXPLOSIVES TESTING	14.983
		SURFACE CLEANING WITH SOLVENT	2.350
		CHEMICAL ETCHING	1.200
SULFUR DIOXIDE	1,534.173	ASPHALT PRODUCTION (BATCH PLANT)	1,511.100
		LABORATORY OPERATION	17.547
		KEROSENE BURNING EQUIPMENT	3.510
		BIOLOGICAL SAMPLE ASHING	1.090
		PROPANE BURNING EQUIPMENT	.685
		DIESEL BURNING EQUIPMENT	.242

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
NITRIC ACID	1,457.122	LABORATORY OPERATION	1,391.512
		SURFACE CLEANING WITH SOLVENT	49.612
		BIOLOGICAL SAMPLE ASHING	10.900
		CHEMICAL ETCHING	4.098
		NO OPERATION (NO EMISSION)	1.000
HYDROGEN CHLORIDE	1,407.478	LABORATORY OPERATION	972.494
		BIOLOGICAL SAMPLE ASHING	393.780
		HIGH EXPLOSIVES TESTING	16.567
		SURFACE CLEANING WITH SOLVENT	11.906
		CHEMICAL ETCHING	2.836
		ELECTROPLATING	.085
		METAL ASSEMBLY/PRODUCTION	.020
		SOLDERING	.009
		BRAZING	.001
VM & P NAPHTHA	1,351.416	SURFACE COATING	1,333.216
		PHOTOPROCESSING	13.640
		SURFACE CLEANING WITH SOLVENT	3.310
		LABORATORY OPERATION	1.050
		GRAPHIC ARTS	.400
METHYL ALCOHOL	1,298.346	SURFACE CLEANING WITH SOLVENT	873.909
		LABORATORY OPERATION	367.932
		SURFACE COATING	31.104
		CONTAINER FILLING	12.730
		METAL MACHINING AND SHAPING	10.000
		PHOTOPROCESSING	1.215
		CHEMICAL ETCHING	.625
		SOLDERING	.500
		GRAPHIC ARTS	.207
		METAL ASSEMBLY/PRODUCTION	.125
ISOPROPYL ALCOHOL	1,188.564	SURFACE CLEANING WITH SOLVENT	1,104.633
		LABORATORY OPERATION	61.598
		SURFACE COATING	18.428
		METAL MACHINING AND SHAPING	2.000
		PHOTOPROCESSING	.682
		SOLDERING	.680
		GRAPHIC ARTS	.544
ACETIC ACID	1,184.662	PHOTOPROCESSING	1,165.214
		LABORATORY OPERATION	16.858
		CHEMICAL ETCHING	2.360
		SURFACE CLEANING WITH SOLVENT	.210

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
CHLOROFORM	1,175.330	DRINKING WATER TREATMENT	1,094.772
		WASTEWATER TREATMENT	31.497
		LABORATORY OPERATION	27.322
		SURFACE CLEANING WITH SOLVENT	15.500
		PLASTIC ASSEMBLY/PRODUCTION	5.211
		NO OPERATION (NO EMISSION)	1.000
		COOLING WATER TREATMENT (CHLOROFORM)	.029
		SOLVENT BURNING	.000
WELDING FUMES NOT OTHERWISE LI	1,127.247	SHIELDED METAL ARC WELDING	469.238
		OXYACETYLENE OR OXYMETHANE CUTTING	264.839
		GMAW - FLUX CORE / MIG WELDING	238.250
		SOLDERING	100.000
		GTAW / TIG / HELIARC WELDING	52.992
		GAS TUNGSTEN ARC	1.624
		BRAZING	.228
WOOD DUST (CERTAIN HARD WOODS	1,003.253	WOOD MACHINING AND SHAPING	1,003.253
NITROGEN OXIDE	693.313	LABORATORY OPERATION	689.995
		CHEMICAL ETCHING	1.378
		SOLDERING	1.000
		METAL ASSEMBLY/PRODUCTION	.500
		SURFACE CLEANING WITH SOLVENT	.440
STODDARD SOLVENT	583.114	SURFACE CLEANING WITH SOLVENT	417.388
		DEGREASING	86.400
		METAL MACHINING AND SHAPING	43.394
		SURFACE COATING	28.639
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	5.400
		GRAPHIC ARTS	1.814
		LABORATORY OPERATION	.075
		METAL ASSEMBLY/PRODUCTION	.004
KEROSENE	573.512	SURFACE CLEANING WITH SOLVENT	365.120
		METAL MACHINING AND SHAPING	115.817
		LABORATORY OPERATION	72.570
		ROCK MACHINING AND SHAPING	16.000
		METAL ASSEMBLY/PRODUCTION	4.000
		HIGH EXPLOSIVE MACHINING AND SHAPING	.005
HYDROGEN FLUORIDE AS F	534.051	LABORATORY OPERATION	484.412
		HIGH EXPLOSIVES TESTING	28.823
		CHEMICAL ETCHING	4.050
		SOLDERING	.742
		SURFACE CLEANING WITH SOLVENT	.364
		BRAZING	.001

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
TRICHLOROETHYLENE	462.888	SURFACE CLEANING WITH SOLVENT	462.758
		LABORATORY OPERATION	.104
		DEGREASING	.026
		SOLVENT BURNING	.001
PROPANE SULTONE	450.600	RECEIVING AND INSPECTION	450.600
2-BUTOXYETHANOL	270.601	SURFACE CLEANING WITH SOLVENT	215.467
		SURFACE COATING	38.881
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	9.600
		LABORATORY OPERATION	6.450
		METAL MACHINING AND SHAPING	.203
ALUMINUM WELDING FUMES	255.457	SHIELDED METAL ARC WELDING	248.633
		GTAW / TIG / HELIARC WELDING	3.504
		SOLDERING	2.000
		GAS TUNGSTEN ARC	1.320
NITRIC OXIDE	250.942	LABORATORY OPERATION	250.672
		SURFACE CLEANING WITH SOLVENT	.170
		CHEMICAL ETCHING	.100
HEAVY METALS	242.073	SHIELDED METAL ARC WELDING	240.240
		METAL ASSEMBLY/PRODUCTION	.401
		LABORATORY OPERATION	.139
		METAL MACHINING AND SHAPING	.115
		GAS TUNGSTEN ARC	.060
		ELECTROPLATING	.018
		NO OPERATION (NO EMISSION)	.000
TUNGSTEN AS W INSOLUBLE COMPOU	241.440	SHIELDED METAL ARC WELDING	240.240
		METAL MACHINING AND SHAPING	.603
		METAL ASSEMBLY/PRODUCTION	.500
		GAS TUNGSTEN ARC	.060
		LABORATORY OPERATION	.037
		HIGH EXPLOSIVES TESTING	.000
ETHYL ACETATE	195.998	HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	105.400
		HE / MOCK HE MIXING	45.000
		LABORATORY OPERATION	33.928
		SURFACE CLEANING WITH SOLVENT	11.500
		PHOTOPROCESSING	.170
HEXANE (N-HEXANE)	169.491	LABORATORY OPERATION	135.156
		SURFACE CLEANING WITH SOLVENT	16.152
		SURFACE COATING	12.472

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (Lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (Lbs.)
HEXANE (N-HEXANE)	169.491	GRAPHIC ARTS	3.412
		METAL MACHINING AND SHAPING	1.300
		PHOTOPROCESSING	.500
ETHYLENE GLYCOL	158.485	MAINTENANCE AND REPAIR	94.000
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	36.000
		SURFACE CLEANING WITH SOLVENT	10.050
		METAL ASSEMBLY/PRODUCTION	6.000
		GRAPHIC ARTS	5.140
		METAL MACHINING AND SHAPING	4.650
		LABORATORY OPERATION	2.433
		PHOTOPROCESSING	.212
NICKEL METAL	121.959	SHIELDED METAL ARC WELDING	120.120
		GTAW / TIG / HELIARC WELDING	.960
		OXYACETYLENE OR OXYMETHANE CUTTING	.568
		METAL MACHINING AND SHAPING	.175
		GAS TUNGSTEN ARC	.060
		METAL ASSEMBLY/PRODUCTION	.050
		LABORATORY OPERATION	.026
		SOLVENT BURNING	.000
FORMALDEHYDE	108.684	PHOTOPROCESSING	95.545
		SOLDERING	7.195
		KEROSENE BURNING EQUIPMENT	2.882
		PLASTIC MACHINING AND SHAPING	1.020
		ASPHALT PRODUCTION (BATCH PLANT)	.776
		LABORATORY OPERATION	.702
		GRAPHIC ARTS	.510
		DIESEL BURNING EQUIPMENT	.055
ALUMINUM METAL & OXIDE	88.533	METAL MACHINING AND SHAPING	72.720
		CERAMICS DRYING	10.675
		LABORATORY OPERATION	1.767
		GLASS MACHINING AND SHAPING	1.117
		SOLDERING	1.000
		OXYACETYLENE OR OXYMETHANE CUTTING	.568
		CERAMIC SLIP CASTING	.305
		CERAMICS MACHINING AND SHAPING	.281
		SURFACE CLEANING WITH SOLVENT	.100
		ROCK MACHINING AND SHAPING	.001
SOFT WOOD	88.092	WOOD MACHINING AND SHAPING	87.202
		WOOD ASSEMBLY/PRODUCTION	.890
PROPYLENE OXIDE	80.364	SURFACE COATING	80.364

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
OIL MIST, MINERAL	75.840	METAL MACHINING AND SHAPING	49.985
		SURFACE COATING	11.271
		SURFACE CLEANING WITH SOLVENT	8.730
		LABORATORY OPERATION	2.168
		MAINTENANCE AND REPAIR	1.384
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	1.300
		METAL ASSEMBLY/PRODUCTION	.002
CYCLOHEXANE	62.046	LABORATORY OPERATION	56.559
		METAL MACHINING AND SHAPING	5.000
		SURFACE CLEANING WITH SOLVENT	.406
		GRAPHIC ARTS	.081
METHYL CHLORIDE	58.010	GRAPHIC ARTS	44.000
		LABORATORY OPERATION	2.910
LEAD	56.744	SOLDERING	40.273
		LEAD POURING	9.483
		SURFACE COATING	5.950
		LABORATORY OPERATION	1.037
		ELECTROPLATING	.001
PHOSGENE	50.220	LABORATORY OPERATION	50.220
SULFURIC ACID	47.742	LABORATORY OPERATION	33.608
		SURFACE CLEANING WITH SOLVENT	10.886
		CHEMICAL ETCHING	2.679
		ELECTROPLATING	.550
		METAL ASSEMBLY/PRODUCTION	.020
HYDROGEN PEROXIDE	43.053	LABORATORY OPERATION	40.590
		CHEMICAL ETCHING	2.313
		NO OPERATION (NO EMISSION)	.150
ISOBUTYL ACETATE	39.790	SURFACE COATING	38.880
		CERAMICS ASSEMBLY/PRODUCTION	.910
ETHYL ETHER	37.464	LABORATORY OPERATION	37.464
TETRAHYDROFURAN	37.202	LABORATORY OPERATION	37.202
DICHLOROFLUOROMETHANE	37.080	SURFACE CLEANING WITH SOLVENT	36.680
		LABORATORY OPERATION	.400
LEAD CHROMATE AS Cr	35.546	SURFACE COATING	35.546
CHLORINE	28.976	LABORATORY OPERATION	28.976

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
HEXANE, OTHER ISOMERS	26.405	SURFACE CLEANING WITH SOLVENT	13.422
		LABORATORY OPERATION	12.983
FLUORINE	24.293	LABORATORY OPERATION	24.293
FORMAMIDE	23.293	LABORATORY OPERATION	13.793
		CERAMICS ASSEMBLY/PRODUCTION	9.500
PROPYL ALCOHOL	23.139	SURFACE CLEANING WITH SOLVENT	12.150
		GRAPHIC ARTS	5.100
		LABORATORY OPERATION	4.889
		METAL MACHINING AND SHAPING	1.000
ACETONITRILE	20.871	LABORATORY OPERATION	20.871
TURPENTINE	18.240	SURFACE CLEANING WITH SOLVENT	17.440
		SURFACE COATING	.700
		LABORATORY OPERATION	.100
SODIUM HYDROXIDE	17.437	CHEMICAL ETCHING	9.713
		SURFACE CLEANING WITH SOLVENT	3.985
		LABORATORY OPERATION	3.220
		NO OPERATION (NO EMISSION)	.500
		METAL ASSEMBLY/PRODUCTION	.020
CARBON TETRACHLORIDE	17.407	CERAMICS ASSEMBLY/PRODUCTION	13.300
		LABORATORY OPERATION	3.087
		SURFACE CLEANING WITH SOLVENT	1.020
MAGNESIUM OXIDE FUME	14.400	CERAMICS DRYING	14.000
		CERAMIC SLIP CASTING	.400
SEC-BUTYL ALCOHOL	13.815	HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	9.600
		SURFACE CLEANING WITH SOLVENT	3.500
		LABORATORY OPERATION	.341
		METAL MACHINING AND SHAPING	.312
		SOLDERING	.063
DIACETONE ALCOHOL	13.212	HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	9.600
		SURFACE CLEANING WITH SOLVENT	3.300
		METAL MACHINING AND SHAPING	.312
FLUORIDES, AS F	12.896	LABORATORY OPERATION	12.682
		SOLDERING	.214
N-BUTYL ACETATE	10.356	HE / MOCK HE MIXING	5.000

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
N-BUTYL ACETATE	10.356	SURFACE CLEANING WITH SOLVENT	2.500
		SURFACE COATING	1.352
		LABORATORY OPERATION	.306
		GRAPHIC ARTS	.078
		HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	.020
REFINED PETROLEUM SOLVENTS NOT	9.965	SURFACE CLEANING WITH SOLVENT	6.500
		SURFACE COATING	2.000
		METAL MACHINING AND SHAPING	1.465
POTASSIUM HYDROXIDE	9.545	LABORATORY OPERATION	4.851
		PHOTOPROCESSING	4.292
		SOLDERING	.335
		CHEMICAL ETCHING	.050
		METAL MACHINING AND SHAPING	.013
		SURFACE CLEANING WITH SOLVENT	.003
		GRAPHIC ARTS	.001
		ELECTROPLATING	.000
GASOLINE	9.004	SURFACE CLEANING WITH SOLVENT	9.000
		LABORATORY OPERATION	.004
OXALIC ACID	8.500	LABORATORY OPERATION	8.290
		ELECTROPLATING	.210
CARBON BLACK	7.896	GRAPHIC ARTS	2.780
		METAL MACHINING AND SHAPING	2.000
		LABORATORY OPERATION	1.111
		METAL ASSEMBLY/PRODUCTION	1.005
		MAINTENANCE AND REPAIR	1.000
METHYL ISOBUTYL KETONE	6.828	SURFACE CLEANING WITH SOLVENT	6.700
		LABORATORY OPERATION	.128
N-BUTYL ALCOHOL	6.510	SURFACE COATING	4.517
		LABORATORY OPERATION	1.972
		GRAPHIC ARTS	.021
NITROUS OXIDE	6.300	LABORATORY OPERATION	3.214
		HIGH EXPLOSIVES TESTING	3.086
CARBON DISULFIDE	5.566	LABORATORY OPERATION	5.566
PROPYLENE DICHLORIDE	5.500	METAL ASSEMBLY/PRODUCTION	5.500
OCTANE	5.146	LABORATORY OPERATION	4.146
		METAL MACHINING AND SHAPING	.500

