Permit

11/8/1988

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

NOV - 8 1988

Mr. C. Kelley Crossman
Permitting Supervisor
Hazardous Waste Bureau
Environmental Improvement Division
P.O. Box 968
Santa Fe, NM 87504-0968

Dear Mr. Crossman:

Enclosed are three copies of the revision to the Department of Energy's (DOE) Los Alamos National Laboratory Part B Resource Conservation and Recovery Act permit application. The Part B includes the Laboratory's open burning/open detonation units.

This revision also includes a revised Part A that has been reprinted in total. The TA-35 surface impoundments have been included which addresses your concerns stated in your September 16, 1988 letter to DOE. The funding is available to close the TA-35 surface impoundments during this fiscal year.

The Part A has also been amended to include an increase in design capacity at TA-54, Area L. This change will not alter the volume in storage but rather the section of Area L where storage occurs. A letter explaining planned improvements at Area L will follow.

Should you have any questions, please call Donna Lacombe at 667-5288.

Sincerely,

Harold E. Valencia
Area Manager

2DL-012

3 Enclosures

cc w/o enclosures:
A. Tiedman, ADS, LANL, MS A120

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HAZARDOUS WASTE SECTION

14988

INTERNATIONAL TECHNOLOGY CORPORATION

Project No. 301215.02.09
November 1988

Volume I - Text, Tables & Figures Rev. 4.1

RCRA Part B Permit Application

Los Alamos National Laboratory
Los Alamos, New Mexico

Los Alamos National Laboratory
Environmental Surveillance Group HSE-8
Los Alamos, New Mexico 87545

RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

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6.2 WARNING SIGNS	264.14(c)
6.3 INSPECTION SCHEDULES AND REQUIREMENTS	270.14(b)(5), 264.15, 264.33, 264.174, 264.194, 264.303, 264.347
6.4 PREPAREDNESS AND PREVENTION REQUIREMENTS	264.34-35
6.5 PREVENTIVE PROCEDURES, STRUCTURES AND EQUIPMENT	270.14(b)(8)

TABLE 1-1

FORMAT OUTLINE AND REGULATION REFERENCES
(CONTINUED)

REPORT SECTION	RCRA REGULATION REFERENCE[1]
6.6 PREVENTION OF ACCIDENTAL IGNITION OR REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE	270.14(b)(9), 270.15(d), 264.17, 264.176, 264.198, 264.312
7.0 HAZARDOUS WASTE FACILITY CONTINGENCY PLAN	
7.1 INTRODUCTION	
7.2 HAZARDOUS WASTE EMERGENCY RESPONSE RESOURCES	264.37, 264.52(c), 264.52(e)
7.3 NONSUDDEN RELEASES	
7.4 SUDDEN RELEASES	264.51, 264.52(a)
7.5 SPECIFIC EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS WASTE UNITS	270.14(b)(7), 264.56
7.6 EVACUATION	264.52(f)
7.7 SALVAGE AND CLEANUP	270.14(b)(7), 264.56
7.8 POST-EMERGENCY ASSESSMENT	
7.9 EMERGENCY RECORDS	
7.10 EMERGENCY REPORTS	270.14(b)(7), 264.56
7.11 CONTINGENCY PLAN AMENDMENT	264.54
8.0 PERSONNEL TRAINING	
8.1 OUTLINE OF TRAINING PROGRAM	264.16(d)(2)
8.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES	270.14(b)(12), 264.16
8.3 EMERGENCY RESPONSE TRAINING	264.16(a)(3)
8.4 IMPLEMENTATION OF TRAINING PROGRAM	264.16(b), (c), & (e)
9.0 CLOSURE AND POST-CLOSURE PLAN	270.14(b)(13), 264.112
9.1 GENERAL CLOSURE/POST-CLOSURE INFORMATION	
9.2 CLOSURE PLAN FOR OPEN DETONATION/OPEN BURNING UNITS AND THE INDUSTRIAL INCINERATOR	270.14, 270.19, 270.23, 264.351, 264.603
9.3 CLOSURE PLAN FOR TA-50 STORAGE, BATCH TREATMENT, AND INCINERATION UNITS	
9.4 CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE MANAGEMENT UNITS	270.14(b)(13), 270.21(e), 164. 112, 264.310(a) & (b), 264.117 & 118
9.5 SAMPLING AND ANALYTICAL PROCEDURES	270.14, 264.110-120, 264.178, 264.197, 264.351, 268.41
10.0 OTHER FEDERAL LAWS	270.3, 270.14(b)(20)
11.0 CERTIFICATION	270.11

[1] From Code of Federal Regulations 40.

TA-14 includes one open burning unit which consists of a small burn cage placed within a metal tray. Combustible materials potentially contaminated with experimental HE which cannot be safely transported to the TA-16 incinerator are burned in this cage.

HE-contaminated wash water is collected in sumps at HE fabrication facilities located in several Technical Areas. HE settles out of the wash water, is collected in a vacuum truck and is taken to TA-16 for treatment. When barium is used in the formulation process, it must be precipitated out of the waste water as insoluable barium sulfate, and is collected with the waste HE in a vacuum truck. The collected sludge is gravity fed from the vacuum truck to one of two pressure vessels buried in the ground. Up to 750 pounds of sludge, estimated by the depth of the sludge material in the pressure vessel, can be burned at one time. The vessels contain sand and gravel, and a fluid drain connects the base of the cone-shaped vessel to a carbon-filter wastewater treatment unit (TA-16-228) located nearby. Treated effluent is regulated by a NPDES permit (NM 0028355).

2.1.1.2 Technical Areas 14, 15, 36, and 39 Open Detonation Units

Open detonation sites used for the destruction of excess or waste HE are located at Los Alamos in Technical Areas 14, 15, 36, and 39. These sites are used routinely to detonate scrap HE, failed experimental detonations, unneeded classified explosives shapes, and small quantities of reactive chemicals. These sites consist of detonation points on the open ground, often located within a small canyon. Material to be detonated is placed on sand or on a wooden table at the firing point and is detonated with a remote firing mechanism. Associated facilities at these sites include bunkers which are occupied by technical personnel during detonations. Prior to all firings, nearby roads are checked and kept clear.

2.1.2 Technical Area 16 Industrial Incinerator

A baffled single chamber industrial incinerator, equipped for combustion of potentially HE-contaminated trash and machine oil, is located outdoors in the northeastern part of Technical Area 16 (Figure 2-22). The incinerator, which consists of primary and secondary combustion chambers is capable of burning 810 pounds of Type Zero trash (as defined by the Incinerator Institute of

America) per hour. Typically, four loads, or 3200 pounds are incinerated per day. In addition to potentially HE-contaminated paper, cardboard, wood boxes, etc., a limited volume of potentially HE-contaminated machine oil will be burned in the incinerator from time to time. The industrial incinerator will not be used to burn wastes other than those permitted by 40 CFR 264.340(b)(1)(i), (ii), (iii), or (iv) [NMHWMR 206.D.8.a(2)(a)(i), (ii), (iii) or (iv)]. Emissions from the incinerator conform to federal and state standards.

2.1.3 Technical Area 50 (TA-50) Units

Hazardous waste management units located at TA-50 include the Batch Treatment System; the Chemical Waste Incinerator; and the Waste Packaging, Transfer, and Storage Units. These units and their associated support facilities are discussed in the following sections.

2.1.3.1 Batch Treatment System and Associated Container Storage Units

The Batch Treatment System is located in Building 1 at Technical Area 50 (Figure 2-3). The system consists of a totally enclosed, vented, 500-gallon pressure vessel equipped with a filtering system, condenser, and vacuum transfer lines. Total system washdown between batches allows for the treatment of incompatible wastes. Wastes treated in the Batch Treatment System include cyanide; chromate plating solutions; and solutions of acids, bases and heavy metals.

Three waste streams comprise the bulk of the waste treated in the Batch Treatment System, although the system is flexible enough to allow treatment of other wastes that may be generated through new Laboratory projects. These streams are an acid/base waste which contains copper, chromate plating waste, and waste cyanide plating solutions. Los Alamos wishes to obtain a permit to treat hazardous wastes in the Batch Treatment System.

A waste transfer and packaging area is also housed in the room with the Batch Treatment System. This consists of a small area covered by a ventilation hood. Small quantities of wastes are repackaged within this area, when necessary.

To facilitate usage of the Batch Treatment System, three modular hazardous waste storage buildings will be located at Technical area 50 (Figure 2-3). These pre-manufactured storage units will be used for the accumulation, packaging and storage of wastes intended for treatment in the Batch Treatment System. Each of the three identical units will have approximately 175 square feet of floor space (separated into two bays) and will be enclosed by sheet steel supported by structural steel sections. The buildings are manufactured with secondary containment, static grounding connections and fire protection devices installed. Floors are designed to support a total load of 20,000 pounds, permitting storage of 30 55-gallon drums or similar volumes of wastes in other closed containers. The modular buildings will be set on concrete pads of sufficient load-bearing capacity to support the fully loaded building.

2.1.3.2 Chemical Waste Incinerator and Associated Storage Units

The waste incinerator is located in Building 37 at Technical Area 50 (Figure 2-3). The highly modified, controlled air incinerator is rated at a nominal 45 kilograms per hour waste feed throughput. The incinerator was developed as part of a continuing incinerator study and demonstration program being conducted by Los Alamos and is currently permitted to burn PCB-contaminated liquid materials. Modifications to the incinerator include additions of liquid and solid waste feed preparation lines, a gravity ash removal system, a high-efficiency off-gas cleanup system, and backup utility systems. Standard combustion equipment has been modified to permit effective incineration of waste in solid, liquid, slurry, or gaseous form. Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms. Los Alamos wishes to obtain a permit to burn RCRA-regulated wastes in this incinerator.

Prior to incineration, hazardous chemical waste will be accumulated and stored at a container storage area that will be constructed as an addition to Building 37 at Technical Area 50 (the building that houses the controlled air incinerator described in Section 2.1.3.2). Up to 34,600 pounds of containerized hazardous waste (about a two week supply of incinerator feed) will be stored in the 920 square-foot storage unit. Wastes will be stored in drums or other suitable containers, which will be placed on grates that are mounted

above the secondary containment sump that forms the floor of this part of the building. Ventilation, fire sprinklers and alarms and catchment basins for fire sprinkler water will be integral to the building.

2.1.3.3 Waste Packaging, Transfer and Storage Units

A roofed concrete storage pad encompassing an area of 1,595 square feet will be located in Technical Area 50 (Figure 2-3). The unit will be used for the accumulation, packaging and storage of containerized waste generated throughout the Laboratory. The storage pad will be materially identical to the existing roofed storage unit at Technical Area 54, Area L (Figure 2-7). The concrete floor of the storage pad will have a load-bearing capacity of 700 pounds per square foot or greater.