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
OCTANE	5.146	SURFACE CLEANING WITH SOLVENT	.500
HYDROGEN BROMIDE	4.940	LABORATORY OPERATION	4.940
ETHYLENE DICHLORIDE	4.940	LABORATORY OPERATION	2.250
		SURFACE CLEANING WITH SOLVENT	2.200
		GRAPHIC ARTS	.490
PHENOL	4.435	LABORATORY OPERATION	4.385
		PLASTIC MACHINING AND SHAPING	.050
N-AMYL ACETATE	4.340	LABORATORY OPERATION	2.510
		SURFACE COATING	1.830
HYDROGEN CYANIDE	4.310	HIGH EXPLOSIVES TESTING	4.310
LITHIUM HYDRIDE	4.070	LITHIUM HYDRIDE MACHINING AND SHAPING	4.070
N-BUTYL GLYCIDYL ETHER (BGE)	3.680	SURFACE COATING	3.629
		PLASTIC ASSEMBLY/PRODUCTION	.051
DIETHYLENE TRIAMINE	3.469	SURFACE COATING	2.850
		SURFACE CLEANING WITH SOLVENT	.500
		LABORATORY OPERATION	.119
ZINC CHLORIDE FUME	3.416	SOLDERING	3.415
		BRAZING	.001
TIN METAL	3.002	SOLDERING	2.881
		METAL MACHINING AND SHAPING	.053
		BRAZING	.038
		LABORATORY OPERATION	.030
DI-SEC,OCTYL PHTHALATE	3.000	LABORATORY OPERATION	3.000
METHYL METHACRYLATE	2.806	PLASTIC ASSEMBLY/PRODUCTION	2.736
		LABORATORY OPERATION	.044
		GRAPHIC ARTS	.021
		SURFACE COATING	.005
PENTANE	2.633	LABORATORY OPERATION	2.633
PERCHLOROETHYLENE	2.615	LABORATORY OPERATION	1.600
		SURFACE CLEANING WITH SOLVENT	1.000
		SOLVENT BURNING	.015
		DEGREASING	.000

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
BORON OXIDE	2.523	SOLDERING	2.522
		BRAZING	.001
ISOBUTYL ALCOHOL	2.329	SURFACE CLEANING WITH SOLVENT	1.553
		LABORATORY OPERATION	.772
		SURFACE COATING	.004
POLYTETRAFLUOROETHYLENE DECOMP	2.270	METAL MACHINING AND SHAPING	1.750
		PLASTIC MACHINING AND SHAPING	.510
		SURFACE CLEANING WITH SOLVENT	.010
		LABORATORY OPERATION	.000
SILICA, FUSED (RESPIRABLE)	2.075	LABORATORY OPERATION	1.000
		ROCK MACHINING AND SHAPING	1.000
		SOLDERING	.050
		SAND OR BEAD BLASTING	.025
PARAFFIN WAX FUME	2.074	SURFACE CLEANING WITH SOLVENT	2.000
		SURFACE COATING	.054
		LABORATORY OPERATION	.010
		METAL MACHINING AND SHAPING	.010
ISOPROPOXYETHANOL	2.000	SURFACE CLEANING WITH SOLVENT	2.000
METHYL N-BUTYL KETONE	2.000	LABORATORY OPERATION	2.000
COPPER DUSTS & MISTS, AS Cu	1.899	METAL MACHINING AND SHAPING	1.834
		SOLDERING	.046
		BRAZING	.019
		LABORATORY OPERATION	.000
PYRIDINE	1.825	LABORATORY OPERATION	1.825
TERT-BUTYL ALCOHOL	1.815	METAL MACHINING AND SHAPING	1.733
		LABORATORY OPERATION	.082
PHOSPHORIC ACID	1.702	CHEMICAL ETCHING	.939
		LABORATORY OPERATION	.395
		SURFACE CLEANING WITH SOLVENT	.300
		ELECTROPLATING	.048
		METAL ASSEMBLY/PRODUCTION	.020
SILICA, ALL CRYSTALLINE RESPIR	1.515	LABORATORY OPERATION	1.500
		SAND OR BEAD BLASTING	.015
NITROMETHANE	1.400	LABORATORY OPERATION	1.300
		SURFACE CLEANING WITH SOLVENT	.100

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
NITROMETHANE	1.400	DEGREASING	.000
METHYL 2-CYANOACRYLATE	1.370	LABORATORY OPERATION	1.300
		METAL MACHINING AND SHAPING	.070
		PLASTIC ASSEMBLY/PRODUCTION	.000
HYDROGEN SULFIDE	1.260	LABORATORY OPERATION	1.258
		SURFACE COATING	.002
SODIUM BISULFITE	1.208	LABORATORY OPERATION	.900
		PHOTOPROCESSING	.308
AMMONIUM CHLORIDE FUME	1.133	SOLDERING	1.133
1,1-DICHLOROETHANE	1.125	LABORATORY OPERATION	1.125
HYDRAZINE	1.110	LABORATORY OPERATION	1.110
BORON TRIFLUORIDE	1.097	SOLDERING	1.085
		LABORATORY OPERATION	.011
		BRAZING	.001
TRIETHYLAMINE	1.053	LABORATORY OPERATION	1.052
		SURFACE COATING	.001
ACETIC ANHYDRIDE	1.050	LABORATORY OPERATION	1.050
TRIBUTYL PHOSPHATE	1.050	LABORATORY OPERATION	1.050
CHLOROBENZENE	1.050	LABORATORY OPERATION	.550
		SURFACE CLEANING WITH SOLVENT	.500
ETHYLENE GLYCOL MONOBUTYL ETHE	1.049	SURFACE CLEANING WITH SOLVENT	.870
		SURFACE COATING	.179
BERYLLIUM	1.020	METAL MACHINING AND SHAPING	1.016
		ROCK MACHINING AND SHAPING	.002
		GAS TUNGSTEN ARC	.001
		LABORATORY OPERATION	.000
VINYL ACETATE	1.006	LABORATORY OPERATION	1.000
		GRAPHIC ARTS	.006
MOLYBDENUM AS Mo SOLUBLE COMPO	1.000	METAL MACHINING AND SHAPING	1.000
		LABORATORY OPERATION	.000
AMITROLE	1.000	LABORATORY OPERATION	1.000

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
ISOPROPYL ACETATE	1.000	SURFACE CLEANING WITH SOLVENT	1.000
DIOXANE	.921	LABORATORY OPERATION	.458
		GRAPHIC ARTS	.338
		SURFACE CLEANING WITH SOLVENT	.125
		DEGREASING	.000
OZONE	.872	GAS TUNGSTEN ARC	.624
		LABORATORY OPERATION	.248
ISOPROPYL ETHER	.860	LABORATORY OPERATION	.860
SULFUR, TOTAL REDUCED COMPOUND	.857	LABORATORY OPERATION	.775
		METAL MACHINING AND SHAPING	.059
		PHOTOPROCESSING	.013
		NO OPERATION (NO EMISSION)	.010
DIMETHYLFORMAMIDE	.851	LABORATORY OPERATION	.801
		SURFACE CLEANING WITH SOLVENT	.050
ZINC OXIDE FUME	.836	GRAPHIC ARTS	.690
		METAL MACHINING AND SHAPING	.100
		SOLDERING	.046
BENZENE	.813	LABORATORY OPERATION	.813
BROMINE	.805	LABORATORY OPERATION	.805
HYDROQUINONE	.727	PHOTOPROCESSING	.686
		LABORATORY OPERATION	.038
		GRAPHIC ARTS	.002
IRON OXIDE FUME (Fe_2O_3) AS Fe	.702	GAS TUNGSTEN ARC	.602
		SURFACE COATING	.100
ENFLURANE	.693	LABORATORY OPERATION	.693
ETHYL ACRYLATE	.664	LABORATORY OPERATION	.664
HEPTANE (ISOMERS OTHER THAN N)	.505	LABORATORY OPERATION	.505
PHOSPHORUS OXYCHLORIDE	.500	LABORATORY OPERATION	.500
TOLUENE-2,4-DIISOCYANATE (TDI)	.500	LABORATORY OPERATION	.500
COPPER FUME	.472	SOLDERING	.229

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
COPPER FUME	.472	ELECTROPLATING	.180
		BRAZING	.060
		GAS TUNGSTEN ARC	.002
		LABORATORY OPERATION	.001
DIETHYL KETONE	.400	LABORATORY OPERATION	.400
ACETYLENE TETRABROMIDE	.394	LABORATORY OPERATION	.394
YTTRIUM	.385	CERAMICS DRYING	.350
		LABORATORY OPERATION	.025
		CERAMIC SLIP CASTING	.010
ZIRCONIUM COMPOUNDS AS Zr	.360	CERAMICS DRYING	.350
		CERAMIC SLIP CASTING	.010
SILVER METAL	.352	SOLDERING	.204
		BRAZING	.149
		LABORATORY OPERATION	.000
SODIUM METABISULFITE	.324	PHOTOPROCESSING	.314
		NO OPERATION (NO EMISSION)	.010
CHROMIC ACID	.323	SURFACE CLEANING WITH SOLVENT	.320
		CHEMICAL ETCHING	.003
ISOAMYL ALCOHOL	.316	LABORATORY OPERATION	.316
		SURFACE CLEANING WITH SOLVENT	.000
NITROBENZENE	.310	LABORATORY OPERATION	.310
PROPIONITRILE	.300	LABORATORY OPERATION	.300
MORPHOLINE	.264	GRAPHIC ARTS	.264
BUTYLAMINE	.250	LABORATORY OPERATION	.250
SILICON TETRAHYDRIDE	.242	LABORATORY OPERATION	.242
EPICHLOROHYDRIN	.220	PLASTIC ASSEMBLY/PRODUCTION	.220
o-DICHLOROBENZENE	.220	LABORATORY OPERATION	.220
1,1,2,2-TETRACHLOROETHANE	.205	LABORATORY OPERATION	.205
TRICHLOROACETIC ACID	.203	LABORATORY OPERATION	.202
		CHEMICAL ETCHING	.001

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
TIN OXIDE & INORGANIC COMPOUND	.200	LABORATORY OPERATION	.200
DIMETHYL ACETAMIDE	.200	LABORATORY OPERATION	.200
NONANE	.200	LABORATORY OPERATION	.200
DIBUTYL PHTHALATE	.191	SURFACE CLEANING WITH SOLVENT	.125
		METAL ASSEMBLY/PRODUCTION	.066
FORMIC ACID	.187	LABORATORY OPERATION	.187
CALCIUM OXIDE	.180	CERAMICS DRYING	.175
		CERAMIC SLIP CASTING	.005
		LABORATORY OPERATION	.000
MOLYBDENUM AS Mo INSOLUBLE COM	.180	METAL MACHINING AND SHAPING	.135
		LABORATORY OPERATION	.025
		METAL ASSEMBLY/PRODUCTION	.020
METHYL N-AMYL KETONE	.179	SURFACE COATING	.179
TANTALUM	.173	METAL MACHINING AND SHAPING	.128
		LABORATORY OPERATION	.025
		METAL ASSEMBLY/PRODUCTION	.020
ANILINE & HOMOLOGUES	.168	LABORATORY OPERATION	.168
IODINE	.165	LABORATORY OPERATION	.165
IRON SALTS, SOLUBLE AS Fe	.164	METAL MACHINING AND SHAPING	.163
		SOLDERING	.001
		LABORATORY OPERATION	.000
THIONYL CHLORIDE	.160	LABORATORY OPERATION	.160
PHOSPHOROUS PENTACHLORIDE	.150	LABORATORY OPERATION	.150
PICRIC ACID	.145	CHEMICAL ETCHING	.100
		LABORATORY OPERATION	.045
CADMIUM OXIDE FUME AS Cd	.125	SOLDERING	.113
		GAS TUNGSTEN ARC	.012
FIBROUS GLASS DUST	.124	LABORATORY OPERATION	.124
		CERAMICS MACHINING AND SHAPING	.000

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
CHROMIUM METAL	.118	ELECTROPLATING	.060
		METAL MACHINING AND SHAPING	.058
		LABORATORY OPERATION	.000
QUARTZ	.112	ROCK MACHINING AND SHAPING	.100
		LABORATORY OPERATION	.011
		GLASS MACHINING AND SHAPING	.001
MERCURY	.111	LABORATORY OPERATION	.111
SEC-BUTYL ACETATE	.108	LABORATORY OPERATION	.108
CHROMIUM (III) COMPOUNDS, AS C	.105	ELECTROPLATING	.060
		METAL MACHINING AND SHAPING	.044
		SOLVENT BURNING	.000
ETHYLENE GLYCOL VAPOR	.100	LABORATORY OPERATION	.100
		ROCK MACHINING AND SHAPING	.000
ACETALDEHYDE	.100	LABORATORY OPERATION	.100
TRIMETHYL BENZENE	.100	LABORATORY OPERATION	.100
NO CHEMICAL	.100	LABORATORY OPERATION	.100
METHYLENE DIPHENYL DIISOCYANTE	.100	LABORATORY OPERATION	.100
METHYL PROPYL KETONE	.100	SURFACE CLEANING WITH SOLVENT	.100
ETHYLENE OXIDE	.100	LABORATORY OPERATION	.100
DIMETHYLAMINE	.100	LABORATORY OPERATION	.100
ALLYL ALCOHOL	.100	LABORATORY OPERATION	.100
ALLYL CHLORIDE	.100	LABORATORY OPERATION	.100
CHLORINE TRIFLUORIDE	.100	LABORATORY OPERATION	.100
COBALT AS Co	.099	LABORATORY OPERATION	.098
		METAL ASSEMBLY/PRODUCTION	.001
		ELECTROPLATING	.000
ETHYLENE GLYCOL MONOETHYL ETHE	.091	LABORATORY OPERATION	.091
NAPHTHALENE	.090	LABORATORY OPERATION	.090

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
MANGANESE AS Mn DUST & COMPOUN	.070	LABORATORY OPERATION	.050
		METAL MACHINING AND SHAPING	.020
		SOLVENT BURNING	.000
ANTIMONY & COMPOUNDS, AS Sb	.069	LABORATORY OPERATION	.050
		SOLDERING	.019
		NO OPERATION (NO EMISSION)	.000
THALLIUM SOLUBLE COMPOUNDS, AS	.063	LABORATORY OPERATION	.057
		METAL ASSEMBLY/PRODUCTION	.006
DINITROTOLUENE	.063	HIGH EXPLOSIVE ASSEMBLY/PRODUCTION	.063
ETHYL CHLORIDE	.060	SURFACE CLEANING WITH SOLVENT	.060
DICYCLOPENTADIENE	.059	LABORATORY OPERATION	.059
CYANIDES AS CN	.050	LABORATORY OPERATION	.050
		ELECTROPLATING	.000
2-METHOXYETHANOL	.050	LABORATORY OPERATION	.050
ACETOPHENONE	.050	LABORATORY OPERATION	.050
TRIMETHYL PHOSPHITE	.050	LABORATORY OPERATION	.050
METHYL IODIDE	.050	LABORATORY OPERATION	.050
ISOOCYTL ALCOHOL	.050	SURFACE CLEANING WITH SOLVENT	.050
IRON PENTACARBONYL AS Fe	.050	LABORATORY OPERATION	.050
FURFURYL ALCOHOL	.050	SURFACE CLEANING WITH SOLVENT	.050
CYCLOPENTADIENE	.050	LABORATORY OPERATION	.050
CYCLOHEXENE	.050	LABORATORY OPERATION	.050
CYCLOHEXANOL	.050	LABORATORY OPERATION	.050
BENZOPHENONE	.050	LABORATORY OPERATION	.050
ALUMINUM ALKYLS NOT OTHERWISE	.050	LABORATORY OPERATION	.050
DIETHYLAMINE	.050	PLASTIC ASSEMBLY/PRODUCTION	.040
		LABORATORY OPERATION	.010

1990 NON-RADIOACTIVE AIR EMISSIONS

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
ACRYLAMIDE	.044	LABORATORY OPERATION	.044
ETHYL MERCAPTAN	.041	LABORATORY OPERATION	.041
ETHYLENE GLYCOL MONOETHYL ETHE	.032	LABORATORY OPERATION	.032
CALCIUM HYDROXIDE	.032	LABORATORY OPERATION	.022
		CHEMICAL ETCHING	.010
2-ETHOXYETHANOL	.029	LABORATORY OPERATION	.025
		SURFACE COATING	.004
DIPROPYLENE GLYCOL METHYL ETHE	.026	METAL MACHINING AND SHAPING	.026
BARIUM, SOLUBLE COMPOUNDS, AS	.025	LABORATORY OPERATION	.025
		NO OPERATION (NO EMISSION)	.000
DIPHENYLAMINE	.025	LABORATORY OPERATION	.025
2-ETHOXYETHYL ACETATE	.025	LABORATORY OPERATION	.025
DIETHYLENE GLYCOL MONOMETHYL E	.025	LABORATORY OPERATION	.025
DIETHYLENE GLYCOL DIETHYL ETHE	.025	LABORATORY OPERATION	.025
DICYCLOPENTADIENYL IRON	.025	LABORATORY OPERATION	.025
PROPYLENE GLYCOL MONOMETHYL ET	.023	SURFACE CLEANING WITH SOLVENT	.020
		LABORATORY OPERATION	.003
CESIUM HYDROXIDE	.022	METAL MACHINING AND SHAPING	.022
CADMIUM DUSTS & SALTS, AS Cd	.021	SOLDERING	.013
		LABORATORY OPERATION	.008
		SOLVENT BURNING	.000
ARSENIC, INORGANIC	.021	LABORATORY OPERATION	.021
		SOLVENT BURNING	.000
ZINC CHROMATE AS Cr	.020	SURFACE COATING	.020
ETHYLENEDIAMINE	.015	LABORATORY OPERATION	.015
OSMIUM TETROXIDE AS Os	.012	LABORATORY OPERATION	.012
2-HYDROXYPROPYL ACRYLATE	.011	LABORATORY OPERATION	.011

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
COBALT CARBONYL AS Co	.011	LABORATORY OPERATION	.011
COBALT HYDROCARBONYL AS Co	.010	LABORATORY OPERATION	.010
CRISTOBALITE RESPIRABLE DUST	.010	ROCK MACHINING AND SHAPING	.010
PHENYL MERCAPTAN	.010	LABORATORY OPERATION	.010
PHOSPHOROUS TRICHLORIDE	.010	LABORATORY OPERATION	.010
METHYL CYCLOPENTADIENYL MANGAN	.010	LABORATORY OPERATION	.010
ETHYL BENZENE	.010	LABORATORY OPERATION	.010
1,2-DICHLOROETHYLENE	.007	PLASTIC ASSEMBLY/PRODUCTION	.006
		LABORATORY OPERATION	.002
ALUMINUM SOLUBLE SALTS	.007	LABORATORY OPERATION	.007
HAFNIUM	.005	METAL ASSEMBLY/PRODUCTION	.005
		LABORATORY OPERATION	.000
TUNGSTEN AS W SOLUBLE COMPOUND	.005	LABORATORY OPERATION	.005
BENZENETHIOL	.005	LABORATORY OPERATION	.005
INCENE	.005	LABORATORY OPERATION	.005
MANGANESE AS Mn FUME	.005	SOLDERING	.004
		LABORATORY OPERATION	.001
PROPARGYL ALCOHOL	.005	LABORATORY OPERATION	.005
SILVER SOLUBLE COMPOUNDS, AS A	.005	ELECTROPLATING	.005
		LABORATORY OPERATION	.000
COBALT METAL, DUST & FUME	.004	METAL MACHINING AND SHAPING	.004
ISOPHORONE DIISOCYANATE	.004	LABORATORY OPERATION	.004
NICKEL SOLUBLE AND INORGANIC C	.003	ELECTROPLATING	.003
		LABORATORY OPERATION	.000
SELENIUM COMPOUNDS AS SE	.001	LABORATORY OPERATION	.001
DIISOPROPYLAMINE	.001	LABORATORY OPERATION	.001

CHEMICAL NAME	ANNUAL TOTAL (lbs.)	OPERATION DESCRIPTIONS	OPERATION TOTAL (lbs.)
PHENYLHYDRAZINE	.001	LABORATORY OPERATION	.001
PLATINUM METAL	.001	LABORATORY OPERATION	.001
SODIUM AZIDE	.001	LABORATORY OPERATION	.001
TRIDYMITE, RESPIRABLE DUST	.001	ROCK MACHINING AND SHAPING	.001
CHROMIUM (II) COMPOUNDS, AS Cr	.001	METAL MACHINING AND SHAPING	.001
ALUMINUM PYRO POWDERS	.000	HIGH EXPLOSIVES TESTING	.000
		METAL MACHINING AND SHAPING	.000
		LABORATORY OPERATION	.000
GLUTARALDEHYDE	.000	LABORATORY OPERATION	.000
BROMINE PENTAFLUORIDE	.000	LABORATORY OPERATION	.000
GERMANIUM TETRAHYDRIDE	.000	LABORATORY OPERATION	.000
ACENAPHTHENE	.000	LABORATORY OPERATION	.000
URANIUM (NATURAL) SOLUBLE & IN	.000	LABORATORY OPERATION	.000
CHROMIUM (VI) WATER SOLUBLE	.000	LABORATORY OPERATION	.000
VANADIUM, METALLIC	.000	LABORATORY OPERATION	.000

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO KNOW ACT
(EPCRA)

MULTI-MEDIA COMPLIANCE INVESTIGATION

Los Alamos National Laboratory
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Investigators

Anne Bevington, Chemical Engineer NEIC
Ken Garing, Environmental Engineer NEIC

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APPENDIX

Los Alamos EPCRA Section 313 Release Estimates

MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) located in Los Alamos, New Mexico. This report, one of a series, addresses investigation findings and discusses Emergency Planning and Community-Right-to-Know Act (EPCRA § 302-313) issues and compliance at LANL.

REGULATORY SUMMARY

EPCRA was enacted as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986. EPCRA (also known as SARA Title III) requires regulated facilities to provide information to EPA, state, and community groups concerning chemicals handled by the facility and chemical releases. LANL is subject to the Emergency Planning and Notification requirements of 40 CFR Part 355 (EPCRA § 304) and the Hazardous Chemical Reporting: Community Right-to-Know requirements of 40 CFR Part 370. During the NEIC inspection, LANL was voluntarily complying with the Toxic Release Reporting requirements of 40 CFR Part 372. Subsequent to the inspection, an executive order was signed by President Clinton which will require LANL to comply with the 40 CFR Part 372.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a facility safety presentation and a general discussion of LANL operations, including waste generation and handling, a general facility tour was conducted. Records/documents affiliated with the EPCRA activities were also reviewed.

Emergency Notification Reporting

The 1991 through 1993 spill files were reviewed. The files identified numerous liquid spills, several of which exceeded the reportable quantities. Appropriate notifications were made for documented releases exceeding the reportable quantities. There were no reported air releases.

None of the documented releases exceeded the reporting quantity for extremely hazardous substances. LANL does not have written procedures for follow-up notifications in the event an extremely hazardous substance is released to the environment.

Community Right-to-Know Requirements

The 1992 updated list of MSDSs for chemicals used at LANL was provided to the state emergency response commission (SERC), local emergency response committee (LERC), and the Los Alamos Fire Department (fire department). Additionally, a list of new MSDSs received in the previous year (January through December 1992) was provided on computer diskette.

LANL maintains copies of MSDSs in each operational area. According to LANL personnel, before a new chemical can be used, the chemical must be evaluated by the Environmental Division. Upon Environmental Division approval, the chemical is ordered and the MSDS list is updated.

As required by EPCRA § 312, LANL submits the chemical inventory to the SERC, LERC, and the fire department. LANL opted to submit a Tier II form in lieu of the Tier I information. Ten chemicals exceeding reporting levels of 10,000 pounds for hazardous chemicals and 500 pounds for extremely

hazardous substances were reported by LANL. The reported chemicals include:

Sodium hydroxide	Hydrogen fluoride
Sulfuric acid	Propane
Oxygen	Nitric acid
Chlorine	Carbon dioxide
Nitrogen	HMX

The minimum reporting level for chemicals is lowered to zero pounds (from the 10,000 pounds for hazardous chemicals or the 500 pounds for extremely hazardous substances) if requested by the SERC, LERC, and/or the fire department. LANL personnel stated that there are potentially hundreds of chemicals in use at the laboratory which would require reporting if the threshold limit were reduced to zero pounds.

LANL has no method to accurately determine if reporting levels or threshold quantities have been exceeded. Chemicals used by the various laboratories are purchased through several independent departments, group purchases, or directly from suppliers. An accurate accounting is not maintained because of the multiple purchasing options. LANL is starting a new purchasing approach whereby all acquisitions will be purchased through a central office.

Toxic Release Inventory Reporting (EPCRA § 313)

The primary SIC code for LANL is 9711 which is not included in the group of codes regulated by EPCRA § 313. LANL voluntarily agreed to provide Form R information. LANL submitted the Toxic Chemical Inventory Reporting Form (Form R) for only one chemical, nitric acid. LANL reports that nitric

acid was present in amounts above the threshold quantities (quantities manufactured, imported, processed, or otherwise used by the facility).

The Department of Energy is claiming an exemption for all research-related functions [Appendix]. LANL considers the Plutonium Processing Facility (TA-55) the only industrial activity and, therefore, only chemicals used in this area are evaluated in preparing the Form R submittal. The plutonium processing facility uses hydrofluoric acid, hydrochloric acid, and nitric acid. Less than 300 pounds of hydrofluoric acid and hydrochloric acid are used. Greater than 10,000 pounds of nitric acid are used and a Form R was submitted.

The nitric acid emission estimates are based on source tests conducted in 1988. Because processes have generally not changed since 1989, the 1992 estimates were calculated using the 1988 emission factors and the 1992 usages. Reported releases of nitric acid from stack or point sources and fugitive or non-point sources were both estimated to be in the range of 11 through 500 pounds. Releases of nitric acid from areas other than the plutonium processing facility were not included in the estimates because LANL claims these areas were not considered to be manufacturing facilities.

A Form R submittal was not prepared for chlorine, although the Tier II report shows that greater than 10,000 pounds were on-site for 1992. LANL records indicate that 8,975 pounds of chlorine were used for wastewater purification and 7,300 pounds were used for chlorination of drinking water.

SUMMARY OF FINDINGS

AREA OF NONCOMPLIANCE

Based on inspection observations, discussions with LANL personnel, and review of documentation, no areas of noncompliance of the EPCRA requirements were identified.

AREAS OF CONCERN

During the on-site inspection and review of documents, the following areas of concern were noted.

- LANL has no written follow-up procedures in the event of a release of an extremely hazardous substance (EHS). There have been no reported EHS releases; however, these procedures should be formalized.

- LANL may have to report significantly more chemicals on the annual Tier II submittal. LANL used reporting levels of 10,000 pounds for hazardous chemicals and 500 pounds for extremely hazardous substances. LANL reported only 10 chemicals exceeding these reporting levels. The minimum reporting level for chemicals may be lowered to zero pounds if requested by the SERC, LERC, and/or the fire department. Potentially, hundreds of additional chemicals may need to be reported on the Tier II forms.

- LANL has no method to accurately determine if reporting levels or threshold quantities have been exceeded. Chemicals are

acquired through various purchasing procedures. An accurate accounting is not maintained because of the multiple purchasing options. LANL is starting a new purchasing approach whereby all acquisitions will be purchased through a central office.

- The 1992 LANL Form R submittal for nitric acid does not include all releases. Only the nitric acid released from TA-55 was included on the Form R submittal. Other sources and uses of nitric acid throughout the laboratory were not included on the release estimates.

- To be in voluntary compliance with Form R requirements, LANL should have provided Form R submittals for chlorine. LANL uses in excess of 10,000 pounds of acrylic acid and chlorine annually.

APPENDIX

LOS ALAMOS EPCRA SECTION 313 RELEASE ESTIMATES

RCN 256-006-10-04

EPCRA SECTION 313
1992 RELEASE ESTIMATES FOR
LOS ALAMOS NATIONAL LABORATORY

Prepared for:

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Prepared by:

Radian Corporation
10389 Old Placerville Road
Sacramento, CA 95827

May 1993

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1.0 INTRODUCTION

Section 313 of Title III of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), also known as the Superfund Amendments and Reauthorization Act (SARA), requires owners and operators of certain facilities that manufacture, import, process or otherwise use listed toxic chemicals to annually report releases of these chemicals to each environmental medium. Los Alamos National Laboratory (LANL) is eligible for exemption from Section 313 because:

- The primary SIC code for LANL (9711) is not included in the group of codes regulated by Section 313 (40 CFR Part 372.22(b));
- All laboratory activities are exempt (40 CFR Part 372.38(d)); and
- The single industrial activity, which is the Plutonium Processing Facility, is exempt because it generates less than 50% of LANL's income (40 CFR Part 372.22 (b)).

The Department of Energy is claiming an exemption for all research-related functions. However, to ensure that the public is accurately informed about industrial activities at LANL, emissions from the Plutonium Processing Facility are being reported.

Information collected during 1987 and 1988 field studies (PEI, 1989a) and surveys of 1990, 1991, and 1992 usages determined that nitric acid (CAS No. 7697-37-2) was the only reportable chemical used in 1992. Although the Plutonium Processing Facility uses both hydrofluoric and hydrochloric acids, less than 300 pounds of these chemicals are used, far less than the reporting threshold of 10,000 pounds.

To better define nitric acid emissions, LANL conducted a source test in 1988 (PEI, 1989b). During the test, processes using the majority of nitric acid were run at maximum operating conditions. Because processes have generally not changed, using the emission factors determined from this test with 1992 usages to calculate 1992 stack emissions

is technically valid. For several processes using small amounts of nitric acid that were not tested, mass balances and engineering judgement are used to calculate emissions.

Section 2.0 discusses the release estimates to each media from the Plutonium Processing Facility. Section 3.0 discusses treatment, recycling and source reduction. Subsections follow the same organization as the Toxic Chemical Release Inventory Form (Form R), which is contained in Appendix A. The stack emissions and anion exchange emissions spreadsheets are contained in Appendices B and C, respectively.