Containerized hazardous waste, generated at numerous locations throughout the Laboratory, is delivered to the waste packaging and storage unit at Technical Area 50 on a routine basis. Wastes are segregated into compatible types and placed within the appropriate cell on the roofed concrete pad. Wastes packaged in small containers are placed into lab packs (Figure 2-8) or consolidated into drums for incineration, treatment or recycling. Damaged or leaking drums delivered to the storage unit are repackaged into larger drums.

2.1.4 Technical Area 54 (TA-54), Area L Units

The waste management units at TA-54 include the Waste, Transfer, Packaging and Storage Unit and the Treatment Tanks. Each unit is described in the following sections.

2.1.4.1 Waste Transfer, Packaging and Storage Units

A single-story metal building encompassing 196 square feet and a roofed concrete storage pad encompassing 1595 square feet are located in Area L of Technical Area 54. These units are used for the accumulation, packaging and storage of waste containers generated throughout the Laboratory (Figure 2-4). In addition, containerized wastes which contain no liquids are stored on pallets or similar platforms in other portions of Area L. Area L is approximately three acres in size and is surrounded by an eight-feet-high chain-link and barbed-wire fence (Figure 2-5). The metal building has a concrete floor with a design standard load-bearing capacity of 250 pounds per square foot.

Three shallow sumps covered by fiberglass grates are located within the floor of the building (Figure 2-6). The storage pad has a concrete floor with a design standard load-bearing capacity of 700 pounds per square foot (Figure 2-7).

Containers of hazardous waste generated at the various Los Alamos laboratories are delivered to the waste transfer, packaging and storage units on a routine basis. The waste containers are segregated into compatible types and placed upon the three fiberglass grates located in the metal building, within one of the six storage cells on the roofed concrete pad, or, if no liquid is present in the waste container, on a pallet or similar platform in Area L. Wastes packaged in small containers are placed into lab packs (Figure 2-8), and vermiculite is added to 55-gallon drums containing liquids. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repackaged into larger drums, in these units. Los Alamos wishes to obtain a permit to operate the waste transfer, packaging and storage units.

2.1.4.2 Treatment Tanks

Four 1665-gallon ten-gauge carbon steel tanks are located at Area L. These tanks are used to neutralize, oxidize, and evaporate wastes. Section 4.4 of this volume describes waste management practices and facilities for the TA-54 Area L tanks. The tanks are located on a bermed concrete pad as shown in Figure 2-9. The interior and exterior surfaces of each tank are coated with Carboline-Phenoline-373 film. Specifications for this material are presented in Appendix I-1. Phenoline-373 has excellent chemical resistance to alkalies, solvents, and salts, and very good resistance to acids. In addition to the Phenoline film, the tanks are lined with a 100-mil polymeric thermoplastic membrane during treatment of non-reactive wastes (see Appendix I-1 for materials specifications). Prior to placement of a new waste into a tank, existing liners are removed and replaced. A liner may remain in service through treatment of several batches of the same waste. The liners facilitate removal of solids and slurries from tanks after treatment as well as preventing mixture of incompatible wastes in the tanks.

Lithium hydride is commonly oxidized in these tanks using water as the oxidant. Barium-contaminated sands (from the HE open burning units at TA-16)

are treated with sodium sulfate and sulfuric acid to produce barium compounds which are not EP toxic. Chrome-containing acid solutions are treated with sodium sulfite to produce chrome compounds which are not EP toxic. Ammonium bifluoride (a "non-RCRA" waste) is the waste most commonly evaporated in the tanks. Additionally, blowdown from the TA-50 chemical waste incinerator and post-treatment effluent from the TA-50 Batch Treatment System (both of which are very dilute solutions) are placed in the tanks if volume reduction by evaporation is desired. Replacement of liners and operating precautions specified in Section 4.4 prevents mixing of incompatible wastes and materials. Other tank-treated RCRA wastes (as noted in the Part A in Section 1.2 by disposal code T01) are processed in the TA-50 Batch Treatment System. A 210-gallon stainless steel tank mounted on wheels used to mix treatment chemicals prior to addition to the treatment tanks is also located on the pad.

2.1.5 Topographic Maps

Topographic maps, as required by 40 CFR §270.14(b)(19) [NMHWMR 302.A.4.b.(1)] are presented in Figure 2-3 for the TA-50 units and Figure 2-4 for the TA-54 units. A topographic map with the legal boundaries of the hazardous waste management facility site is presented in Figure 2-21. In accordance with the note located at the end of 40 CFR §270.14(b)(19) [NMHWMR 302.A.4.b. (1)], maps at a scale of 1" = 400' are provided. Los Alamos requests that the regulatory agencies accept maps at this scale due to the large size of the various hazardous waste management units. Contour lines on these maps are at intervals of ten feet, reflecting the mesa and canyon topography present at Los Alamos. A second map of Area L at TA-54 at a scale of 1" = 20' and contour interval of two feet is provided (Figure 2-10). The potential for flooding of Laboratory waste management units is described in Section 2.2.2. There are no storm sewers in the vicinity of the hazardous waste management units; storm water runoff is diverted by ditches and culverts. Sanitary sewage lines in the vicinity of the incinerator are shown in Figure 2-11. No sanitary sewage is generated at Area L.

2.1.6 Wells

The municipal and industrial water supply for the Laboratory and community is from 17 deep wells in three well fields and one gallery. The wells are located on Pajarito Plateau and in canyons east of the Laboratory. Water is

pumped from the main aquifer, which is about 850 to 1150 feet below the surface of the plateau. The gallery collects spring discharge from a perched water zone in the volcanics on the flanks of the mountains located west of Los Alamos.

There are no injection wells in the vicinity of Los Alamos. The location of supply wells and the gallery, as well as the locations of test wells, springs, observation holes and surface water sampling stations are shown on Figure 2-12. Surface, well, and spring waters are routinely sampled and analyzed for radionuclides as well as heavy metals, fluorides, nitrates, carbonates, bicarbonates, silica, sodium, magnesium and conductivity. Analytical results are published annually by the Los Alamos Environmental Surveillance Group (HSE-8) and copies are submitted annually to the EPA Regional Administrator and the Director of the NMEID.

2.1.7 Wind Rose

An annual wind rose (1983 data) for Technical Area 59, which is located less than one mile northwest of Technical Area 50, is shown in Figure 2-13. The major wind component is from the west-northwest.

The mountainous terrain at Los Alamos produces a distinct daily wind pattern. At night, winds tend to flow downward from the Jemez Mountains generally out of the west-northwest and northwest. During the day, the pattern reverses and light up-slope winds come generally from the southeast and south-southeast. Los Alamos is generally a light wind site with an annual average wind speed of 2.8 meters per second. Only twelve percent of wind speeds in 1983 were greater than five meters per second and 38 percent were less than 2.5 meters per second (Los Alamos National Laboratory, 1983).

2.1.8 Land Use

The communities located closest to the Laboratory facilities are Los Alamos, which is located just north of the Laboratory, and White Rock, which is located a few miles to the east-southeast of the Laboratory (Figure 2-1). The total population of Los Alamos County is 19,000 to 20,000. Most of Los Alamos County, as well as adjoining portions of neighboring Sandoval, Rio Arriba, and Santa Fe Counties, is undeveloped. The only significant development in Los

Alamos County are the Laboratory facilities and the associated residential communities. Large tracts of land in the Jemez Mountains which lie to the north, west, and south of Los Alamos are held by the U.S. Forest Service and the National Park Service. This land is largely occupied by pine, fir, and aspen forests. Agriculture in the vicinity of the Laboratory is limited to home gardens and some cattle grazing. In the river valleys to the east, agriculture is limited to the cultivation of relatively small, irrigated plots. Primary crops are corn, chili, tree fruits, and alfalfa.

2.2 LOCATION INFORMATION

2.2.1 Seismic Standard

Consistent with the definition presented in 40 CFR 270.2 (NMHWMR 102.A.29) and the criteria provided in §270.14(b)(11)(i) (NMHWMR 302.A.4.b.[1]) and §264.18 (NMHWMR 206.B.8.a), the TA-50 batch treatment and container storage units and the TA-50 incinerator are existing units and, thus, seismic design standards are not applicable.

The Area L waste transfer, packaging, and storage units and the treatment tanks; the TA-50 container modular storage buildings; the TA-50 container storage area and the TA-16 industrial incinerator are not existing hazardous waste units according to the definitions given in 40 CFR §270.2 (NMHWMR 102.A.29). Additionally, these units are located in Los Alamos County, New Mexico, which is listed in Appendix VI of 40 CFR §264 (NMHWMR 206.B.8). Figure 2-14 shows the location of Los Alamos facilities and the locations of nearby fault traces. This information and that presented in Section 2.2.4 is provided to demonstrate compliance with §264.18(a) (NMHWMR 206.B.8.a). As can be noted from Figure 2-14, no faults or fault traces with Holocene (or other) displacements have been located within 200 feet of the locations of the pertinent waste management units.

2.2.2 Floodplain Standard

A floodplain map of Los Alamos National Laboratory is unavailable. However, personnel from the U.S. Department of the Army, Albuquerque District Corps of Engineers, Engineering and Planning Division, have evaluated the potential for flooding and have concluded that Los Alamos waste management units do not lie within the 100-year floodplain (see Appendix E).

2.2.3 Soils

An intensive soil survey of Los Alamos County, New Mexico has been prepared by the USDA, Soil Conservation Service, and Forest Service (1978). This soil survey was published in June 1978 under DOE Contract W-7405-ENG.36. It classifies the soils according to the soil series, soil type, and soil phase.

The principal parent materials of about 95 percent of the Los Alamos soils are Bandelier Tuff, volcanic rocks of the Tschicoma and Puye Formations, the

margin of the plateau and is artesian along the eastern edge and along the Rio Grande.

As expected, wells completed into the high permeability sediments and volcanics of the Santa Fe Group and Puye Formation are very productive. Wells located in the eastern well field, which penetrate about 1,600 feet of the fine grained sediments of the Santa Fe Group, yield an average of 500 gallons per minute with a specific capacity of eight gallons per minute per foot of drawdown. Wells in the central part of the plateau, which are completed in the Puye Formation and coarser sediments of the Santa Fe Group, are higher yielding and average 1,000 gallons per minute with a specific capacity of about 35 gallons per minute per foot of drawdown.

The chemical quality of water varies among wells due to local conditions within the aquifer. In general, the quality of water is good; total dissolved solids (TDS) range from about 200 milligrams per liter to less than 500 milligrams per liter.

The Tschicoma Formation and the Bandelier Tuff, west of the Pajarito Plateau on the flank of the mountains, contain localized, small bodies of perched water. The Bandelier Tuff contains no perched water beneath the Pajarito Plateau. Additional information on Los Alamos groundwater and area vadose zone characteristics is presented in IT Corporation (1987).

2.3 TRAFFIC PATTERNS

2.3.1 General

The rugged topography of alternating mesas and canyons present at Los Alamos limits traffic circulation to only a few major arterial roads. This road system is shown in Figure 2-2. A total of 132 miles of paved roads are present at Los Alamos.

The main access route to Los Alamos is State Road 502 (formerly State Road 4). The majority of traffic to Los Alamos approaches on State Road 502 from the east, although an alternate access route, State Roads 4 and 501 through the Jemez Mountains, is available.

The pattern of east-west trending canyons at Los Alamos prohibits north-south automobile travel in nearly all portions of the laboratory with the exception of Diamond Drive. Los Alamos Canyon is spanned at Diamond Drive by an 820-feet-long steel arch bridge which was completed in 1951 (Los Alamos National Laboratory, 1984). This bridge provides the main access between the Los Alamos facilities located on either side of Los Alamos Canyon.

Currently, over 9,000 people are employed at Los Alamos (including Los Alamos personnel and contractors). Roughly 3,500 people commute to the laboratory daily from communities other than Los Alamos and White Rock (Los Alamos National Laboratory, 1982).

2.3.2 Waste Collection Areas

The majority of the hazardous waste is generated at eight technical areas. The eight technical areas include four buildings in Technical Area (TA) Three (TA-3-29, TA-3-39, TA-3-40 and TA-3-66) and TA-16, TA-43, TA-46 and TA-48. Wastes from all eight of these locations will be collected routinely.

Chemical wastes can be generated at all of the 32 active Los Alamos technical areas. A schematic diagram of Los Alamos waste management activities is shown in Figure 2-20. Wastes are transported from the generating laboratories and shops to the various waste management units on an as-needed basis. The chemical wastes are generally received in small bottles (i.e., a gallon or less) or containers. These are packed in cardboard boxes or drums for transport. The volume of waste received in each instance varies considerably. Because wastes are generated at facilities dispersed throughout the laboratory, waste transport occurs (at least occasionally) on nearly all of the roads located within the Laboratory.

2.3.3 Routes of Travel

As detailed in Section 2.0, the majority of the wastes will be taken from the point of origin to TA-54, Area L Units (Waste Transfer, Packaging, and Storage Unit) and TA-50 (Batch Waste Treatment System, Chemical Waste Incinerator and storage units). As a result, traffic routes which will be used to transport hazardous cargo will be limited primarily to Pajarito Road

and Mesita del Buey, with occasional travel on State Road 502 and West Jemez Road.

2.3.4 Traffic Volumes

According to a report entitled "TA-3 Traffic Study", January 10, 1985, the peak traffic periods are between 7:15 and 8:15 in the morning and 4:15 and 5:30 in the afternoon. Although the report is limited to the TA-3 area, a few intersections outside the TA-3 area were examined. Approximately 5,100 people work in the TA-3 area. Consequently, the data presented in the study should reflect the existing traffic conditions at Los Alamos. However, the data for TA-3 will have higher vehicular volumes than the rest of Los Alamos. Maps depicting vehicular traffic count movements at various intersections in the vicinity of TA-3 from the cited document are included in Appendix F-1.

Based on 1984 traffic counts, the Diamond and Jemez intersection had a volume of 3,255 cars during the morning and 2,824 in the afternoon. At the intersection of Diamond and Pajarito, the 1984 afternoon volume was 1,284.

2.3.5 Traffic Control Signals

Traffic flow at the Laboratory is controlled by traffic lights, stop signs, and yield signs. Access to the high-security technical areas is controlled by security guards and is restricted to vehicles having specific identification. Only personnel having appropriate security clearance and identification, or escorted visitors are allowed access to the secured technical areas. Vehicles and personnel entering these technical areas are subject to periodic search by security personnel. Traffic signals and signs located in the vicinity of hazardous waste management units are shown in Figures 2-3 and 2-4.

Traffic lights are in place at all major intersections. Traffic signs are used at "T"s throughout Los Alamos.

2.3.6 Road Load-Bearing Capacity

Roads at Los Alamos carrying the greatest traffic volumes include Diamond Drive, Pajarito Road, and East and West Jemez Drive. These roads were constructed with a ten-inch-thick base overlain with a five-inch-thick asphaltic concrete surface. These roads were designed and built in conformance with

American Association of State Highway Transportation Officials (AASHTO) specification HS-20. This specification is intended to accommodate truck loading capacities of 32,000 pounds per axle.

2.3.7 Road Surfacing from Technical Areas to Transfer and Storage Units

The roads from the technical areas to the transfer and storage units are two-lane roads with an asphalt surface.

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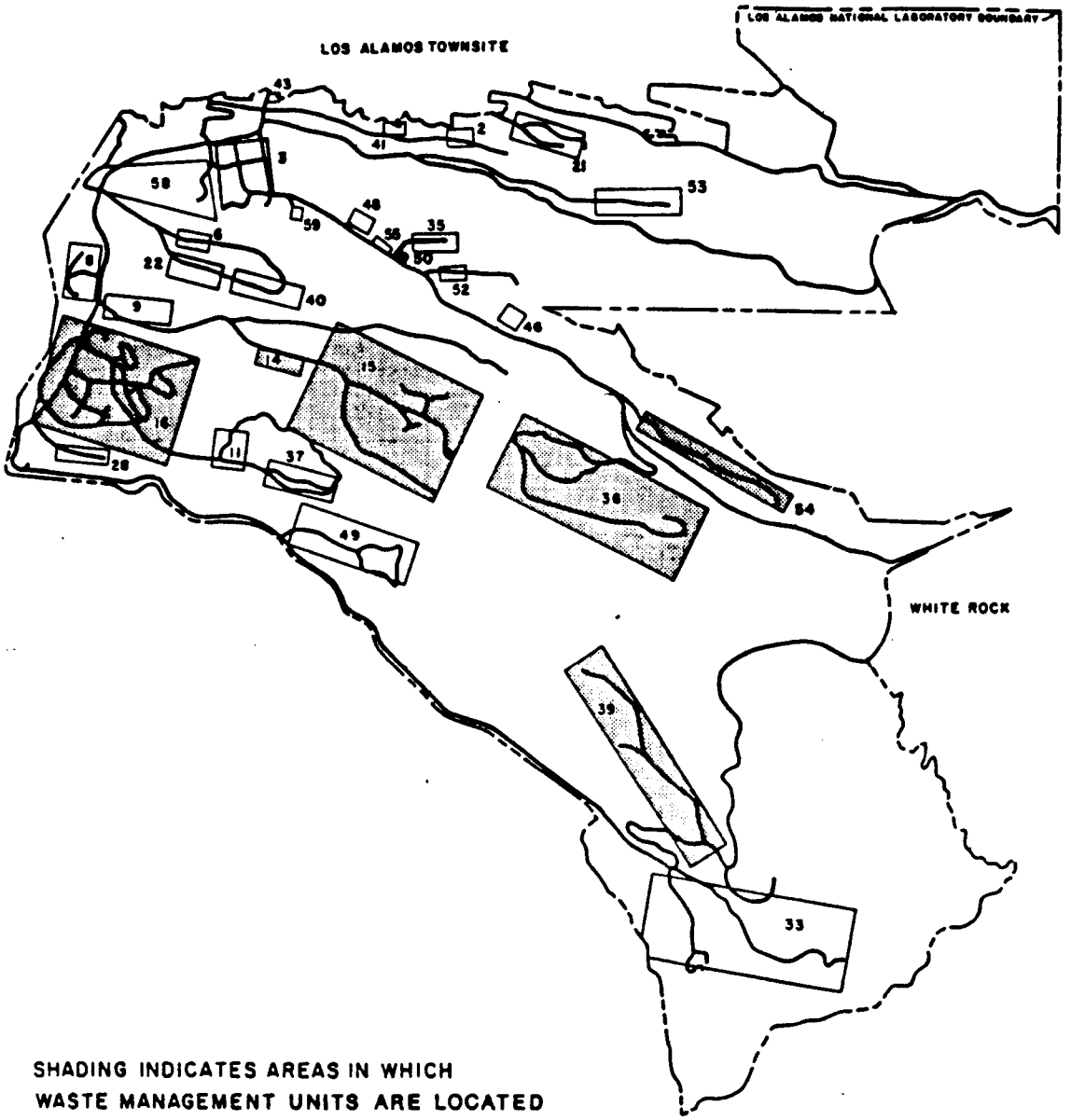

SHADING INDICATES AREAS IN WHICH WASTE MANAGEMENT UNITS ARE LOCATED

N

4000 0 4000

SCALE

FIGURE 2-2

LOS ALAMOS TECHNICAL AREAS

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LOS ALAMOS NATIONAL LABORATORY LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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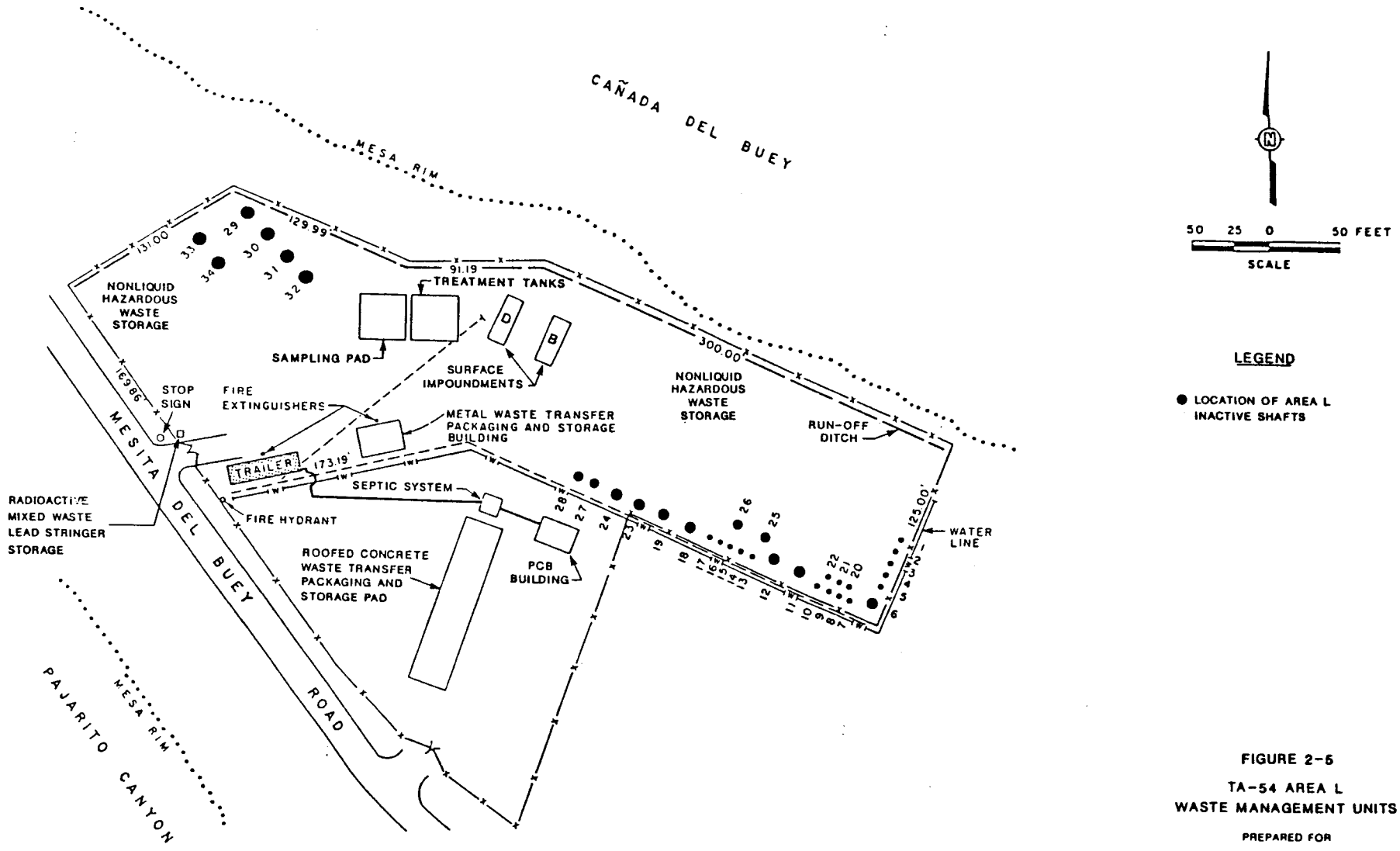