2.0 RELEASE ESTIMATES

Nitric acid is used in several processes at the Plutonium Processing Facility. These processes and their corresponding usages of 100% nitric acid are listed in Table 2-1. The acid may be either incorporated into the product, discharged to the air as HNO_3, oxidized and emitted as NO_x, or contained in the waste-water stream. Controlled emissions of HNO_3, NO and NO_2 are also reported in Table 2-1. The following subsections address releases relevant to EPCRA.

2.1 Fugitive or Non-Point Source Air Emissions (Section 5.1 of Form R)

The only source of fugitive emissions is the line connecting the nitric acid storage tank to the facility, which has negligible emissions. All other nitric acid emissions from within the facility occur in areas under negative pressure and within gloveboxes that are vented to stacks. Emissions from the transfer of the liquid waste stream to the Radioactive Waste Treatment Service are assumed to be negligible because the radioactive nature of the stream demands that all fittings are leak free. Based on this information and the annual usage of approximately 14,000 pounds, more than 10 but less than 500 pounds/year of nitric acid will escape as fugitive emissions.

2.2 Stack or Point Air Emissions (Section 5.2 of Form R)

Point emissions issue from process vents. Stack emissions are based on stack testing data and engineering judgement. The emitting processes are described in Table 2-1. Usage, control devices and controlled emissions for each process are summarized in Table 2-2. Unless otherwise stated in Table 2-1, emissions were estimated using process-specific emission factors developed from PEI source test data in 1988 (PEI, 1989b). The data used to estimate emissions and the emission calculations are contained in Appendices B and C.

Table 2-1

Plutonium Processing Facility Processes

Process (Room)	Description	Emissions Basis
Waste Immobilzation (401)	Chemical wastes containing ammonia stored in glovebox one or two days before neutralized and solidified with cement. Nitric acid used to clean the glovebox and to oxidize the cement, which is left in open cans in the glovebox overnight, then loaded in lead-lined drums and turned in to TA-54.	Assume 1.35% evaporates.
Cascade Dissolution (401)	Plutonium oxide dissolved in 15.6 M nitric acid with calcium difluoride at 96°C.	Use 1988 emission factors.
Cascade Dissolution (420)	Plutonium dioxide and magnesium oxide dissolved in 10 M nitric acid at 100°C.	Use 1988 emission factors.
Oxide Leach (401)	Plutonium dioxide dissolved in 15.6 M nitric acid with calcium difluoride for four hours at 108°C.	Use cascade dissolution (Room 401) emission factors.
Distillation (401)	Waste nitric acid, ammonia and water concentrated before disposal. Distillate condensed in a one-shell, two-pass condenser and sent to TA-50. Bottoms sent to TA-54 for disposal.	Use 1988 emission factors.
Alpha Counting (116)	Analytical process conducted at 122°C on radioactive samples dissolved in nitric acid.	Assume 12.5% evaporates (PEI, 1989a).
Residue Leaching (209)	Plutonium-containing residues leached in 15.6 M nitric acid with calcium difluoride or hydrofluoric acid at 103°C.	Use plutonium oxide dissolution emission factors.
Scrap Dissolution and Plutonium Oxide Dissolution (209)	Plutonium in metal scrap leached in 15.6 M nitric acid and hydrochloric acid at 110°C for four hours. Remaining plutonium leached in 15.6 M nitric acid and hydrofluoric acid at 110°C.	Use 1988 emission factors.
Anion Exchange (409, 401, 209)	Plutonium solutions passed through a resin bed after the pH and concentration adjusted to 7 M with 15.6 M nitric acid.	Assume nitric acid displaces an equal volume of air saturated with nitric acid. See Appendix C.
Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP) (106)	Nitric acid (8 M) used as blank standards and to dilute plutonium solution samples for ICP analysis.	Lab personnel estimate 4% of the nitric acid remains in the plasma and is emitted as NO_x (PEI, 1989a).

Process (Room)	Description	Emissions Basis
Catalyzed Electrolyzed Plutonium Oxidized Dissolution (CEPOD) (420)	Plutonium recovered from residues dissolved in 5 M nitric acid, using cerium as a catalyst.	Assume 1.35% evaporates.
Multi-Purpose Dissolution (MPD) (401)	Plutonium oxide dissolved in nitric acid with calcium difluoride at 96°C. Plutonium dioxide also dissolved with magnesium oxide in nitric acid at 98°C.	Use highest cascade dissolution emission factors.
OH Cake Dissolution (401, 409)	Plutonium hydroxide precipitates from various plutonium recovery processes filtered, concentrated and redissolved.	Use scrap dissolution emission factors.
Filtrate Concentration (209)		Use waste stream distillation emission factors.
Oxide Dissolution (420)	Plutonium dioxide dissolved in 15.6 M nitric acid with hydrofluoric acid at 110°C.	Use highest scrap and plutonium oxide dissolution emission factors.
Non-Combustible Leaching (420)	Plutonium recovered from plastic and HEPA filters in 4 M nitric acid with calcium difluoride. Gloves from gloveboxes wiped down with rags soaked in 1 M nitric acid.	Use ash leaching emission factors.
Metallography (115)	Cut plutonium samples placed in a nitric acid etching solution to clean the cut surfaces.	Assume 1% evaporates.
Advanced Testing Line for Actinide Separations (ATLAS) (409)	Samples prepared for research and development with an integrated module of dissolution, ion exchange, precipitation, and calcination.	Use highest scrap and plutonium oxide dissolution emission factors.

Table 2-2

Plutonium Processing Facility Nitric Acid Usage and Emissions

Process (Room)	Usage (pounds)	Control Type[a]	Controlled Emissions (lb/yr)		
			HNO_3	NO	NO_2
Waste Immobilzation (401)	45	water	0.3	0	0
Cascade Dissolution (401)	208	water	0.3	0.2	0.6
Cascade Dissolution (420)	1,430	water/OH	80.7	14.2	135.9
Oxide Leach (401)	0	water	0	0	0
Distillation (401)	7,110	condenser	110.1	8.8	24.1
Alpha Counting (116)	12.5	none	0	0.4	1.2
Residue Leaching (209)	77	reflux	0.2	1.2	3.2
Scrap Dissolution (209)	400	OH/reflux	2.8	2.6	6.4
Anion Exchange (409, 401, 209)	9,038	none	0.1	0	0
ICP (106)	12.5	none	0	0.1	0.4
CEPOD Dissolution (420)	94	water	0.3	0	0
MPD (401)	319	2 condensers	24	3.2	30.3
OH Cake Dissolution (401)	81	reflux	1.1	0.6	1.5
OH Cake Dissolution (409)	75	reflux	1.0	0.5	1.4
Filtrate Concentration (209)	15	reflux	0.2	0	0.1
Oxide Dissolution (420)	592	water	8.2	8.9	24.3
Non-Combustible Leaching (420)	1,252	water	1.8	1.5	3.8
Metallography (115)	10	water	0	0	0
ATLAS (409)	626	water	8.6	9.4	25.7
Total	14,272.[b]		191.0	23.6	161.8

[a] Water refers to a water scrubber; OH to a caustic scrubber. Reflux refers to a reflux condenser.

[b] Total does not include evaporator or filtrate concentration usage, which is actually recovered nitric acid used in other processes.

2.3 Discharges to Receiving Streams or Water Bodies (Section 5.3 of Form R)

All liquid nitric acid waste is handled by the Radioactive Waste Treatment Service. The liquid waste is neutralized to pH 6.5-7 in underground tanks at TA-50. EPCRA regulations classify acid wastes neutralized to pH 6-9 as 100% treated, and specify that such streams contain no acid (U.S. EPA, 1991). Therefore, there are no liquid discharges of nitric acid.

2.4 Other Nitric Acid Releases

Releases to all media must be reported on Form R. There are no other nitric acid releases by the facility, including on-site underground tanks (Section 5.4 of Form R), on-site land releases (Section 5.5), discharges to POTWs (Section 6.1), or transfers to other off-site locations (Section 6.2).

3.0 ON-SITE WASTE TREATMENT, SOURCE REDUCTION, AND RECYCLING (SECTIONS 7 AND 8 OF FORM R)

No new source reduction measures were implemented by the Plutonium Processing Facility in 1992. In addition, no on-site recycling, off-site recycling or off-site treatment of nitric acid was performed.

Air emissions and liquid waste were treated on-site. Control of 189 pounds of nitric acid by scrubbers and condensers is summarized in Table 3-1. Nitric acid from Waste Distillation and Filtrate Concentration (7110 pounds) was neutralized at TA-50.

Table 3-1

Uncontrolled and Controlled Emissions

Process	Controlled HNO_3 Emissions (lb/yr)	Assumed Control Efficiency (%)	Control Type[a]	Uncontrolled HNO_3 Emissions (lb/yr)	Difference (lb/yr)
Waste Immobilzation	0.3	50	water	0.6	0.3
Cascade Dissolution (401)	0.3	70	water	1.0	0.7
Cascade Dissolution (420)	80.7	70	water/OH	268.8	188.1
Oxide Leach	0	70	water	0	0
Distillation	110.1	0[b]	condenser	110.1	0
Alpha Counting	0	0	none	0	0
Residue Leaching	0.2	0[b]	reflux	0.2	0
Scrap Dissolution	2.8	50	OH/reflux	5.5	2.7
Anion Exchange	0.1	0	none	0.1	0
ICP	0	0	none	0	0
CEPOD Dissolution	0.3	70	water	1.1	0.8
MPD	24.0	75	2 condensers	96.0	72.0
OH Cake Dissolution (401)	1.1	0[b]	reflux	1.1	0
OH Cake Dissolution (409)	1.0	0[b]	reflux	1.0	0
Filtrate Concentration	0.2	0[b]	reflux	0.2	0
Oxide Dissolution	8.2	70	water	27.2	19.0
Non-Combustible Leaching	1.8	70	water	5.8	4.0
Metallography	0	70	water	0.1	0.1
ATLAS	8.6	70	water	28.8	20.2
Total	191.0			379.9	188.9

[a] Water refers to a water scrubber; OH to a caustic scrubber. Reflux refers to a reflux condenser.

[b] Condensers are considered integral parts of these processes, rather than control devices. Therefore, there is no associated control efficiency used to calculate uncontrolled emissions.

4.0 REFERENCES

Foxx, Charles, May 1993. Personal Communication. Los Alamos National Laboratory.

Hayes, Tim, February 1993. Personal Communication. Los Alamos National Laboratory.

PEI Associates, Inc., 1989a. *Toxic Air Pollutant Emissions Inventory.* Prepared for EM-8, Los Alamos National Laboratory. Arlington, TX.

PEI Associates, Inc., 1989b. *Process Emissions Rates, Plutonium Processing Facility, Area 400 Ventilation Exhaust, Technical Area 55.* Prepared for Los Alamos National Laboratory. Arlington, TX.

Radian Corporation, 1992. *EPCRA Section 313 1991 Release Estimates for Los Alamos National Laboratory.* Sacramento, CA.

U.S. Environmental Protection Agency, 1991. *Toxic Chemical Release Inventory Questions and Answers.* EPA 560/4-91-001. Washington, DC.

40 CFR, Part 372, 1991. Code of Federal Regulations, Title 40, Part 372, Office of the Federal Register. Washington, DC.

APPENDIX A

1992 TOXIC INVENTORY RELEASE FORM (FORM R)

EPA
United States Environmental Protection Agency

FORM R TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

WHERE TO SEND COMPLETED FORMS:
1. EPCRA Reporting Center, P.O. Box 3348, Merrifield, VA 22116-3348, ATTN: TOXIC CHEMICAL RELEASE INVENTORY
2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision: [ ]

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

For EPA use only

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR

19 92

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 3 trade secret?
[ ] Yes (Answer question 2.2; Attach substantiation forms)
[X] No (Do not answer 2.2; Go to Section 3)

2.2 If yes in 2.1, is this copy: [ ] Sanitized [ ] Unsanitized

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

Name and official title of owner/operator or senior management official:

Signature:

Date Signed:

SECTION 4. FACILITY IDENTIFICATION

4.1

Facility or Establishment Name: Los Alamos National Laboratory

TRI Facility ID Number: 87545LSLMSLOSAL

Street Address:

City: Los Alamos

County: Los Alamos

State: New Mexico

Zip Code: 87545

Mailing Address (if different from street address): Los Alamos Area Office

City: Los Alamos

State: New Mexico

Zip Code: 87545

PUT LABEL HERE

EPA
United States Environmental Protection Agency

EPA FORM R

PART I. FACILITY IDENTIFICATION INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 4. FACILITY IDENTIFICATION (Continued)

4.2	This report contains information for: (Important: check only one)	a. [X] An entire facility	b. [ ] Part of a facility
4.3	Technical Contact	Name: Jean Dewart	Telephone Number (include area code): (505) 665-0239
4.4	Public Contact	Name:	Telephone Number (include area code):

		a.	b.	c.	d.	e.	f.
4.5	SIC Code (4-digit)	9711	NA				

		Latitude			Longitude		
4.6	Latitude and Longitude	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
		035	49	51	106	14	15

4.7	Dun & Bradstreet Number(s) (9 digits)	a. NA	b.
4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	a. NM0890010515	b. NA
4.9	Facility NPDES Permit Number(s) (9 characters)	a. NM0028355	b. NM0028576
4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)	a.	b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	[ ] NA U.S. Department of Energy
5.2	Parent Company's Dun & Bradstreet Number	[X] NA (9 digits)

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EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you complete Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
	7697-37-2
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
	Nitric Acid
1.3	Generic Chemical Name (Important: Complete **only** if Part I, Section 2.1 is checked "yes." Generic Name must be structurally descriptive.)
	NA

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)
	NA

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1	**Manufacture the toxic chemical:**	a. ☐ Produce b. ☐ Import	If produce or import: c. ☐ For on-site use/processin d. ☐ For sale/distribution e. ☐ As a byproduct f. ☐ As an impurity
3.2	**Process the toxic chemical:**	a. ☐ As a reactant b. ☐ As a formulation component	c. ☐ As an article component d. ☐ Repackaging
3.3	**Otherwise use the toxic chemical:**	a. ☐ As a chemical processing aid b. ☐ As a manufacturing aid	c. ☒ Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	03	(Enter two-digit code from instruction package.)

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United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 5. RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-SITE

			A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	☐ NA	B	0	
5.2	Stack or point air emissions	☐ NA	B	0	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
5.3.1	Stream or Water Body Name				
	Ephemeral Tributaries of the Rio Grande		0	M	NA
5.3.2	Stream or Water Body Name				
	NA		NA	NA	NA
5.3.3	Stream or Water Body Name				
	NA		NA	NA	NA
5.4	Underground injections on-site	☒ NA			
5.5	Releases to land on-site				
5.5.1	Landfill	☒ NA			
5.5.2	Land treatment/application farming	☒ NA			
5.5.3	Surface impoundment	☒ NA			
5.5.4	Other disposal	☒ NA			

☐ Check here only if additional Section 5.3 information is provided on page 5 of this form

Range Codes: A = 1 - 10 pounds B
C = 500 - 999 pou

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 5.3 ADDITIONAL INFORMATION ON RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-SITE

5.3	Discharges to receiving streams or water bodies (enter one name per box)	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.3.__	Stream or Water Body Name			
	NA	NA	NA	NA
5.3.__	Stream or Water Body Name			
	NA	NA	NA	NA
5.3.__	Stream or Water Body Name			
	NA	NA	NA	NA

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTW)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1 Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)
0	M

6.1.B POTW Name and Location Information

6.1.B.__ POTW Name		6.1.B.__ POTW Name	
NA		NA	
Street Address		Street Address	
City	County	City	County
State	Zip Code	State	Zip Code

If additional pages of Part II, Sections 5.3 and/or 6.1 are attached, indicate the total number of pages in this box [ ] and indicate which Part II, Sections 5.3/6.1 page this is, here. [ ]
(example: 1, 2, 3, etc.)