FIGURE 2-5

TA-54 AREA L
WASTE MANAGEMENT UNITS

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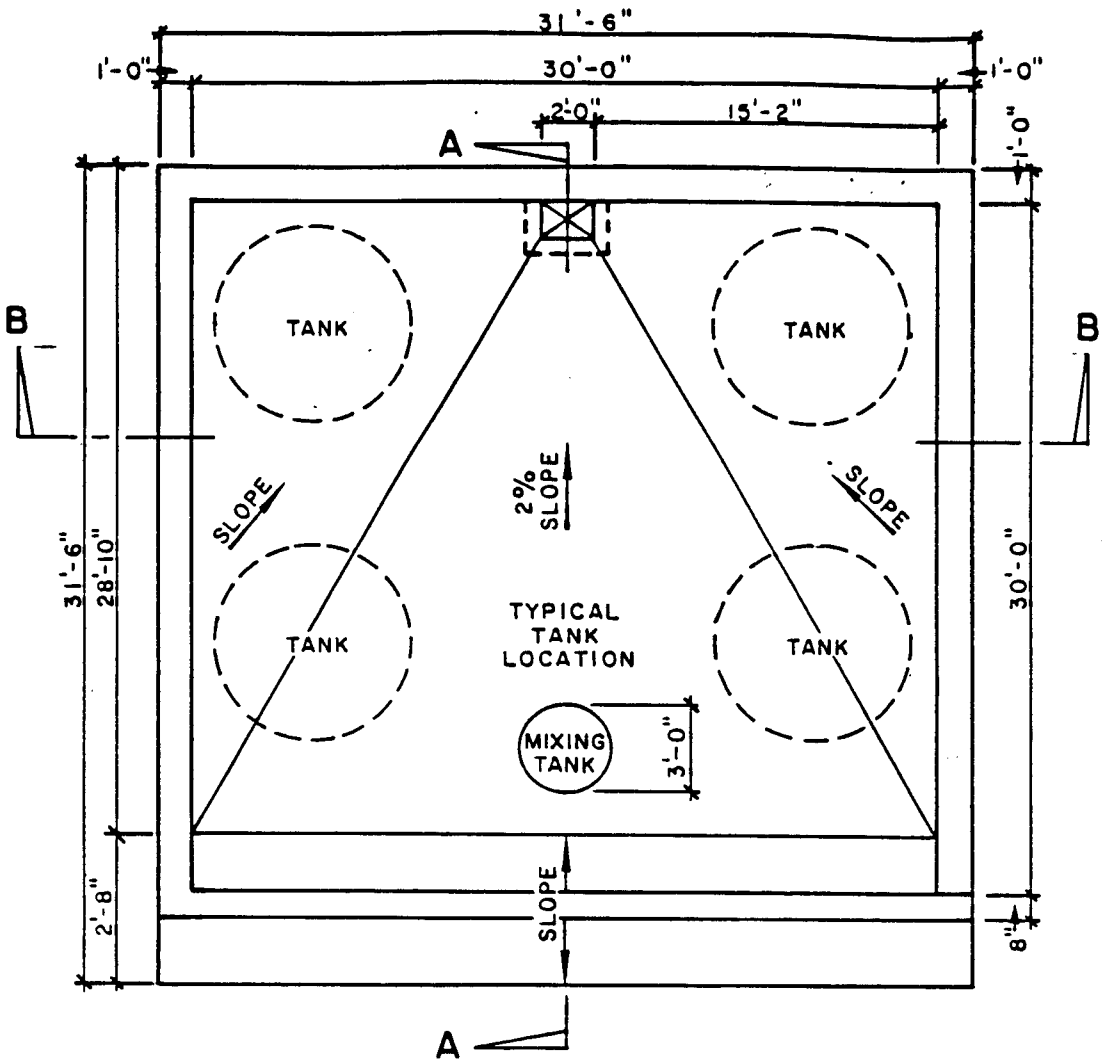

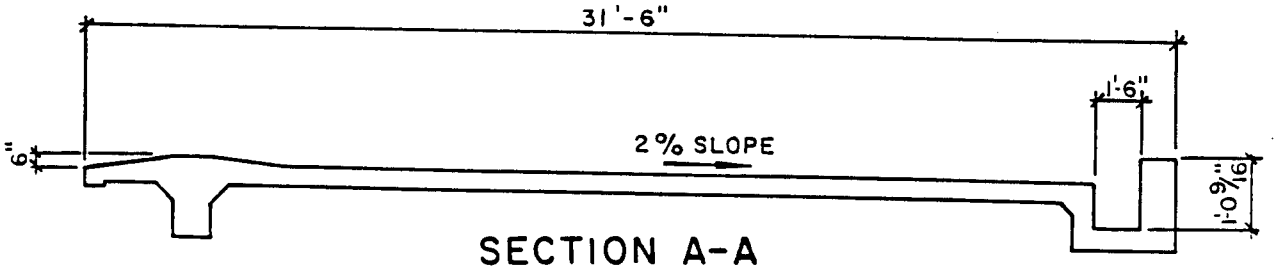

SECTION A-A
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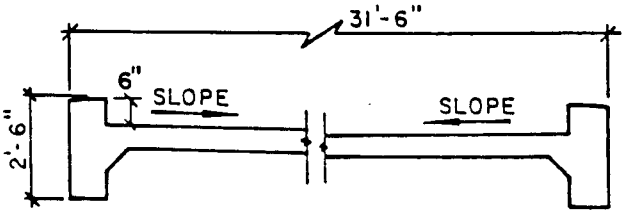

SECTION B-B
NOT TO SCALE

FIGURE 2-9

TA 54, AREA L
TREATMENT TANKS
PLAN

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

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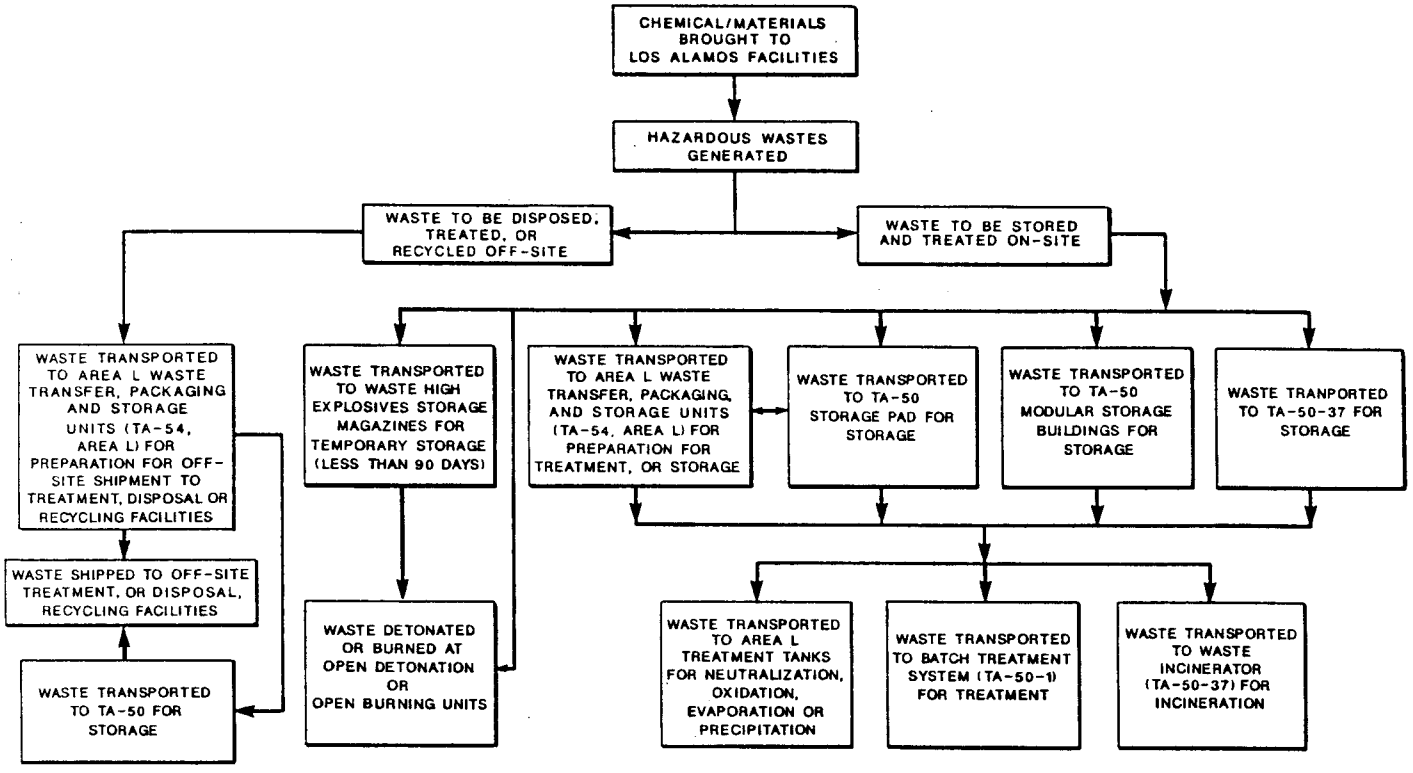

FIGURE 2-20

SCHEMATIC DIAGRAM OF LOS ALAMOS HAZARDOUS WASTE MANAGEMENT ACTIVITIES

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY

LOS ALAMOS, NEW MEXICO

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facility. The wastes are divided according to process or facility activities which generate the wastes. Table 3-1 provides an abbreviated form of this information as well as representative estimates of waste volumes.

3.1.1 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 (see Appendix G for a list of these materials and the disposal method used for each). These R&D wastes represent nearly all of the waste species included in the Los Alamos Part A Permit Application.