Range Codes: A = 1 - 10 pounds; B = C = 500 - 999 pounds

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2. ___ Off-site EPA Identification Number (RCRA ID No.): NA

Off-Site Location Name:

Street Address:

City: County:

State: Zip Code: Is location under control of reporting facility or parent company? ☐ Yes ☐ No

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1. M
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2. ___ Off-site EPA Identification Number (RCRA ID No.): NA

Off-Site Location Name:

Street Address:

City: County:

State: Zip Code: Is location under control of reporting facility or parent company? ☐ Yes ☐ N

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1. M
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

If additional pages of Part II, Section 6.2 are attached, indicate the total number of pages in th box ☐ and indicate which Part II, Section 6.2 page this is, here. ☐ (example: 1, 2, 3, etc.)

Range Codes: A = 1 - 10 pounds; C = 500 - 999 pou

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b: 1 C11; 2; 3; 4; 5; 6; 7; 8	7A.1c	7A.1d	7A.1e
W		1	100 %	Yes ☐ No ☒
7A.2a	7A.2b: 1 A03; 2; 3; 4; 5; 6; 7; 8	7A.2c	7A.2d	7A.2e
A		3	70 %	Yes ☐ No ☒
7A.3a	7A.3b: 1 A02; 2; 3; 4; 5; 6; 7; 8	7A.3c	7A.3d	7A.3e
A		3	75 %	Yes ☐ No ☒
7A.4a	7A.4b: 1 A03; 2; 3; 4; 5; 6; 7; 8	7A.4c	7A.4d	7A.4e
A		3	50 %	Yes ☐ No ☒
7A.5a	7A.5b: 1 NA; 2; 3; 4; 5; 6; 7; 8	7A.5c	7A.5d	7A.5e
NA			%	Yes ☐ No ☐

If additional copies of page 7 are attached, indicate the total number of pages in this box ☐ and indicate which page 7 this is, here. ☐ (example: 1, 2, 3, etc.)

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Toxic Chemical, Category, or Generic Name: NITRIC ACID

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[X] **Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.**

Energy Recovery Methods [enter 3-character code(s)]

1 [ ] 2 [ ] 3 [ ] 4 [ ]

SECTION 7C. ON-SITE RECYCLING PROCESSES

[X] **Not Applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.**

Recycling Methods [enter 3-character code(s)]

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ]

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 87545LSLMSLOSAL

Chemical Category or Generic Name: NITRIC ACID

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

All quantity estimates can be reported using up to two significant figures.		Column A 1991 (pounds/year)	Column B 1992 (pounds/year)	Column C 1993 (pounds/year)	Column D 1994 (pounds/year)
8.1	Quantity released *	320	190	200	200
8.2	Quantity used for energy recovery on-site	0	0	0	0
8.3	Quantity used for energy recovery off-site	0	0	0	0
8.4	Quantity recycled on-site	0	0	0	0
8.5	Quantity recycled off-site	0	0	0	0
8.6	Quantity treated on-site	730	190	200	200
8.7	Quantity treated off-site	0	0	0	0
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)	0			
8.9	Production ratio or activity index	0.3			

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	NA	a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

		YES	NO
8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)		X

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

APPENDIX B

STACK EMISSIONS CALCULATIONS

Los Alamos National Lab
1992 Nitric Acid Usage

Process	Room	Usage pounds	Control %	Control Type	Controlled Emission Factors HNO3	Controlled Emission Factors NO	Controlled Emission Factors NO2	Controlled Emissions (lb/yr) HNO3	Controlled Emissions (lb/yr) NO	Controlled Emissions (lb/yr) NO2	Uncontrolled Emissions (lb/yr) HNO3	Uncontrolled Emissions (lb/yr) NO	Uncontrolled Emissions (lb/yr) NO2	Differenc HNO3 lb/yr
Waste Immobilization	401	45	50	water	0.0135	0	0	0.3	0.0	0.0	0.6	0.0	0.0	0.30
Cascade Dissolution	401	208	70	water	0.0014	0.00117	0.00307	0.3	0.2	0.6	1.0	0.8	2.1	0.68
Cascade Dissolution	420	1430	70	water/OH	0.0564	0.0099	0.095	80.7	14.2	135.9	268.8	47.2	452.8	188.19
Oxide Leach	401	0	70	water	0.0014	0.00117	0.00307	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Evaporator	401	7100	0	condenser	0.0155	0.00124	0.0034	110.1	8.8	24.1	110.1	8.8	24.1	0.00
Alpha Counting	116	13	0	none	0	0.03125	0.09375	0.0	0.4	1.2	0.0	0.4	1.2	0.00
Residue Leaching	209	77	0	reflux	0.002999	0.015	0.041	0.2	1.2	3.2	0.2	1.2	3.2	0.00
Scrap Dissolution	209	400	50	reflux/OH	0.0069	0.006574	0.016065	2.8	2.6	6.4	5.5	5.3	12.9	2.76
Anion Exchange	all	9038	0	none	--	--	--	0.1	0.0	0.0	0.1	0.0	0.0	0.00
ICP	106	13	0	none	0	0.01	0.03	0.0	0.1	0.4	0.0	0.1	0.4	0.00
CEPOD Dissolution	420	94	70	water	0.0135	0	0	0.3	0.0	0.0	1.1	0.0	0.0	0.74
MPD	401	319	75	condenser	0.0752	0.0099	0.095	24.0	3.2	30.3	96.0	12.6	121.2	71.97
OH Cake Dissolution	401	81	0	reflux	0.0138	0.00692	0.0189	1.1	0.6	1.5	1.1	0.6	1.5	0.00
OH Cake Dissolution	409	75	0	reflux	0.0138	0.00692	0.0189	1.0	0.5	1.4	1.0	0.5	1.4	0.00
Filtrate Concentration	209	15	0	reflux	0.0155	0.00124	0.0034	0.2	0.0	0.1	0.2	0.0	0.1	0.00
Oxide Dissolution	420	592	70	water	0.0138	0.015	0.041	8.2	8.9	24.3	27.2	29.6	80.9	19.06
Non-Combustible Leaching	420	1252	70	water	0.0014	0.00117	0.00307	1.8	1.5	3.8	5.8	4.9	12.8	4.09
Metallography	115	10	70	water	0.0135	0	0	0.0	0.0	0.0	0.1	0.0	0.0	0.08
ATLAS	409	626	70	water	0.0138	0.015	0.041	8.6	9.4	25.7	28.8	31.3	85.6	20.16
GRAND TOTAL		21387						190.99	23.59	161.80	379.86	57.20	480.27	188.87
-CONCENTRATING PROCESSES		-7115												
REVISED TOTAL		14272												

Stack Emissions Speadsheet Documentation

This documentation explains the steps in the Quattro Pro spreadsheet (HNO3.WQ1) used to calculate emissions from the Plutonium Processing Facilty

COLUMN

Process	Two of these processes are new for 1992.
Room	Room where each process occurs. Some processes occur in two separte rooms with different controls.
1992 Usage	Specific usages supplied by TA-55 personnel.
Control % and Control Type	Control efficiencies and corresponding control devices at each process. Control efficiencies are from PEI, 1989b. Control devices were specified by TA-55 personnel. Control efficiencies for reflux and other condensors are not listed because the condensors are an integral part of processes and are not considered control devices.
Controlled Emission Factor HNO_3	For the most part, emission factors were taken from PEI, 1989b. If a process does not have a specific emission factor developed from source test data, the emission factor from a similar process is used. This is noted in the body of this report where appropriate. For some processes that do not have an emission factor (generally those at room temperature), the percent of nitric acid that evaporates is reported. This is also noted in the body of the text. Though not shown on the hard copy, the spreadsheet also contains emission factors for NO and NO_2.
Controlled Emissions (lb/yr)	Emissions in these three columns are calculated by multiplying usages by emission factors. The anion exchange emissions spreadsheet provides emissions for anion exchange.
Uncontrolled Emissions (lb/yr) HNO_3	Controlled HNO_3 emissions are divided by (1 - control efficiency) to obtain uncontrolled emissions.
Difference HNO_3 (lb/yr)	The amount of treated nitric acid is the difference between controlled and uncontrolled nitric acid emissions.

APPENDIX C

ANION EXCHANGE EMISSIONS AND REFERNCES

Emissions from Anion Exchange
(ALL MOLES IN THIS CALCULATION ARE G-MOLES, NOT LB-MOLES)
Conservatively assume that HNO3 displaces an equal volume of air saturated with HNO3

STEP				
1	usage (lb)=	9038		
2	specific gravity=	1.42		
3	usage (cm3) = displaced air =	2893086		
4	ambient pressure=	786.78	mbar =	590.13 mm Hg
5	ambient temperature=	18	C =	291.15 K
6	R =	83140000	g * cm2 /sec2 / g-mol / K	
7	volume of mole air = nRT/P =	30766.17	cm3 =	33.10 ft3
8	HNO3 partial pressure=	3	mm Hg	
9	molecular weight of HNO3=	63.012	g/g-mole	
	Concentration (y) of HNO3 in air is the partial pressure/total pressure:			
10	P_1 =	3	y =	0.01 moles HNO3/mole air
11	P =	590.14		
12	Displaced air (cm3) =	2893086		
13	Moles displaced air =	94.03		
14	Moles HNO3 in displaced air =	0.48		
15	HNO3 emitted (lbs) =	0.07		

Anion Exchange Speadsheet Documentation

This documentation explains the steps in the Quattro Pro spreadsheet (ANION.WQ1) used to calculate emissions from anion exchange.

STEP

1. Usage is from the stack emissions spreadsheet (HNO3.WQ1).

2. Specific gravity (s.g.) for 15.99 M (close to 15.6 M, the reported concentration) nitric acid is taken from the Handbook of Tables for Applied Engineering Science.

3. Usage in cm^3 is converted from usage in pounds:

   usage (lbs) × kg/2.2 lb. × ℓ/(s.g.) kg × 0.001 m^3/ℓ × $(100\ cm/m)^3$ = usage (cm)

4. Ambient pressure is the pressure at 2260 m, the altitude of Los Alamos according to Climates of the States. Pressure at 2600 m is extrapolated from pressures at both 2000 m and 2500 m (from CRC's Handbook of Chemistry and Physics), and then averaged for the ambient pressure in this spreadsheet:

   P_{2600} = average of (2260 m × P_{2000} m/2000 m, 2260 m × P_{2500}/2500 m)

5. The temperature of the Plutonium Processing Facility is controlled near 65°F (~18-20°C).

6. R (gas constant) is taken from Transport Phenomena.

7. The volume of air per mole of air is calculated using the ideal gas law and the constants in steps 4, 5 and 6:

   V/mole = RT/P

8. The partial pressure of ~70% nitric acid at 20°C is taken from Perry's Chemical Engineers' Handbook.

9. The molecular weight of HNO_3 =

   H: 1.008
   N: 14.007
   O: 15.999 × 3
   63.012 g/g-mole

10. Partial pressure (P_i) of nitric acid is the contribution of nitic acid to the total pressure (P):

11. $P_i = P \times y_i$; y_i = vapor mole fraction of nitric acid
$y_i = P_i/P$

12. Volume of displaced air is from step 3.

13. Moles of displaced air = air volume (step 12) ÷ volume per mole of air (step 7).

14. Moles of HNO_3 in displaced air = y_i (step 10/11) × moles of air (step 13).

15. Pounds of HNO_3 emitted = moles emitted (step 14) × molecular weight (step 9).

REFERENCES

Bird, R.B., W.E. Stewart, and E.N. Lightfoot, 1960. *Transport Phenomena*. John Wiley & Sons, New York.

Bolz, R.E, and G.L. Tuve (ed), 1970. *Handbook of Tables for Applied Engineering Science*. 2nd Edition. CRC Press, Cleveland, OH.

Gale Research Company, 1980. *Climates of the States*. 2nd Edition. Book Tower, Detroit.

Perry, R.H., and D.W. Green (ed), 1984. *Perry's Chemical Engineer's Handbook*. 6th Edition. McGraw-Hill Book Company, New York.

Smith, J.M., and H.C. Van Ness, 1975. *Introduction to Chemical Engineering Thermodynamics*. Third Edition. McGraw-Hill Book Company, New York.

Weast, R.C. (ed), 1985. *Handbook of Physics and Chemistry*. 66th Edition. CRC Press, Boca Raton, FL.

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT
(FIFRA)

MULTI-MEDIA COMPLIANCE INVESTIGATION

LOS ALAMOS NATIONAL LABORATORY
Los Alamos, New Mexico

Facility Address

United States Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Investigation Dates

August 2 through 12, 1993

Lead Investigator

John Ellison, Environmental Investigations Specialist
NEIC

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APPENDICES

A 1992 and 1993 LANL Pesticide Inspections
B Notice of Inspection

MEDIA REPORT

At the request of EPA Region 6, NEIC conducted a multi-media compliance investigation of the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. This report, one of a series, addresses investigation findings and discusses Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) issues and compliance at LANL.

REGULATORY SUMMARY

A LANL subcontractor, Johnson Controls, Inc. (JCI), is responsible for applying pesticides and maintaining a pesticide storage area regulated by FIFRA. Pesticide storage, handling, use, and disposal requirements are specified on the pesticide label. Additionally, restricted use pesticides have recordkeeping requirements. Label directions for pesticide storage usually contain warnings about storing pesticides next to foodstuffs, avoiding heat, and keeping the container closed when not in use. A few labels warn about storing insecticides and herbicides together.

EPA-recommended procedures for pesticide storage include location, security, protection from the weather, ventilation, warning signs, and general housekeeping. Location was evaluated on the potential for environmental effect of stored pesticides if uncontrolled release to the environment occurred. Security was evaluated on fencing, locks, and separation of pesticides from other activity. Shelter was evaluated on protection of pesticides from the weather and the adequacy of ventilation. Warning signs were evaluated for adequacy to advise of the contents and hazardous nature of pesticide storage areas. General housekeeping was evaluated on separation of pesticides in a neat and orderly fashion according to the general class or type of pesticide.

The New Mexico Department of Agriculture inspected the LANL pesticide program on May 1, 1992 and July 29, 1993 [Appendix A]. No deficiencies were noted in either inspection. A JCI compliance report for 1992 was attached to the 1992 state inspection in Appendix A.

ON-SITE INSPECTION SUMMARY

Credentials were presented to Jerry L. Bellows, Area Manager at LANL. Following a general discussion of LANL environmental issues, the facility inspection ensued. Later in the inspection, a more detailed inspection of pesticide activities was conducted. Records/documents associated with regulated pesticide activities were also reviewed. Before the pesticide inspection began, a Notice of Inspection was issued to the facility [Appendix B]. A summary of on-site activities, inspection observations, and records review is provided below.