3.1.2 Electrochemistry Processing Wastes

The Electrochemistry Section of the MST-6 Materials Technology Group, located at TA-3-66, generates plating solutions containing chromates and cyanides. From a regulatory viewpoint, these are hazardous wastes from nonspecific sources coded as reactive and toxic wastes (D007, F007 and F009). The Print Circuit Board Shop of the MEC-10 Electronic Manufacturing and Technician Resources Group, located at TA-3-40, generates acid/base wastes heavily contaminated with copper. These are considered as hazardous wastes due to their corrosivity (D002).

3.1.3 Isotope Separation Wastes

The Isotope and Structural Chemistry Group, INC-4, generates highly concentrated nitric and sulfuric acid wastes which are hazardous because of their highly corrosive characteristics (D002). Nitric acid is also considered hazardous because it can be an oxidizer (D001) depending on its concentration. Based on knowledge of the waste generating processes, it has been determined that these wastes do not contain listed hazardous contaminants.

3.1.4 Shops Department Wastes

The Main Shops Department, Building TA-3-39, houses most of the highly versatile machine shop capabilities at the Laboratory. Parts can be machined from almost any known metal or alloy. Waste materials from machining operations are segregated by metal when generated. (For example, there are containers for aluminum, chips and turnings.) The machining operations routinely generate waste lithium metal and lithium hydride, both of which are hazardous because of their reactivity (D003). Again, these materials, when generated, are known and not comingled with other metal wastes. The Main Shops Department also generates waste nonhalogenated solvents (F003) and halogenated degreasers (F001) and solvents (F002).

3.1.5 Explosives Wastes

High explosives (HE) waste is generated by the Dynamics Testing (M) and Design Engineering (WX) Divisions groups in the course of processing and testing various HE materials. Processing includes pressing, machining and casting HE. Table 3-7 shows the established explosives that may be processed at the Laboratory. 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 (K044, D005), collected in specially designed accumulating/settling sump tanks. Spent carbon (K045) from the TA-16 wastewater treatment facility 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, F005) as well as exhibit the characteristics of EP toxicity for barium (D005). Chemically, the predominant wastes consist of HMX, RDX (cyclonite), TNT (2,4,6 trinitrotoluene), PETN (pentaerythritol 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).

3.1.6 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 drums, tanks and gas cylinders are typical contaminated items. Generation of this type of hazardous waste occurs throughout the Laboratory facilities and produces a wide variety of waste types.

ignitability, are adequate to determine if the laboratory waste is properly categorized or if contamination or misrepresentation requires changes in handling procedures. These scans are also used to verify the compositions of process wastes.

Verification testing of high explosives (HE) is not performed because such testing would pose a significant human risk. Additionally, contamination by hazardous components that could credibly be present would not lead to changes in the handling or thermal treatment methods used for these wastes. Burn pad sand undergoes verification testing for regulated metals that may have been present in the HE.

3.2.3 Test Methods Used to Perform Each Analysis

Table 3-4 lists the test methods which will be used to test for the parameters. Although specific methods are listed, alternate methods from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 (most current edition) may be used if experience, the nature of the sample or improvements in analytical technology warrant the alternate method.

3.2.4 Representative Sampling Methods

Table 3-5 lists the methods which will be used to obtain representative samples. SW-846, Section 1.2, which specifies EPA-approved equipment and procedures for obtaining representative samples, forms the basis of the sampling protocol used at Los Alamos. The Laboratory does, however, employ a variation of the Coliwasa for sampling containerized liquids. Rather than use a device which must be cleaned between samples, Los Alamos uses a glass tube to collect each sample and disposes of the tube as hazardous waste after each sample is collected. Except for the mechanical variations in the sampling procedure required by use of a different sampling device, all sampling procedures for use of a Coliwasa are followed. In addition, other alternate methods of sampling may be employed if they are appropriate and are listed in SW-846.

3.4 RESTRICTED WASTES

The Laboratory has implemented the following procedures to insure compliance with the 40 CFR Part 268 land disposal restrictions with regard to wastes with treatment standards expressed as total concentrations (this includes some of the "First Third" wastes) or as concentrations in the waste extract:

- When knowledge of a waste indicates that it is prohibited from land disposal or if the Laboratory intends to treat the waste on site, no analysis of the waste is required to be performed for restricted constituents. If the waste is shipped off site for treatment, accompanying the waste shipment will be the documentation required under 40 CFR 268.4 consisting of: EPA Hazardous Waste Number; the corresponding treatment standard; the manifest number associated with the shipment; and pertinent waste analysis and compositional data, where available.

- When knowledge of a waste suggests that it can be land disposed without further treatment and the waste is intended for land disposal, total constituent analysis or the Toxicity Characteristic Leaching Procedure (TCLP) (as applicable) will be performed. If the appropriate test confirms that treatment standards are not exceeded, then the waste will be shipped to an off-site, permitted facility with the following documentation: EPA Hazardous Waste Number; the corresponding treatment standard; the manifest number associated with the shipment of waste; waste analysis data; and a signed certification stating that the waste complies with the treatment standards specified in 40 CFR Part 268, Subpart D.

The following procedures are implemented to comply with the land disposal restrictions effective for "California List" wastes [the facility currently generates two waste streams under this category - corrosive (pH ≤ 2.0) and liquid wastes containing chromium in concentrations of at least 500 mg/l]:

- When knowledge of a waste indicates that it is prohibited from land disposal or if the Laboratory intends to treat the waste on site, no analysis of the waste is required to be performed for restricted constituents. If the waste is shipped off site for treatment, accompanying the waste shipment will be the documentation required under 40 CFR 268.4 consisting of: EPA Hazardous Waste Number; the corresponding treatment standard; the manifest number associated with the shipment; and pertinent waste analysis and compositional data, where available.

- When knowledge of the waste suggests that it can be land disposed without further treatment and the waste is intended for land disposal, the following procedures will be employed: when necessary, Standard Method 9095 (Paint Filter Liquids Test) will be used to determine whether the waste is a liquid; Standard Method 9040 will be used to determine the pH of corrosive liquids; and the TCLP will be used to determine concentrations of restricted metals. If tests show that the waste may be land disposed, then the waste will be shipped to a permitted facility with the following documentation: EPA hazardous waste number; the corresponding treatment standard; the manifest number associated with the shipment of waste; waste analysis data; and a signed certification stating that the waste complies with applicable treatment standards.

The following procedures are implemented to comply with the requirements of the "First Third" restrictions under 40 CFR §268.33(f) ("soft hammer" wastes):

- Prior to land disposal of these restricted wastes, the Laboratory will demonstrate that the treatment method selected offers the greatest environmental benefit, as required by 40 CFR §268.3(a). This demonstration will be submitted to EPA and to the off-site treatment facility with the initial shipment, along with the certification required by 40 CFR §268.8(a)(2)(ii). Subsequent shipments to the same facility will be accompanied by the certification only.

- If practically available treatment facilities are not available for the waste, this will be noted in the demonstration and certification submitted to EPA. The waste may then be land disposed. The first shipment will be accompanied by the demonstration and certification. Subsequent shipments will be certified only. The EPA will be notified at the time that any conditions change which may effect the certification.

Waste analysis parameters, tests methods, and frequency of analysis are described in Tables 3-2 through 3-4.

TABLE 3-1

LOS ALAMOS WASTE INVENTORY IDENTIFIED BY GENERATION PROCESS AND WASTE CHARACTERIZATION

Process or Operation Generating Hazardous Waste and Waste Generated	Approx. Annual Volume (lbs)	Hazard	Basis for Hazard Designation
Basic and Applied Chemistry R&D Programs			
Chemistry and Metallurgy Research Building			
Radiochemistry Laboratory			
Health Research Laboratory	Organic 100,000		
- Numerous chemical wastes	Inorganic 80,000	Varies[1]	R&D wastes are comprised of numerous listed wastes[1]
Electrochemistry Processing			
Materials Technology Group			
- Chromate and cyanide plating solutions	2,000	Toxic, Reactive	Listed waste - D007, F007, F009 - toxic and reactive, could contain 10,000-20,000 ppm cyanide and chromium compounds
Print Circuit Board Shop			
- Acid/base copper etching/ plating solutions	40,000	Corrosive	D002 - pH can vary from less than 2 to about 11
Isotope Separation			
Isotope and Structural Chemistry Group			
- Concentrated nitric and sulfuric acid	80,000	Corrosive	D002 - pH is generally less than 2, concentrated nitric acid is also ignitable (D001) per 261.21(a)(4) (NMHWMR 201.B.2.a[4]) as an oxidizer
Shops Department			
Main Shops Department			
- Lithium hydride, lithium metal	3,500	Reactive	D003 - per 261.23(a)(2),(3), (NMHWMR 201.B.4.a[2],[3]) gas and heat upon rapid reaction with water
- Halogenated solvents	<1,000	Toxic	Listed waste - F001, F002 - toxic
- Non-halogenated solvents	<1,000	Ignitable	Listed waste - F003 - ignitable
Explosives			
Dynamics Testing and Design Engineering			
- High Explosives	50,000	Ignitable, Reactive	Listed waste - K044, K045, K047 - also D001, D003, may also contain D005 waste
- Contaminated burn pad sand	60,000	Toxic	D005 - sand contaminated and tests EP Toxic for barium per 261.24(a) (NMHWMR 201.B.5.a)
- Oil/Solvent Residues	<1,000	Toxic	May contain listed waste F001, F002, F003, F005
Chemically Contaminated Equipment			
Many LANL Facilities	12,000		Same characteristics as hazardous material contaminants

[1] See Appendix G for a representative list of wastes and hazard designations.

TABLE 3-2
WASTE ANALYSIS PARAMETERS AND RATIONALE FOR THEIR SELECTION (Continued)

Hazardous Waste	Parameter(s)	Rationale
Explosives		
Dynamics Testing and Design Engin. Groups - High explosives	None	A portion of this waste is a listed hazardous waste (K044, K045) due to its reactivity and ignitability; other portions are considered hazardous due to their reactivity (D003). This material will not be analyzed because of to safety considerations; however, process knowledge allows identification of the material.
- Contaminated burn pad sand	EP Toxicity for Metals	Sand has been found to contain EP Toxic barium; other high explosive chemicals are decomposed.
- Oil/solvent residues from burn pad	Total halogenated and nonhalogenated Solvents or TCLP	Residues are tested for applicable solvents to document compliance with the land disposal restrictions.
Chemically Contaminated Equipment		
Many LANL facilities - Empty drums, tanks, gas cylinders, etc.	None	Contaminants known and contaminated equipment treated with the same precautions as if it were were the actual material.

TABLE 3-3
VERIFICATION WASTE ANALYSIS PARAMETERS, FREQUENCY OF ANALYSES AND RATIONALE

Hazardous Waste	Analysis Parameters	Frequency	Rationale
Basic and Applied Chemistry			
R & D Programs			
Laboratory wastes (liquids)	pH, total metals, volatile and semi-volatile organics, reactivity, ignitability	1% of Waste Containers(1)	Analyses are conducted to determine contamination of chemicals at levels requiring changes in handling practices.
Laboratory wastes (solids)	pH, total metals, volatile and semi-volatile organics, reactivity, ignitability, plus free liquids determination	1% of Waste Containers(1)	Analyses are conducted to determine contamination of chemicals at levels requiring changes in handling practices, plus the free liquids analysis to demonstrate suitability for landfill disposal.
Electrochemistry Processing			
Materials Technology Group			
- Cyanide and Chromate solutions	pH, total metals, volatile and semi-volatile organics cyanide, reactivity(2)	Annually, and if waste generation process changes	Analyses are performed to check for heavy metal and organic solvent contamination. Sulfide generation (reactivity) is determined to ensure safe treatment.
Printed Circuit Board Shop			
- Acid/base copper etching/ plating solutions	pH, total metals, volatile and semi-volatile organics cyanide, reactivity(2)	Annually, and if waste generation process changes	As for cyanide and chromate solutions.

TABLE 3-3

VERIFICATION WASTE ANALYSIS PARAMETERS, FREQUENCY OF ANALYSES AND RATIONALE (Continued)

Hazardous Waste	Analysis Parameters	Frequency	Rationale
Shops Department (cont.)			
- Non-halogenated solvents	Total metals, volatile and semi-volatile organics, ignitability	Annually, and if waste generation process changes	As for halogenated solvents. The semi-volatile and volatile organic analyses are adequate to determine the presence of halogenated solvents as well as most regulated organic constituents.
Explosives			
Dynamics Testing and Design Engineering Group			
- High explosives	None	None	A portion of this waste is a listed hazardous waste (K044, K045) due to its reactivity and ignitability; other portions are considered hazardous due to their reactivity (D003). This material will not be analyzed because of safety considerations; process knowledge allows adequate identification for thermal treatment.

TABLE 3-3

VERIFICATION WASTE ANALYSIS PARAMETERS, FREQUENCY OF ANALYSES AND RATIONALE (Continued)

Hazardous Waste	Analysis Parameters	Frequency	Rationale
Explosives (cont.)			
- Contaminated burn pad sand	Total metals	Annually, and if process changes	Total metal analysis is performed to determine contamination with regulated metals.
Chemically Contaminated Equipment			
Many Los Alamos Facilities			
- Empty drums, tanks, gas cylinders, etc.	None	None	There are no sampling protocols for sampling contaminated equipment.

(1) One percent of laboratory waste containers excludes laboratory chemicals in their original bottles if bottles have not been opened as demonstrated by an unbroken cap seal. These chemicals are disposed of when their shelf life has been exceeded and there is no chance of contamination.

(2) Reactivity for these wastes is determined as cyanide and sulfide gas generation potential per NMHWMR 201.b.4.a.5.

TABLE 3-6
FREQUENCY OF ROUTINE ANALYSES AND RATIONALE
(Continued)

Hazardous Waste	Analysis	Frequency	Rationale
Shops Department			
Main Shops Department			
- Lithium hydride, lithium metal	None	None	Process knowledge allows identification of material without analysis
- Solvents, halogenated and non-halogenated	None	None	Material properties of these solvents are well known and process knowledge allows identification of material without analysis
Explosives			
Dynamics Testing and Design Engineering Group			
- High explosives	None	None	Process knowledge allows identification of material without performing highly dangerous analysis of high explosives
- Contaminated burn pad sand	EP Toxicity for Metals	Annually, and if formulation of explosives changes	Sand is assumed to be contaminated with EP Toxic barium
- Oil/solvent residues from burn pad	Total halogenated and nonhalogenated solvents or TCLP	Each time waste is thought not to exceed treatment standards and is intended for land disposal	To provide certifiable documentation that waste is land disposable under 40 CFR 268.7.

TABLE 3-7

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% A1/5 wt% Wax/0.5 wt% $CaC1_2$

TABLE 3-7

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 3-7

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.

4.0 WASTE MANAGEMENT PRACTICES AND UNITS

The waste management units to be permitted at Los Alamos consist of the following, as noted in Section 2.0:

- TA-50 Batch Treatment System, Modular Container Storage Buildings, and Chemical Waste Incinerator and Associated Container Storage Areas
- TA-54 Waste Transfer, Packaging and Storage Units and Treatment Tanks
- TA-50 Container Storage Pad
- TA-16 Industrial Incinerator
- TA-14 and 16 Open Burning Units
- TA-14, 15, 36, and 39 Open Detonation Units.

These Laboratory units and related hazardous waste processing activities (treatment and storage) are described in the following sections.

4.1 TA-50 BATCH TREATMENT SYSTEM AND ASSOCIATED CONTAINER STORAGE UNITS

The lower level of Building 1 at TA-50 houses waste treatment units for treating radioactive liquid wastes and nonradioactive RCRA-regulated wastes. The hazardous waste treatment unit (the batch treatment unit) is located in a room with approximately 425 square feet of floor area (Figure 4-1). The cement pad underlying the treatment system is presently in good condition, free of any cracks, gaps or holes. The cement pad underlying the treatment system is coated with epoxy (see Appendix I) to prevent damage in the event of a spill. The area can easily be inspected and is free of cracks and other signs of deterioration. The treatment unit includes a versatile batch, wet chemical processing system (Figure 4-2), designed to neutralize or treat acids and bases, cyanides and heavy metal-containing solutions.

Container storage for the Batch Treatment System occurs south of Building 1 in modular storage buildings. Drummed or otherwise containerized hazardous waste scheduled for treatment is stored in the prefabricated units. Each unit is 22 feet, 8 inches by 9 feet by 8 feet, 7½ inches high, and is capable of storing a maximum of 30 55-gallon drums or the equivalent amount of bulk storage

containers. Up to three storage units are anticipated to provide storage for the Batch Treatment System. Figure 4-1 shows the location of each storage unit. A complete manufacturer's description of the storage units is presented

both before and after treatment. The Waste Analysis Plan, Section 3.2, discusses the parameters, rationales, test methods and sampling methods pertinent for characterizing these wastes.

After rendering wastes nonhazardous by treatment (see Section 4.1.3), the resulting liquid is sampled by opening of the valves on the treatment tank. The types and frequency of analyses performed and the analytical methods employed are identical to those noted for the wastes prior to treatment (see Section 3.0). Liquid, post-treatment effluent is placed in the treatment tanks at TA-54, Area L and allowed to evaporate. Residue from effluent evaporation in Area L treatment tanks and sludge generated in the treatment of listed wastes (NMHWMR 201.C.2 through 201.C.4) will be mixed with cement in drums and stored at Area L prior to disposal at a permitted off-site facility. Any effluent or sludge resulting from the treatment of material which is a RCRA waste because it exhibits one of the four characteristics (NMHWMR 201.B) will be handled as hazardous waste if the effluent or sludge continues to exhibit the characteristic. After treatment, wastes are discharged to a holding tank pending results of chemical analysis for disposal requirements. Effluent generated by the treatment of a characteristic waste which does not exhibit the characteristic will be discharged to the industrial waste treatment system.

The fume hood area of the batch treatment room is used for transfer of liquids from one drum to another (as, for example, from a damaged drum to a new drum or to collect liquids for incineration, etc.). This area is typically used when a waste generator within the Laboratory cannot transfer liquids without receiving vapor exposures to chemicals such as xylene or toluene.

4.1.2 Secondary Containment Areas

The eight-inch curb which encloses about 150 square feet of floor space beneath the batch treatment system provides containment for approximately 850 gallons of liquid. This containment volume is greater than the 500-gallon capacity of the batch treatment system. Raised floor drains that empty into the industrial (radioactive) sewer system are located within the curbed area. The level of these drains is about one-half inch below the top of the curb; thus, the serrated tops of the floor drains have been replaced with blind

4.1.3.1 Cyanide Waste Treatment

Batches of up to 220 gallons of waste cyanide solution are treated at one time in the treatment system. Cyanide solutions are received at the unit in 55-gallon drums. After analysis, the solutions are transferred from the drums into the treatment system tank by transfer pump. Pump specifications and the vendor information on the pumps are included in Appendix I (page I-54). Based on the volume of the solution and its cyanide concentration, measured amounts of sodium hypochlorite or a combination of chlorine gas and sodium hydroxide are added to the tank through pipelines and valves. The subsequent series of reactions of these chemicals with the cyanide in solution results in the essentially complete destruction of the cyanide. The end-products of this process are sodium chloride, carbon dioxide and nitrogen.

4.1.3.2 Chromate Waste Treatment

Chromate plating solutions are treated in batches of up to 150 gallons. These wastes are received in 55-gallon drums and transferred to the waste treatment system tank in the same manner as that used for cyanide wastes. Sulfur dioxide gas or sodium hydrosulfide is introduced into the tank and the pH maintained below 2 by addition of sulfuric acid. Resulting reactions reduce the chromium in the plating solutions from the plus six to the plus three valence state. After reduction of the chromium, sodium hydroxide is added to the tank, raising the pH to about eight and precipitating the chromium as the metal hydroxide. This precipitant is filtered from the tank solution, mixed in a drum with cement and stored at TA-54, Area L for disposal at a permitted facility. If the waste liquid contains any listed hazardous waste, or exhibits one of the four characteristics of hazardous waste, it will be evaporated in the Area L treatment tanks and the residue will also be mixed with cement in drums and stored at Area L prior to disposal at a permitted facility.

4.1.3.3 Acid/Base Heavy Metal Waste Treatment

Acid/base wastes resulting from processes such as copper etching and plating are treated in approximately 400-gallon batches which are stored at Area L. These wastes are transferred to the treatment tank in the same manner as other wastes and are neutralized. Sodium hydroxide is used to neutralize waste acids, and hydrochloric or sulfuric acid are the neutralizing agents for alkaline solutions. In addition to neutralization, acid solutions are treated

It is intended that the waste incinerator be used to reduce significantly the volume of hazardous waste requiring off-site land disposal. Incineration, coupled with batch treatment and recycling when feasible, should eventually reduce the volume of landfilled wastes to a minimal level. Some wastes may not be suitable for incineration. These wastes will be identified by actual waste analysis or process knowledge (see Section 3.2) and will be segregated from incinerator-suitable materials (see Section 3.3).

Wastes to be incinerated are stored at the Area L Waste Transfer, Packaging and Storage Unit if storage for greater than 90 days is required or in the Room 117 storage area within Building 37. Solid wastes are received at the incinerator unit in sealed containers which may be opened or sorted as necessary. Prior to incineration, the solid wastes are restricted to an area that has been engineered for proper storage of the material. Liquid wastes are also received in sealed containers. Prior to incineration, the liquid wastes are either retained in the sealed container (if the container is within a shipping cask designed for spill control) or may be transferred by dip tube/pump into the 155-gallon KYNAR-lined holding/ blending tanks. Only compatible wastes are placed in the holding/blending tanks at any one time. Compatibility is assured by mixing only wastes that are in the same packaging categories, as described in Appendix L. Segregation and transfer of the wastes are performed by trained chemical waste technicians inside a properly ventilated enclosure (see Figure 4-3 for locations of emergency equipment). During transfer operations, personnel are equipped with protective clothing and respiratory protection, as required.