Storage

Pesticides were stored in building 29 at TA-60, which was built and designed as a pesticide storage facility. Access to the building is through a side door and an overhead garage-type door. Access doors were observed closed and locked, and warning signs were posted on outside entrances to the building. Although the building was closed, only a slight pesticide odor was observed inside and ventilation seemed to be adequate. Insecticides, avicides, and rodenticides were stored on shelves at one end of the building, and herbicides were stored in other parts of the building. The contents of two containers of herbicide had been transferred to other containers for storage and the brand name of each pesticide, A-4-D (a 2,4-D herbicide) and Phenomec 2+1 Turf Herbicide, respectively, had been written on the new containers, but no label was attached to either new container. After discussing this with JCI and

LANL personnel, a label was attached to each unlabeled container later on August 10, 1993, the day the pesticide storage area was inspected.

Mixing/Loading/Cleanup

Mixing is done in spray rigs. The amount of pesticide required for a spray rig load is measured directly into the spray rig or into a service container. Then, as needed, the contents of a service container are added to the spray rig and diluted, as necessary. Rinsate from pesticide containers, service containers, and spray rigs is sprayed out over appropriate areas or collected in a drum and transferred to the waste management group (EM-7). LANL had two licensed commercial pesticide applicators and six licensed operators/ servicemen for pesticide operations at LANL.

Container Disposal

LANL pesticide applicators indicated that all containers larger than 5 gallons, and unrinseable containers are sent to EM-7 at TA-54 for disposal. Rinseable 5-gallon and smaller containers are disposed of on-site by EM-7 at the Area J landfill for nonhazardous solid wastes.

Application Records

Application records were reviewed for 1993. No restricted use pesticide had been applied in 1993. There were two restricted use pesticides in the pesticide storage area, an avicide (Avitrol) and a rodenticide (Tablet R), but neither had been applied in 1993. Application records are kept for all pesticide applications.

Restricted use pesticides are ordered by a licensed commercial pesticide applicator at LANL, but the purchasing agent is not a licensed applicator and outside vendors have never checked for licenses, according to LANL personnel.

SUMMARY OF FINDINGS

AREAS OF NONCOMPLIANCE

Based on inspection observations, discussions with LANL personnel, and review of documentation, no areas of noncompliance of the FIFRA requirements were identified during the investigation.

AREAS OF CONCERN

The following areas of concern were identified during the NEIC investigation. Areas of concern are inspection observations of potential problems that could result in noncompliance with regulatory requirements or adverse environmental impact.

- Two different LANL groups (EM-7 and JCI) handle disposal of pesticide containers. Based on size and rinseability of the container, it is either landfilled on-site or managed by EM-7. However, label directions may require specific disposal methods that JCI, with specific pesticide training, is aware of, but EM-7 may not be.

- The request for purchase of restricted use pesticides is made by a certified pesticide applicator, but the actual purchase is made through procurement channels by purchasing personnel. Outside vendors have never checked for restricted use pesticide licenses, according to LANL personnel. This would be a potential area of noncompliance for the outside vendors.

APPENDICES

A 1992 and 1993 LANL Pesticide Inspections
B Notice of Inspection

APPENDIX A

1992 AND 1993 LANL PESTICIDE INSPECTIONS

Johnson Controls World Services Inc
Laboratory Support Division
Post Office Box 50
Los Alamos, NM 87544-0050

JOHNSON CONTROLS

D A T A D E L I V E R A B L E T R A N S M I T T A L

May 13, 1993
JENV.93-130

Los Alamos National Laboratory
Los Alamos, NM 87544

ATTN: DISTRIBUTION

We are submitting herewith the following Data Deliverable as required by Subcontract #P-X86-Y7575-1:

D.D. IDENTIFIER	66 TITLE	REMARKS
1.5-DD-022	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Compliance and Reporting	JHSE, report originator, due annually

Very truly yours,

Michael F Brown for.

Joe J. Lopez
Manager, JHSE

DISTRIBUTION:
J. J. Lopez, JHSE
M. F. Brown, JENV
P. R. Kimbrough, MAT-7, MS P274 (w/o attachments)
R. Reines, EM-DO, MS K491 (w/o attachments)
S. R. Rae, EM-8, MS K490
M. R. Alexander, EM-8, MS K490
M. L. Esperance, MDSG
Communications Department, ACOM (w/o attachments)
JENV file (w/o attachments)
Reading file

Laboratory Support Division
P.O. Box 50
Los Alamos, NM 87544-0001

JOHNSON CONTROLS

DATA DELIVERABLE #1.5-DD-022: FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT COMPLIANCE AND REPORTING FOR CALENDAR YEAR 1992.

All aspects of JCI pest control activities, categorized below, strictly adhere to the following mandates: FIFRA requirements under 40 CFR; New Mexico Pesticide Control Act; SPI 12-04-013 "FIFRA Compliance;" LANL Pest Control Policy; individual pesticide labels; and individual pesticide Material Safety Data Sheets(MSDS).

Safety

Personal protective equipment, at least the equivalent of that specified by the label, is provided to anyone handling the pesticide. Material Safety Data Sheets(MSDS) for each product are available for any JCI employee, and as per JCI policy, the MSDS is on site during any use of a pesticide. Laundry service and showers are made available and used by employees after handling pesticides. All use of pesticides is consistent with label directions, including those directions relating to safety. Operators and applicators undergo blood cholinesterase level monitoring, when appropriate.

Training

Commercial Applicators and Operators are re-certified each year by the New Mexico Department of Agriculture(NMDA). See attachment 1 for current list of certified employees. Sixteen hours of continuing education are provided annually to all persons handling pesticides.

Storage

Pesticides and all application equipment except ground rigs are stored at the Pesticide Shed (TA-60-29) on Sigma Mesa. The building stays locked when employees are not on site, and access is limited. It is visited every working day by a Roads & Grounds employee. The building has a satellite hazardous waste storage area inside for wastes that determined to be hazardous. It has

appropriate warning signs, emergency eye wash and shower, explosion proof lighting, spill equipment and containment, and inventory is checked regularly. See attachment 2, current Chemical Inventory. The facility recently delivered to LANL/EM-8 a stormwater pollution prevention plan. The shed and records are subject to routine inspections by JENV personnel.

Handling

Appropriate personal protective equipment, as determined by the label (or by the certified applicator, if a greater level of protection is specified), is worn by anyone handling pesticides. Only certified applicators or operators under their supervision are allowed to handle pesticides.

Application

Application equipment is inspected annually by NMDA, and is calibrated regularly. Anemometer data and anti-drift additives are used to control drift where appropriate. All pesticide application is conducted under the supervision of a certified commercial applicator, and is subject to inspection by JENV personnel. Application records are completed for each application, and are available for review no later than 24 hours following the completion of the application. The records are kept on file for a period of three years. See attachment 3 for an example of a pesticide application record.

Disposal

Pesticide waste and containers are disposed of in a manner consistent with those instructions given on the label. Rinsate which cannot be used as mixing water, as per the LANL Pest Control Policy, is stored in the waste storage drum located in the Pesticide Shed. This drum is inspected each working day, and when necessary, JENV coordinates with LANL EM-7 to dispose of this drum. A policy intended to be added to the JCI Health, Safety & Environmental manual is in its final stages before being distributed. This policy will set forth strict procedures for container tracking and disposal.

Oversight

Pesticide program oversight is provided by JENV personnel, and JENV has representation on the LANL Pest Control Oversight Committee. JENV has revised SPI 12-04-013 and is waiting for it to be distributed by JCI's communications department. Annual inspections of the pesticide program are conducted by NMDA. See attachment 4.

COMMERCIAL PESTICIDE APPLICATORS LICENSE

CAT: 3A,3B,6B

LIC. # 0392 EXPIRES: 10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
HOLMSTEN, EARL
MDSG, MS A199, PO BOX 50
LOS ALAMOS, NM 87544

COMMERCIAL PESTICIDE APPLICATORS LICENSE

CAT: 3A,3B,6B,7A,7B

LIC. # 0238 EXPIRES: 10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
L'ESPERANCE, MANUEL J.
P.O. BOX 50
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B,7A,7B

LIC. # 1683 EXPIRES: 10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
ORTIZ, MARTIN C.
P.O. BOX 50
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B,7A,7B

LIC. # 2186 EXPIRES: 10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
GONZALES, RICHARD F.
P.O. BOX 50
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B

LIC. # 1781 EXPIRES: 10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
JACQUEZ, FRANK
P.O. BOX 50 MDSG MS A199
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B,7A,7B

LIC. # 1214 EXPIRES: 10/31/1993

JOHNSON CONTROLS WORLD SERVICES
MEDINA, JIMMY
P.O. BOX 50
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B

LIC. # 1734 EXPIRES:10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
LOPEZ, FRED
P.O. BOX 50, MDSG MS A199
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B

LIC. # 1701 EXPIRES:10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
MARTINEZ, GABE M.
P.O. BOX 50, MDSG MS A199
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B,7A,7B

LIC. # 2183 EXPIRES:10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
MAESTAS, CHRIS L.
P.O. BOX 50
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B

LIC. # 1300 EXPIRES:10/31/1993

JOHNSON CONTROLS WORLD SEVICES INC.
LEYBA, EPIMENIO
P.O. BOX 50, MDSG MS A199
LOS ALAMOS, NM 87544

BUREAU OF PESTICIDE MANAGEMENT
OPERATOR/SERVICEMAN LICENSE

CAT: 3A,3B,6B,7A,7B

LIC. # 2184 EXPIRES:10/31/1993

JOHNSON CONTROLS WORLD SERVICES INC
FRAZIER, THOMAS J.
P.O. BOX 50
LOS ALAMOS, NM 87544

CHEMICAL INVENTORY

SURVEYOR: Manny L'Esperance DATE: 01/21/93 COST CENTER: 155

LOCATION: TA: 60 BLDG: 29 ROOM #: OTHER DESIGNATION: All

Cas No.	Chemical Name	Mfr	Lctn	MDSD	On Hand*	Hzd Class	Use/Year*
	INSECTICIDE (STRUCTURAL)						
_____	Search Out	Nat'l Chem Search	60/29	Yes	372 oz	C	_____
_____	Dithene F-45	Rchar Hass	60/29	Yes	75 gal	C	_____
_____	Dursban L.O.	Dow Chem Co.	60/29	Yes	1.35 oz	C	_____
	GROWTH REGULATORS (HERB)						
_____	Gro Tard II	Nat'l Chem Search	60/29	Yes	7 gals	C	_____
	GROWTH REGULATORS (INSECT)						
_____	Gencor 5E	Zoecon Corp	60/29	Yes	7.5 mil	W	_____
	AVITICIDE						
_____	Avitrol Bait	Avitrol	60/29	Yes	35.5 lbs	C	_____
	RODENTICIDE						
_____	MAKI	Lipha Tech	60/29	Yes	85-1.5 oz	C	
_____	Tablet R	Deqesh	60/29	Yes	3 can	D	_____
	CLEANERS						
_____	ChemSearch Concentrate	Nat'l Chem Search	60/29	Yes	20 gal	W	_____
_____	Bleach	Labco Inc.	60/29	Yes	4 gal	C	_____
_____	General Purpose Cleaner	Chemsearch	70/1501	Yes		_____	_____
	DEODORANTS						
_____	Liguid Malgon	Nat'l Sanitary	60/29	Yes	4.5 gal	C	_____
	OTHER						
_____	Mulch Magic	Becker Underwood	60/29	Yes	4 gal	C	_____
_____	Prunning Sealer	Ortho	60/29	Yes	26 oz	D	_____
_____	Moth Balls	Enoz	60/29	Yes	3 lbs	C	_____
_____	Bird Proof	Bird X Inc.	60/29	Yes	2 gals	C	_____
_____	Bio Cat Soil Stabilizer	Soil Seal Corp	70/1501	Yes	195 gal	C	_____
_____	PetroMalt	St. Jon Lab	60/29	Yes	288 oz.	C	_____
_____	Foam Machine	InstaFoam Inc.	60/29	Yes	1 box	C	_____

CHEMICAL INVENTORY

SURVEYOR: Manny L'Esperance DATE: 01/21/93 COST CENTER: 155 (17-25?) 116

LOCATION: TA: 60 BLDG: 29 ROOM #: OTHER DESIGNATION: All

Cas No.	Chemical Name	Mfr	Lctn	MDSD	On Hand*	Hzd Class	Use/Year*
	HERBICIDE						
_____	A-4-D	RiverDale Chem	60/29	Yes	274 gal	D	_____
_____	Telar	Dupont	60/29	Yes	13 lbs	W	_____
_____	Phenomec 2 + 1	Gordons	60/29	Yes	1.5 gal	C	_____
_____	Round Up	Monsanto	60/29	Yes	15 gal	W	_____
_____	Confront	Dow Elanco	60/29	Yes	2 samples	W	_____
_____	Velpar L	Dupont	60/29	Yes	47.5 gal	D	_____
	Adjuvant						
_____	Natcotrol	Setre Chem Co	60/29	yes	49.5 qts	C	_____
_____	Blazon	Millicen Chemical	60/29	Yes	23 gal	C	_____
_____	X-77 Spreader	Ortho	60/29	Yes	10 gal	D	_____
_____	Natcotrol II	Setre Chem Co.	60/29	Yes	18 qts	C	_____
	INSECTICIDE (GROUNDS)						
_____	Stem Ax	Nat'l Chem Search	60/29	Yes	120 lbs	D	_____
_____	Diazinon Granuales	American	60/29	Yes	140 lbs	C	_____
_____	Diazinon 4E	Van Waters & Rodgers	60/29	Yes	13.5 gal	W	_____
_____	P-O-W	Chemsearch	60/29	Yes	33-16 oz ea	C	_____
_____	Orthene	Chevron Chem Co.	60/29	Yes	4 lbs	C	_____
	Adjuvant						
_____	Soil Wetting Agent	Nat'l Chem Search	60/29	Yes	50 gal	C	_____
_____	Volic oil Spray	Ortho	60/29	Yes	2 qts	C	_____
_____	Promonite	Nat'l Chem Search	60/29	Yes	7 gal	C	_____
_____	Turf Tonic	Nat'l Chem Search	60/29	Yes	20 gal	C	_____
	INSECTICIDE (STRUCTURAL)						
_____	FicCam W	NorAm Chem Co.	60/29	Yes	4 lbs	W	_____
_____	Tempo	Mobay	60/29	Yes	30 gm	C	_____
_____	MaxForce	Cyanamid	60/29	Yes	109 trays	C	_____
_____	Pro Control Fogger	Micro Gen	60/29	Yes	72 oz	C	_____
_____	PT 110 Resmithrin	Whitmire	60/29	Yes	37.5 lbs	W	_____
_____	PT 250 Baygon	Whitmire	60/29	Yes	27 lbs	W	_____
_____	BayGon Bait	Mobay Corp.	60/29	Yes	1 lb	C	_____
_____	Inspector	Whitmire	60/29	Yes	18 oz	C	_____

Pan Am World Services, Inc.
P.O. Box 50 Los Alamos
New Mexico 87544

Commercial Applicator: License No. 0238

Scheduled Application Dates 11 / 5 / 92 thru ___ / ___ / ___

LOCATION: TA- 03 BUILDING 26 / OTHER [illegible]

CHEMICAL INFORMATION:*

Trade Name: Tempo E.P.A. Registration No.: 3125-380

Pesticide Type: w/p Target Pest: Bugs [illegible]

Application Method: spray

*Pesticide labels, Material Safety data sheets available on request. Contact: Pan Am Grounds Section (7-6111)

APPROVALS:

[signature] 11/5/92 (Eng-6 Specialist) [signature] 11/5/92 (Eng-5 Coordinator) [signature] 11/5/92 (Pan Am Supervisor)

[signature] 11/5/92 (*Building Manager)

*Required at time of application, if Spraying within 50' of building.