The pumps used to transfer liquid wastes into the holding/feed tanks are Lutz brand air-driven centrifugal driven pumps. The pump's suction tube fits directly into the bung hole of the waste drum. These pumps are self-priming, made of Kynar and Hasteloy C276, and transfer liquid at a rate of 25 gallons per minute.

The pH of the circulating flue-gas scrub solution is continuously monitored and adjusted when desired by addition of sodium hydroxide. The specific gravity of the scrub solution is monitored and maintained at or below a value

that would allow the precipitation of solids. The specific gravity of the flue-gas solution is monitored and maintained well below the precipitation threshold value by replacement of the recycled solution with fresh water.

Ash is removed from the incinerator via two knife gate valves directly, by gravity, into a 55-gallon drum. Ash cleanup from the cooled incinerator is accomplished using sweeping wands operated through glove ports. The ash storage is limited to less than 90 days, in accordance with 40 CFR 262.34(a) (NMHWMR 204.B.1) so a RCRA permit is not required for the ash hopper. Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter bags are handled as suspect radioactive wastes. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement, calcium sulfate, or other DOE-approved immobilizing media, and stored for proper disposal. Ash that is classified as low-level radioactive waste is analyzed according to the procedures in Section 3.0 to determine whether or not a hazardous waste component is present. If the waste is also found to be a hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. Thus, the incinerator is used for volume reduction of radioactive and hazardous waste as described above, and the ash is considered potentially to be hazardous waste [40 CFR 261.3 (c)(2)] [NMHWMR 201.A.2.c(2)] and is checked for radioactive and hazardous waste contamination and handled appropriately.

4.2.3 Waste Incinerator Trial Burn Plan and Trial Burn Results

Pursuant to RCRA Part B permit application requirements noted in 40 CFR 270.62 (NMHWMR 302.E.2), a trial burn plan (including a quality assurance plan) has been developed for the Controlled Air Incinerator (CAI) system at Los Alamos and a trial burn has been conducted. The trial burn, results of the trial burn, and quality assurance plans are in Appendix J. The trial burn is summarized below. Startup/shakedown procedures are not applicable because the Laboratory incinerator is an existing unit.

The RCRA Trial Burn of the Chemical Waste Incinerator was conducted during September 1986 in accordance with the Trial Burn Plan. The trial burn was

During the trial burn, and during normal operation of the incinerator, a log is completed for all operations, including completion of data sheets every two hours and continuous monitoring/recording of major parameters. These logs are a record of operating conditions and provide evidence that the operator has checked and is aware of the actual operating status of the system. The time at which entries are made is shown, as are the actual instrument reading for each variable. If automatic shutdown occurs, the log will state the nature of the shutdown, the time it occurred and the suspected cause. Additionally, unusual conditions or situations such as spills or leaks are noted on the log. Further, once each shift, the shift supervisor inspects the unit for malfunctions, deterioration, operator error and discharges that could lead to discharge of hazardous waste constituents to the environment or to a threat to human health. If it is determined that a spill potential exists, corrective action is taken immediately.

Detailed results of the trial burn are presented in Section D-5h of Appendix J. During the trial burn, the incinerator achieved or exceeded the performance standards of 40 CFR §264.343. Based on these results, Los Alamos wishes to permit the incinerator for waste feed of carbon tetrachloride and lower on the EPA Incinerability Index.

After completion of the RCRA Trial Burn, several modifications have been made to the incinerator; however, the modifications are primarily equipment upgrades and thus are considered minor in nature. Detailed descriptions of these minor modifications are presented in Appendix J-1.

The interim period between completion of the trial burn and receipt of final approval for full operating authority could be several months. During this time, Los Alamos intends to continue operating the incineration system under interim status on a full-time basis for volume reduction of hazardous waste.

4.3 TA-54, AREA L WASTE TRANSFER, PACKAGING AND STORAGE UNITS

The waste transfer, packaging and storage units are used to store and to package or solidify hazardous chemical wastes. When ready, wastes are transported from the units to treatment units or off-site for disposal or recycling at a permitted facility. Two structures comprise the Area L waste

transfer, packaging and storage units. These include a metal building and a roofed concrete pad. A plan view of the metal building is shown in Figure 2-6. The roofed concrete pad plan is shown in Figure 2-7.

These metal building and concrete pad structures are used to store lab packs in 55-gallon drums. Prior to the containerization of the lab packs into the 55-gallon drums, an identification and appropriate segregation of the hazardous wastes is performed. This may involve the placement of waste in small containers into drums, pouring liquid waste into drums, and transfer of waste from one drum to another. All drums and containers are kept closed during storage and are opened only when chemicals are transferred from one container to another or when lab packs are prepared.

A representative handling/storage load for the metal building consists of the following:

- Four 55-gallon drums as lab packs
- 25 gallons of miscellaneous wastes in assorted small (five-gallon or less) containers.

A maximum of eight 55-gallon drums (or 14 30-gallon drums) can be stored in the metal building. The volume of liquid waste stored in the building will not exceed 440 gallons (as described in the Part A Application) due to the mix of lab packs and stabilized and free liquids. The small containers will be stored adjacent to the drums on the grates. The small containers will eventually be placed in lab packs and/or the contents transferred to 55-gallon drums.

A total of 304 55-gallon drums can be stored at the roofed concrete pad by stacking drums on pallets on top of the first layer of drums using a forklift. Two 225-gallon storage containers are also located on the pad. These containers are constructed of polyethylene and are designed to facilitate movement with a forklift truck. The containers meet DOT Specification No. E9052. The material of construction, polyethylene, is compatible with any waste that will be stored in them based on vendor chemical suitability data. Vendor information on the 225-gallon containers is contained in Appendix I-2.

Additional containers of this description in either 225- or 330-gallon size may take the storage place of 55-gallon drums. The total gallon capacity will not be exceeded per storage cell.

The 55-gallon drums meet the DOT Specification No. 17C or 17H (small containers are also DOT approved). Corrosive wastes will be stored in DOT drums with polyethylene liners as necessary.

Containers not containing liquids may be stored, on pallets or otherwise elevated four inches, in cleared areas within the fenced portions of Area L subject to the limitations of NMHWMR 206.D.4.f.(3) and 206.D.4.f.(4). Such containers shall not be stored within 10 feet of the perimeter fence, nor 10 feet of closed disposal unit covers, nor 5 feet on either side of buried or overhead utility lines, nor 20 feet of any structure, nor 5 feet of any paved or unpaved roadway.

Waste handling equipment used at these units include the following:

- Hand trucks
- Drum pumps
- Fork lift.

The drums will be stored on wooden pallets (only upper layer); the pallets are moved, positioned, and stacked at the roofed storage area by use of a forklift.

The Los Alamos procedure for transferring wastes from containers to the treatment system utilizing the drum pumps is included as Appendix K.

4.3.1 Lab Packs

Lab packs are used at Los Alamos to containerize the laboratory wastes, particularly the laboratory R&D wastes. A typical lab pack (Figure 2-8) consists

with Semstone® epoxy to prevent damage in the event of a spill. The Semstone® epoxy was chosen for its resistance to a wide range of acids, alkalis, solvents and water solutions (see Appendix I-1 for vendor information). The containers at the metal storage building are elevated by use of the metal or fiberglass grates and wooden pallets to prevent contact with free liquids. The second layer of containers at the roofed concrete pad are stored on wooden pallets.

4.3.3 Current Container Management Practices

When a chemical waste is ready for treatment or disposal, personnel at the generating laboratory contact Group HSE-7. HSE-7 personnel then visit the generating site to package the waste for transport to the waste transfer, packaging and storage units at Area L. The wastes are packaged and labeled in compliance with DOT and EPA requirements. The wastes are transported on a three-ton flat-bed truck.

When the HSE-7 personnel pick up the wastes from the generator, a Chemical Waste Disposal Request form (H-1 in Appendix H) is completed. The form lists the chemicals being transported and is carried in the truck during transport. Once the lab wastes are received in the waste transfer, packaging and storage units, they are segregated into compatible chemical groups (e.g., oxidizers, organics, etc.). They are then packed with vermiculite (heavier containers at the bottom) in 55-gallon drums as described in Section 4.3.1, and in accordance with Los Alamos' procedure for identification and segregation of hazardous wastes (Appendix L).

A second form called "Los Alamos Hazardous Chemical Waste Disposal Record" (H-2 in Appendix H) is also completed for each lab pack. This form is used to record information such as:

- Origin, description and quantity of each waste received
- Method of treatment, storage or disposal
- Location of disposal
- List of chemicals in lab packs.

The segregation capabilities of the waste transfer, packaging and storage units permit storage of up to nine waste types at any one time (six on the concrete pad and three in the metal building).

nel are equipped with appropriate personal protection devices. If greater than 90-day storage of recyclable materials is required, they are stored at the Area L storage units.

Any bulging drums are handled in accordance with accepted practice and Laboratory procedures (Appendix M).

Any spills resulting from transfer of materials will be cleaned up in accordance with Section 7.5.1.1.

Other management practices currently followed at Los Alamos as they apply to these units include the following:

- Only compatible wastes are handled at any one time.
- Drums are inspected on a weekly basis and prior to their use.
- A maximum of eight 55-gallon drums are handled at any one time in the metal building.
- Appropriate spacing of drums is provided.

4.4 TA-54, AREA L TREATMENT TANKS

Four 1665-gallon ten-gauge carbon steel tanks are also located at TA-54, Area L. The tanks are nine feet in diameter and three feet, six inches high and are constructed of 10-gauge carbon steel. Structural support is provided by a 2-inch by 2-inch angle iron stiffening ring on the lip of the tanks. The tanks are flat-bottomed and rest on four-inch by four-inch redwood lumber. These tanks are used to neutralize acids and bases, oxidize reactive wastes such as lithium hydride, and evaporate RCRA-regulated and non-RCRA-regulated wastes. The tanks are also used to chemically treat sands containing barium and to reduce chromium. Treatment of barium sand involves the addition of Na_2SO_4 and H_2SO_4 to barium-contaminated sands to precipitate $BaSO_4$. Detailed descriptions and procedures for this process are presented in Appendix X. Mildly acidic chromium wastes are treated by addition of powdered or liquid sodium sulfite and precipitation of chromium salts. Reactive wastes are treated by addition of controlled amounts of water to wastes in the tank. The specific gravity of any liquid placed in the tank will not exceed 1.5.

The tank covers do not normally come in contact with the waste in the tanks; their purpose is to prevent rain water from entering the tanks so that net evaporation is increased. The tank covers are not routinely discarded. If visual evidence or operating records indicate that a cover is contaminated, it is disposed of as hazardous waste.

Both liquid and solid waste are introduced to the treatment tanks through the open top. Grab samples are taken from tanks prior to and after treatment of wastes (at a minimum). This confirms completeness of treatment prior to removal. Prior to the placement of a new waste into a tank, the old tank liner is removed if the new and old wastes are not compatible.