APPLICATION INFORMATION:

Type of Area Treated: Cracks & [illegible] Square Footage: —

Application Rate: 4 oz per Acre — per 1000 sq. ft.

Pesticide to Water Ratio: 4 [illegible] oz per 1 gal. water.

Machine Used: PN No. [illegible] Other Description Sprayer

Date 11 / 5 / 92 Times: 5:00 thru 5:30

WEATHER CONDITIONS:

Temperature: ___ Humidity: ___ Wind Speed: ___

Wind Direction: ___ Other: ___

Comments: [illegible]

As the applicator of the above-mentioned pesticide, I hereby certify that the information above is true to the best of my knowledge.

Signature: [signature] Z no. 100278

BUILDING MANAGER

NEW MEXICO DEPARTMENT OF AGRICULTURE
DIV. OF AGRICULTURAL AND ENVIRONMENTAL SERVICES
BUREAU OF PESTICIDE MANAGEMENT
BOX 30005, DEPT. 3AQ, LAS CRUCES, NM 88003
Ph: (505) 646-2133/In State (800) 432-5310

Inspection Report No. 16-[illegible]
Date 5/1/92 Hour [illegible] AM/PM
B. Rai[illegible]
NMDA Employee

NOTICE OF PESTICIDE INSPECTION

(I) REASON FOR INSPECTION: To determine compliance with the Federal Insecticide Fungicide, and Rodenticide Act, as amended and/or the New Mexico Pesticide Control Act (NMSA 1978) in the following circumstances:

[ ] Inspection of sites and/or collection of samples where pesticides are being, or have been, used.

[X] Inspection and/or sampling of pesticides or devices (including attendant packaging and/or labelling) that are held at manufacturing, distribution, or sales locations, or in transport within or through the state.

[X] Inspection of records pertaining to pesticides and/or collection of copies thereof.

(II) VIOLATION SUSPECTED (Except as noted, no specific violation is suspected. It is possible that violations may be disclosed during, or as a result of, this inspection):

None

(III) CONSENT TO ENTER - VOLUNTARY CONSENT NECESSARY TO ENTER FOR INSPECTION AND SAMPLING: The undersigned hereby voluntarily consents to an inspection of Johnson Controls, of which I am owner, agent, or person-in-charge, for the specific purpose of gathering information and/or samples in connection with the administration and enforcement of the Federal Insecticide, Fungicide and Rodenticide Act, as amended, and/or the New Mexico Pesticide Control Act (NMSA 1978).

The purpose of this inspection has been explained to me and I understand I have the right to refuse consent to this entry.

5/1/92
Date

Signature

White - Inspected Copy Yellow - Record Copy Pink - Inspector Copy

9009-74-88

Attachment 4

NEW MEXICO DEPARTMENT OF AGRICULTURE
DIVISION OF AGRICULTURAL AND ENVIRONMENTAL SERVICES
BUREAU OF PESTICIDE MANAGEMENT
Box 3A, Las Cruces, NM 88003
Telephone: AC 505/646-2133

RECORDS INSPECTION REPORT

Inspector _____ Date _____ Inspection Report No. _____

Firm Name _____
Address _____
Name of Inspected _____

Regulatory Order No. 5, Section 8. RECORDS: Each commercial applicator, non-commercial applicator, and public applicator shall keep records for pesticides applied by them or persons under their direct supervision which shall include the following (listed in the order they appear in Regulatory Order No. 5):

Recorded	Not Recorded		
(X)	( )	(1)	Name of the person for whom the pesticide was applied
(X)	( )	(2)	Target pest(s)
(X)	( )		and crop or site
		(3)	When pesticide was applied:
(X)	( )		Year
(X)	( )		Month
(X)	( )		Day
(X)	( )		Time of day
(X)	( )	(4)	Brand name or common name of the pesticide
(X)	( )		EPA registration number of the pesticide
		(5)	At the time pesticide was applied (if applicable):
(X)	( )		Wind direction
(X)	( )		Estimated wind velocity
(X)	( )		Temperature at application site
(X)	( )	(6)	Concentration of the pesticide(s) applied
			Example: pounds, ounces, or pints of pesticide formulation per gallon
(X)	( )	(7)	Volume of use-dilution preparation applied if applied in categories 1A, 1B, 2, 3A, 3B, 5, 6, 7D, and 8
(X)	( )	(8)	Location of land or city address to which pesticide was applied
( ) N/A	( )	(9)	If applicable, all aircraft 'N' numbers
(X)	( )	(10)	Name and address of the business or agency
(X)	( )		Name of the individual making the application

Compliance (YES)	(NO)	
(X)	( )	Have records completed and available to the NMDA within 24 hours after the pesticide was applied.
(X)	( )	Keep application records for a period of 2 years from the date of the application of any pesticides.
( )		No Deficiencies noted

The undersigned acknowledges that the deficiencies noted above are violations of the New Mexico Pesticide Control Act.

Report Acknowledged _____

9009-32-87

NEW MEXICO DEPARTMENT OF AGRICULTURE
DIVISION OF AGRICULTURAL & ENVIRONMENTAL SERVICES
BUREAU OF PESTICIDE MANAGEMENT
Box 30005, Dept. 3AQ, Las Cruces, N.M. 88003-0005
Telephone: AC 505 / 646-2133

REPORT NO. 10295

INSPECTION REPORT

Inspector Rabe Date 5/1/92 Hour 8:30 am/pm
Type of Inspection:

Firm Name Johnson Controls
Address PO Box 50 Los Alamos NM 87120
Box No. or Street City State Zip

Name of Inspected

EXAMINATIONS GIVEN:

	Code	Score
General		
Law		
Category		
Term. Tech		

FEES COLLECTED: [ ] Cash [ ] Check No.

		No.	Amount
Lic.:	CPA		
	CO		
	PMC		
	DLR		
	NCA		
Equip Reinsp.			

		No.	Amount
Test:	CPA		
	CO		
	PMC		
	NCA		
	PA		
Manuals			

VIOLATIONS: Your are in violation of Article 76, Chapter 4, Section(s) _____ of the New Mexico Pesticide Control Act, NMSA 1978 Compilation, and/or Regulation No. _____.

[X] None

[ ] Vehicle ID
[ ] Records
[ ] Unregistered Pesticides
[ ] Illegal Use of Restricted-Use Pesticides
[ ] Use Inconsistant with the Label
[ ] Improper Disposal
[ ] Unlicensed Applicator
[ ] Unlicensed Operator/Serviceman
[ ] Unlicensed Dealer
[ ] Expired Temporary Permit
[ ] Improper Storage
[ ] Other

REMARKS: Conducted routine annual inspection of records & equipment. Records check indicates no deficiencies. Storage area locked labeled. Chemicals secured. Checked & OK 2 power sprayers. Disposal is proper. Safety equipment.

Report Acknowledged

9009-20-88

OFFICE — WHITE COPY INSPECTED — PINK COPY INSPECTOR — YELLOW COPY

JOHNSON CONTROLS WORLD SERVICES INC.

MEMORANDUM

TO: Dan McReynolds, Superintendent, MDSO

FROM: Manny L'Esperance, Supervisor, Area Maint., MDSG

==========

DATE: July 29, 1993 MEMO NUMBER: MDSO

RE: DEPARTMENT OF AGRICULTURE INSPECTION

The Department of Agriculture conducted their annual inspection of the pesticide program on 07/29/93. During the course of the inspection (3) ground rigs were certified including the new injection rig. Other items reviewed were records, procedures, and the storage facilities. No deficiencies were noted for this inspection period. Copies of the inspection records are attached for your files.

Manny L'Esperance

Attached: (1)
INSPECTION REPORT

CC: J. Richardson, JENV
E. Hoth, LANL, ENG-6

030 004267

NEW MEXICO DEPARTMENT OF AGRICULTURE
DIV. OF AGRICULTURAL AND ENVIRONMENTAL SERVICES
BUREAU OF PESTICIDE MANAGEMENT
BOX 30005, DEPT. 3AQ, LAS CRUCES, NM 88003
Ph: (505) 646-2133/In State (800) 432-5310

Inspection Report No. A 1511

Date 7-27-93 Hour 10:00 AM/PM

Meyer
NMDA Employee

NOTICE OF PESTICIDE INSPECTION

(I) REASON FOR INSPECTION: To determine compliance with the Federal Insecticide Fungicide, and Rodenticide Act, as amended and/or the New Mexico Pesticide Control Act (NMSA 1978) in the following circumstances:

[X] Inspection of sites and/or collection of samples where pesticides are being, or have been, used.

[ ] Inspection and/or sampling of pesticides or devices (including attendant packaging and/or labelling) that are held at manufacturing, distribution, or sales locations, or in transport within or through the state.

[X] Inspection of records pertaining to pesticides and/or collection of copies thereof.

(II) VIOLATION SUSPECTED (Except as noted, no specific violation is suspected. It is possible that violations may be disclosed during, or as a result of, this inspection): None, Routine inspection

(III) CONSENT TO ENTER - VOLUNTARY CONSENT NECESSARY TO ENTER FOR INSPECTION AND SAMPLING: The undersigned hereby voluntarily consents to an inspection of Johnson Controls, of which I am owner, agent, or person-in-charge, for the specific purpose of gathering information and/or samples in connection with the administration and enforcement of the Federal Insecticide, Fungicide and Rodenticide Act, as amended, and/or the New Mexico Pesticide Control Act (NMSA 1978).

The purpose of this inspection has been explained to me and I understand I have the right to refuse consent to this entry.

7-29-93
Date

Signature

White - Inspected Copy Yellow - Record Copy Pink - Inspector Copy

9009-74-88

NEW MEXICO DEPARTMENT OF AGRICULTURE
DIVISION OF AGRICULTURAL AND ENVIRONMENTAL SERVICES
BUREAU OF PESTICIDE MANAGEMENT
Box 3A, Las Cruces, NM 88003
Telephone: AC 505/646-2133

RECORDS INSPECTION REPORT

Inspector Meyer Date 7-29-93 Inspection Report No. A 1511

Firm Name Johnson Controls
Address Los Alamos NM
Name of Inspected Manny L'esperance

Regulatory Order No. 5, Section 8. RECORDS: Each commercial applicator, non-commercial applicator, and public applicator shall keep records for pesticides applied by them or persons under their direct supervision which shall include the following (listed in the order they appear in Regulatory Order No. 5):

Recorded	Not Recorded		
(X)	( )	(1)	Name of the person for whom the pesticide was applied- ~~being updated~~
(X)	( )	(2)	Target pest(s)
(X)	( )		and crop or site
		(3)	When pesticide was applied:
(X)	( )		Year
(X)	( )		Month
(X)	( )		Day
(X)	( )		Time of day
(X)	( )	(4)	Brand name or common name of the pesticide
(X)	( )		EPA registration number of the pesticide
		(5)	At the time pesticide was applied (if applicable):
(X)	( )		Wind direction
(X)	( )		Estimated wind velocity
(X)	( )		Temperature at application site
(X)	( )	(6)	Concentration of the pesticide(s) applied
			Example: pounds, ounces, or pints of pesticide formulation per gallon
(X)	( )	(7)	Volume of use-dilution preparation applied if applied in categories 1A, 1B, 2, 3A, 3B, 5, 6, 7D, and 8
(X)	( )	(8)	Location of land or city address to which pesticide was applied
( ) NA	( )	(9)	If applicable, all aircraft 'N' numbers
(X)	( )	(10)	Name and address of the business or agency being updated
(X)	( )		Name of the individual making the application

Compliance (YES)	(NO)	
(X)	( )	Have records completed and available to the NMDA within 24 hours after the pesticide was applied.
(X)	( )	Keep application records for a period of 2 years from the date of the application of any pesticides.
(X)		No Deficiencies noted

The undersigned acknowledges that the deficiencies noted above are violations of the New Mexico Pesticide Control Act.

Report Acknowledged [signature]

NEW MEXICO DEPARTMENT OF AGRICULTURE
DIVISION OF AGRICULTURAL & ENVIRONMENTAL SERVICES
Bureau Of Pesticide Management
Box 30005, Dept. 3AQ, Las Cruces, NM 88003-0005
PH: 505/646-2133 FAX: 505/646-3303

NO. A 1511

INSPECTION REPORT

Inspector Megan Date 7-29-93 Hour 10:00 am/pm

Firm Name Johnson Feed & Seed Service Inc

Address PO Box 50 Las Alamos NM 87544

Person Inspected Mary Livingston

Type of Inspection Not Qualified Recordkeep

VIOLATIONS:

[✓] None	[ ] Unreg/Misbranded Pesticide	[ ] Equipment
[ ] Use Inconsistent with Labeling	[ ] Delivery to Uncertified Person	[ ] Vehicle ID
[ ] Unlicensed _____	[ ] Storage/Display/Transp.	[ ] Worker Protection
[ ] Not Qualified	[ ] Disposal	[ ] End. Species
[ ] False/Fraudulent	[ ] Records	[ ] Groundwater Prot.
[ ] Aid/Abet/Conspire		[ ] Other-List Below

REMARKS:

Routine inspection. Inspected approximately [illegible] strikers to 3 ground rigs. Suggested fabricating a guard for the drive valve on the tailgate rig. Vehicles are used in the property rig and are not identified as Johnson Feed & Seed's. Inspection of storage disclosed some indicators that some waste that cannot be used for make-up water is treated as RCRA waste. The rinsate pad at the storage site does not drain [illegible] and is not designed or meant to [illegible] is being installed to capture [illegible] pesticide-containing waste.

Acknowledgement: [signature]

APPENDIX B

NOTICE OF INSPECTION

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT
NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
BUILDING 53, BOX 25227 DENVER FEDERAL CENTER
DENVER, COLORADO 80225

DATE July 30, 1993

Mr. Jerry Bellows, Director
Los Alamos National Laboratory
Los Alamos, New Mexico 87544

Dear Mr. Bellows:

At the request of EPA Region VI, the Environmental Protection Agency's National Enforcement Investigations Center (NEIC) and the New Mexico Environment Department (NMED) will conduct a multi-media compliance inspection at Los Alamos National Laboratory, commencing on August 2, 1993. This letter is your official inspection notification. The inspection is being conducted under the various EPA authorities granted under federal environmental laws and regulations, including but not limited to:

- Section 114(a) of the Clean Air Act, 42 U.S.C. § 7414(a)
- Section 308(a) of the Clean Water Act, 33 U.S.C. § 1318(a)
- Section 3007(a) of the Resource Conservation and Recovery Act, 42 U.S.C. § 6927 (a)
- Section 11(a) and (b) of the Toxic Substances Control Act, 15 U.S.C. § 2610(a) and (b)
- Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9604(e)
- Section 1445(a) and (b) of the Safe Drinking Water Act, 42 U.S.C. § 300j-4(a) and (b)
- Section 9 of the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136g

Margo Dusenbury and Kenna Yarbrough will lead a team of EPA and State investigators. They will be available at the outset of the inspection to brief you or your representatives on the purpose and scope of the investigation.

A list of records and documents needed for this inspection is attached. Your compliance with this request is mandatory, pursuant to EPA regulations and federal environmental statutes, including but not limited to:

- Section 114(a) of the Clean Air Act, 42 U.S.C. § 7414(a)
- Section 308(a) of the Clean Water Act, 33 U.S.C. § 1318(a)
- Section 3007(a) of the Resource Conservation and Recovery Act, 42 U.S.C. § 6927 (a)
- Section 11(a) and (b) of the Toxic Substances Control Act, 15 U.S.C. § 2610(a) and (b)
- Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9604(e)
- Section 1445(a) and (b) of the Safe Drinking Water Act, 42 U.S.C. § 300j-4(a) and (b)
- Section 8 of the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136f

Your cooperation with the NEIC/EPA Region 6/NMED team is appreciated. If you have any questions about the inspection, please contact me at (303) 236-5128.

Sincerely,

for

Charles R. Aschwanden, Esq.
Chief, Enforcement Specialist Office

Enclosure

cc: Sig Hecker, University of California
Joseph Vozella, DOE, Environmental Safety and Health
Joseph D. Winkle, Acting Regional Administrator, EPA Region 6

LOS ALAMOS NATIONAL LABORATORY
RECORDS/DOCUMENTS REQUEST

GENERAL PROCEDURE

The records evaluation generally will proceed in two stages. First, the records listed below will be reviewed. Generally, these records will date back three years from the present, but some records will be for other specific time periods. Second, as more information develops, additional records may be requested, as needed. If necessary, document copies will be requested for later review. The following documents and records are requested to be made available during the inspection.

GENERAL

1. Facility map and plot plan.
2. Management organizational chart (including environmental department).
3. List of all tenants and organizations with corresponding building numbers.
4. Description of facilities and operations.
5. List of on-site laboratories performing analytical work on samples used for environmental compliance monitoring and types of analyses conducted at each laboratory.
6. Plot plan showing the location of maintenance and paint shops.
7. Inventory of chemicals and quantities purchased during the last 2 years.
8. Enforcement Actions/Notices of violation (NOVs)/Consent Decrees/Orders/Agreements still in effect and related correspondence.

CLEAN AIR ACT (CAA)

1. A plot plan of the facility showing location and identification of all major process areas and stacks.
2. Brief descriptions for all process areas to include:
   (a) simplified process flow diagrams
   (b) material balance
   (c) pollution control equipment
3. Procedures/manuals for the operation and inspection of pollution control equipment.
4. State emissions inventory report for 1990, 1991, and 1992. Describe the method by which the total emissions were determined including emission sources. If estimates have been made show calculations and assumptions. Testing is not required to determine total emissions. Provide emissions data from process vents, fugitive emissions, and storage tanks.
5. Permits and/or variances for emission sources including NSPS, NESHAPS, and PSD sources.
6. Process and/or control equipment records required by permits.
7. Consent Decrees/Orders/Agreements still in effect and related correspondence.
8. Notices of non-compliance and related correspondence for the past three years.
9. A list of all registered boilers on-site including installation date, size, fuel type, heat capacity, type, and average fuel use.
10. Sulfur in fuel records for boiler/space heater fuel.
11. Stack tests (most recent) and stack and ambient monitoring data (last 2 quarters).

12. Performance specification tests for continuous emission monitors.
13. Design data and calibration procedures for continuous emissions monitors.
14. Required notices for asbestos demolition/renovation projects in progress and/or completed within the last three years.
15. Excess emission reports.
16. Description of asbestos abatement program and documentation from projects conducted since 1990.
17. Permits and/or permit applications for open burning operations.
18. A list of all registered toxic air pollutants.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

1. RCRA Part A and Part B Permit Applications (originals and any revisions).
2. Determinations for whether any solid wastes generated are hazardous wastes.
3. List of all hazardous waste generation points, satellite accumulation points, less-than-90 day accumulation areas, and permitted storage areas.
4. EPA identification numbers allowing the facility to treat, store, dispose of, transport, or offer for transportation any hazardous wastes.
5. Manifests for any hazardous wastes transported, accepted, or offered for transportation off-site (manifests for past 3 years) including Land Disposal Restriction notifications and certifications (past 5 years).
6. Biennial reports for shipping any hazardous wastes off-site to a treatment, storage, or disposal facility or for treating, storing, or disposing of any hazardous wastes on-site (last 3 years).
7. Exception reports for any manifests not received back from the designated facility (last 3 years).
8. Hazardous waste minimization plan.
9. Notifications for any hazardous wastes intended to be exported.
10. EPA acknowledgement of consent for any exports of hazardous wastes.
11. Confirmation of delivery for any exports of hazardous wastes.
12. Annual reports from any primary exporting of hazardous wastes.
13. Waste analysis plan for treating, storing, or disposing of any hazardous wastes.
14. Documentation relating to RCRA testing results for incoming, and outgoing materials; examples are parameters such as cyanide reactivity testing, EP and TCLP toxicity testing, corrosivity testing, and testing oriented towards establishing whether or not a material meets the definition of a waste category and any testing determining whether or not a waste meets LDR treatment standards.
15. For all analytical results provided, provide any raw data (lab notebooks, bench sheets, instrument printouts) to support such results.
16. For all samples collected, provide records to establish collection of samples such as lab/field notebooks and any written sampling procedures.
17. Schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.
18. Inspection logs for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.
19. Employee training records for hazardous waste handlers, including job titles and descriptions, name of each employee, and documentation of the type and amount of training each has received.
20. Current Contingency Plan.
21. Summary reports and documentation of all incidents that required implementation of the contingency plan (past 3 years).
22. Methods and dates for treating, storing, or disposing of any hazardous wastes at the facility.
23. Location and quantity of each hazardous waste generated within the facility.

24. Unmanifested waste reports for any hazardous wastes received from off site without accompanying manifests.
25. Groundwater sampling and analysis plan for any impoundment, landfill, or land treatment facilities on site.
26. Outline of ground water quality assessment program for any impoundment, landfill, or land treatment facilities on site.
27. Ground water analyses and reports for any impoundment, landfill, or land treatment facilities on site.
28. Closure plans for any hazardous waste disposal facilities, waste piles, surface impoundments, tanks or landfills.
29. Certifications for any hazardous waste disposal facilities, waste piles, surface impoundments, tanks or landfills that have been closed.
30. Post-closure plans for any hazardous waste disposal facilities, waste piles, surface impoundments, tanks or landfills.
31. Certifications for any post-closure care that has been completed on any hazardous waste disposal facilities, waste piles, surface impoundments, tanks or landfills.
32. Inspection schedules, logs/summaries for all interim status storage areas, satellite accumulation areas, and <90 day accumulation areas (last 3 years).
33. Certified assessment of integrity for any existing tank systems used for storing or treating hazardous waste that do not have secondary containment.
34. Certified assessment of design and construction for any new tank systems used for storing or treating hazardous waste.
35. Certified statements for any tank systems used for storing or treating hazardous waste that have been repaired.
36. Inspection schedules, logs/summaries for all tank systems and surface impoundments used for storing or treating hazardous waste (last 3 years)
37. Notifications of any hazardous waste releases to the environment.
38. Reports for any hazardous waste releases to the environment.
39. Inspection logs for inspecting surface impoundments used to treat, store, or dispose of hazardous waste.
40. Analyses of each incoming movement of hazardous waste added to any waste piles used to treat or store hazardous waste.
41. Analyses of any hazardous wastes being incinerated or thermally treated.
42. Inspection logs for inspecting any thermal treatment processes.
43. Analyses of any hazardous wastes being treated by chemical, physical, or biological methods in other than tanks, surface impoundments, or land treatment facilities.
44. Inspection schedules, logs/summaries for all thermal, chemical, physical, or biological treatment areas (other than tanks, surface impoundments, or land treatment facilities).
45. List of solid waste management units on site.
46. List of all underground storage tanks (USTs) ever in operation including tanks currently in operation, temporarily closed or permanently closed. List should include location, age, construction material, and current status.
47. Notifications for any underground storage tanks.
48. Certifications for any new underground storage tanks.
49. Reports of any releases, spills, or overfills from underground storage tanks.
50. Reports summarizing initial abatement steps, site characterization, and free product removal at confirmed release sites.
51. Corrective action plans required as a result of any releases, spills, or overfills from underground storage tanks.
52. Notifications of any underground storage tank changes, upgrades, or closures.
53. Documentation of operation for any corrosion protection equipment required on underground storage tanks.
54. Documentation of any underground storage tank repairs.

55. Documentation for complying with any underground storage tank release detection requirements.
56. Results of any site investigations conducted upon closure of any underground storage tanks.
57. Facility map showing underground storage tank locations.

58. Any notifications for burning used oil.
59. Any notification, precompliance and compliance certifications submitted for burning of hazardous wastes in boilers or industrial furnaces.

TOXIC SUBSTANCES CONTROL ACT (TSCA)

1. Copies of the "Annual Document" as required by 40 CFR § 761.180(a) for the last three years.
2. List or description of PCB storage area(s).
3. Monthly inspection records for storage areas subject to 40 CFR § 761.65.
4. The Spill Prevention Control and Countermeasures (SPCC) plan prepared for storage areas subject to 40 CFR § 761.65.
5. PCB transformer and hydraulic systems inventory with location map and PCB analyses.
6. Inspection and maintenance records for PCB transformers and hydraulic systems for the last 3 years.
7. Certifications for PCB transformer and PCB fluid disposal for last 3 years.
8. All spill reports and remediation plans.
9. Manifests for PCB items shipped off-site.
10. Facility map showing location of PCB equipment.

CLEAN WATER ACT (CWA)

NPDES

1. Sewer system diagrams, including process, sanitary and stormwater.
2. Plan showing all wastewater discharge points.
3. Description of sewer and storm water system. Include pipe sizes, flow and effluent monitoring stations, all influent locations.
4. Water use and effluent flow discharge data.
5. Written calibration procedures and calibration records for flow measuring and recording equipment; include industrial, storm, sanitary, or any other sewers on facility property.
6. Effluent monitoring data for last three years. Include written sampling/preservation/chain-of-custody procedures.
7. Inspection reports and responses for last year.
8. Copies of plans, surveys and test results required by the NPDES or equivalent state permit including, but not limited to solvent management plan(s), biomonitoring study plan(s), biomonitoring testing plans and test results, sewage sludge monitoring test results, and Sewage Sludge Utilization Permit.

SPCC

12. Current SPCC plan (required by 40 CFR § 112).
13. Copies of all Army Corps of Engineers "404" permits issued.
14. All data forms "Routine Wetland Determination" prepared for Los Alamos facilities.

SAFE DRINKING WATER ACT

PUBLIC WATER SUPPLY

1. Construction dates, elevations, diagrams, modification information and well logs for water supply wells.
2. Description of treatment processes used for drinking water.
3. Procedures/manuals/diagrams for water distribution system.
4. Names and phone numbers of system operators; certifications and dates.
5. Records of any interruptions in service.
6. Reports of any waterborne disease.
7. Well abandonment records.
8. Description of sample locations, equipment, protocol, and preservation.
9. List of monitoring parameters and records of monitoring results January 1990 to present.
10. Notifications of failures to monitor, January 1990 to present.
11. Notifications of MCL violations, January 1990 to present.
12. Public notices issued from January 1990 to present.
13. Construction and maintenance information for water storage tanks.
14. Water treatment plant schematic, and description of water treatment performed at or near the wells.
15. Copies of inspection reports, notices of noncompliance, Consent Orders/Agreements still in effect and related correspondence.
16. Description of wellhead protection program and cross connection control program.
17. Description of dates and causes of depressurization of the water distribution system.

UNDERGROUND INJECTION CONTROL

1. Any inventory reporting of underground injection wells located on-site.
2. Description, location, and status of any septic systems ever used.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA)

1. Pesticide application licenses/certificates
2. Application records
3. Restricted-use pesticide records
4. Inventory records
5. Training records
6. Equipment repair records
7. Spill reports
8. Complaint file

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW (EPCRA)

1. Notifications to the State Emergency Response Commission.
2. Designated facility emergency coordinator.
3. Identify each and every release of all hazardous substances at the facility for the last three years.

For <u>each</u> release identified in your response to question number 1 above, provide a separate answer to each of the following questions (A-Q). If exact responses cannot be given, provide

estimates using your best professional judgment. Indicate estimates were provided.

A. Identify each chemical by describing:

a. precise chemical name/Chemical Abstract Substance (CAS) number
b. trade name/synonyms
c. RCRA number
d. Whether solid, liquid, or gas

B. Specify the quantity of each chemical released (in pounds only), and its concentration by % weight; indicate how that quantity was determined including any calculations, estimations or assumptions relied upon in making your conclusions. Identify any equipment or records relied upon in making your determination including any valves, gauges, scales, meters, production charts or log books.

C. Specify the date and time each release began and ended by month, day and year on a 24-hour clock.

D. Describe what initiated each release (i.e., equipment failure or operator error, etc.).

E. Describe the end effects of each release such as a spill, vapor release, explosion and/or fire.

F. Provide all documents reflecting notification of, or communication with "911", Local Emergency Planning Committee (LEPC), State Emergency Response Commission (SERC), National Response Center (NRC) and/or other local authorities regarding each release. Identify the date and time of each notification and communication.

4. Provide all documentation reflecting the initial and any subsequent submissions of Material Safety Data Sheets (MSDS) or lists of MSDSs to the SERC, LEPC and local Fire Department. Note: DO NOT submit actual MSDSs with your response to this question.
5. Provide documentation reflecting the annual submission of chemical emergency planning and inventory information (i.e., Tier II information) for the calendar years 1990, 1991 and 1992 to the SERC, LEPC, and local Fire Department.
6. Form Rs used for notification of toxic releases for the last three years.
7. Documentation used to complete Form Rs for the last three years, (if computer generated, provide description of calculation methods).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

Coby

HSWA General

APR 14 1994

Benito
Coordinate this with other Bureaus
Bruce
4/18/94

Ms. Kathlene Sisneros
Director Water and Waste Management Division
Harold Runnels Building
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, New Mexico 87502

XI

XC letter to: Mary
Jim
Marilin
Bill B
James B.

find in Library

Dear Ms. Sisneros:

Included with this letter is a copy of the report from the Multi-media Compliance Investigation that was conducted in August 1993 at Los Alamos National Laboratory (LANL). This investigation was conducted by EPA's National Enforcement Investigations Center (NEIC) on behalf of Region 6. Inspectors from the State of New Mexico also participated in the inspection. Walter Helmick, of my staff, coordinated the inspection with NEIC. He may be contacted at 214/655-8373 if there are questions concerning the inspection. Findings from this investigation have been forwarded to the program-specific enforcement offices within Region 6 for further action. If you or your staff have any questions concerning this investigation, please contact me at 215/655-2284.

Sincerely yours,

Robert C. Clark

for Robert R. Broyles
Chief
Surveillance Branch

Enclosures

LANL MSWA Compliance
LANL RFD '94

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