4.5 TA-50 STORAGE PAD

The TA-50 Storage Pad is used to store containerized hazardous chemical wastes. When ready, wastes are transported from the unit to treatment units or off site for disposal or recycling at a permitted facility. The TA-50 Storage Pad consists of a roofed concrete pad identical to the storage pad at TA-54, Area L. The roofed concrete pad plan is shown in Figure 2-7. The TA-50 Storage Pad is used to store lab packs, liquids in 55-gallons drums, and other storage containers, as described in Section 4.3.1.

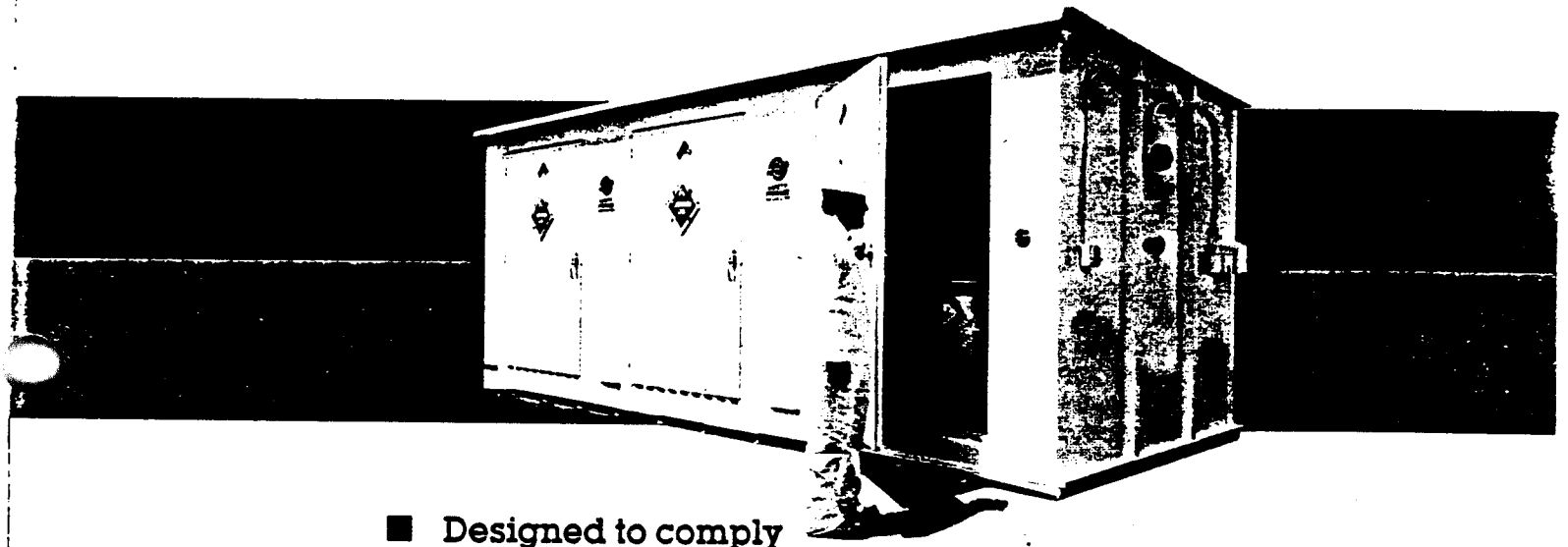
A total of 304 55-gallon drums can be stored at the roofed concrete pad by stacking drums on pallets on top of the first layer of drums using a forklift. Two 225-gallon storage containers are also located on the pad. These containers are constructed of polyethylene and are designed to facilitate movement with a forklift truck. The containers meet DOT Specification No. E9052. The material of construction, polyethylene, is compatible with any waste that will be stored in them based on vendor chemical suitability data. Vendor information on the 225-gallon containers is contained in Appendix I-2. Additional containers of this description in either 255- or 330-gallon size may take the storage place of 55-gallon drums. The total gallon capacity will not be exceeded per storage cell.

The 55-gallon drums meet the DOT Specification No. 17C or 17H (small containers are also DOT approved). Corrosive wastes will be stored in DOT drums with polyethylene liners as necessary.

13145/SAF
BuyLine 5195

Safety Storage Containers

for packaged chemicals and hazardous materials



- Designed to comply with regulatory standards for storing hazardous materials
- Factory-built to user requirements
- Four model sizes
- Readily available
- Relocatable

SAFETY STORAGE, INC.
18900 Stevens Creek Blvd.
Cupertino, CA 95014
408/252-2750
1-800/621-0854 Ext. 926

CARL HIME & ASSOCIATES
8220 La Mirada Road NE Suite 300
ALBUQUERQUE, NEW MEXICO 87109
(505) 292-3007

FIGURE 14

MODEL 10 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 10 SAFETY STORAGE BUILDING	$5,700

- Outside Dimensions (LxWxH): 10'6" x 6'6" x 8'4"
- Inside Dimensions (LxWxH): 10'4" x 5'9" x 6'9"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 150 Gallons
- Double-Door with Safety Lock
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- One Interior Grounding/Bonding Lug
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS	
1. Shelving (per linear foot)	25
2. General-Purpose Fiberglass Grating	1,150
3. Corrosive-Resistant Fiberglass Grating	1,440
4. Polypropylene Sump Liner	600
5. Hold-down Assembly	200
6. Gas Cylinder Wall Mount (each)	55
C. MISCELLANEOUS OPTIONS	
1. Emergency Eye/Face Wash (Permanent)	300
2. Emergency Eye/Face Wash (Portable)	720
3. Loading Ramp	850
4. Special Order Exterior Paint	300
5. Exterior Chemical-Resistant Finish	600

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

Safety Storage

Spill Containment, Fire Protection, Security

Safety Storage chemical and hazardous material containers are readily available for delivery throughout the United States. Four different size models can be used immediately upon delivery. They are turnkey units which require a minimum of site preparation. These high-quality units meet government standards and regulations for hazardous-materials storage. You can gain in many ways when you order:

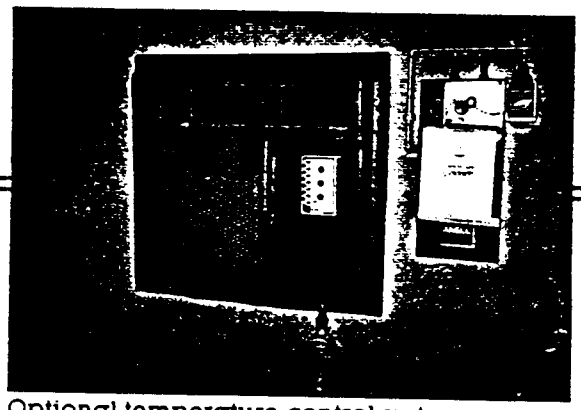
- More economical than comparable block or concrete structures.
- Can be tailored to fit your requirements.
- Avoid costly delays characteristic of on-site construction.
- Combine spill containment, security, fire protection and worker safety.
- Can be relocated on- or off-site.
- You pay only for the features you need.

Safety Storage container construction

Safety Storage containers are made of welded 10- and 12-gauge steel with supporting structural steel sections. Four models are available, the largest of which is the Model 22 with outside dimensions of 22'8" x 9' x 8'7". Three doors, each with three-point locking systems, provide access and security. The 500-gallon secondary spill-containment reservoir, the walls and the ceiling, all are covered with two coats of chemical-resistant epoxy. Maximum storage capacity is 10 tons of chemicals and hazardous materials (drums, boxes and cans). For example, thirty 55-gallon drums can be by conveniently accommodated. Loading can be by forklift or by hand. Standard floors are 1⅛" thick, epoxy-coated, fire-resistant plywood.

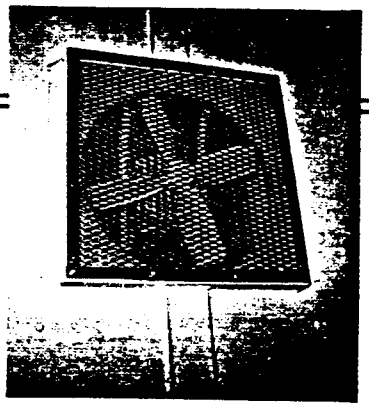
Safety features in this carefully engineered unit include a spill-containment sub-floor to prevent escape of hazardous liquids or solids. It is constructed of continuously welded 10-gauge steel which is epoxy coated to resist chemical attack. Blow-out panels are provided for pressure relief under explosive conditions. A static grounding connection helps to protect flammable materials from ignition by electrical discharge. And fire protection is supplied by three water sprinkler heads with a 2" NPT fitting located outside the container for sprinkler system hookup.

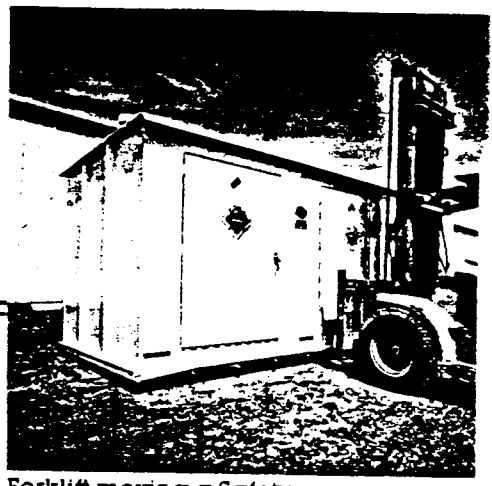
Permanent placards and NFC 704M rating signs are provided for flammable materials, corrosives, oxidizers, poisons and other hazardous materials stored within.



Optional temperature-control system for temperature-sensitive chemicals.

Non-sparking exhaust fan and protective aluminum shield (shown without louvered cover).





Forklift moving a Safety Storage chemical container to a new location.

Equipped to meet your needs

Optional features are determined by your specific storage requirements. For example: If you are going to store flammable liquids, we offer a dry chemical system to supplement or replace the standard sprinkler system. If you plan to store incompatible materials, we can install suitable separation walls. And, if you require shelf space for small containers, we can provide sturdy, epoxy-coated shelves of 15¼" depth.

Corrosives?...We offer a polypropylene spill-containment reservoir liner and fiberglass floor grating for additional protection. Do you want to monitor liquid spills continuously? Another option is a liquid-level detector that can either tie into your plant security system or an exterior audible alarm.

Worker safety?...We have selected only UL-approved equipment for lighting and explosion-proof electrical wiring systems—which also meet NEC, NFPA and NEMA requirements. The forced ventilation system is designed to provide one air change per minute and is powered by a Class I, Division I, totally enclosed explosion-proof motor. The fan has non-static aluminum blades, and the ductwork is epoxy-coated steel.

Safety Storage containers can be equipped with heating/cooling units to provide a moderated environment for stored chemicals. Double-wall insulated construction is also available.

Emergency eye/face wash units are still other worker-safety options.

How you can benefit from installing Safety Storage containers

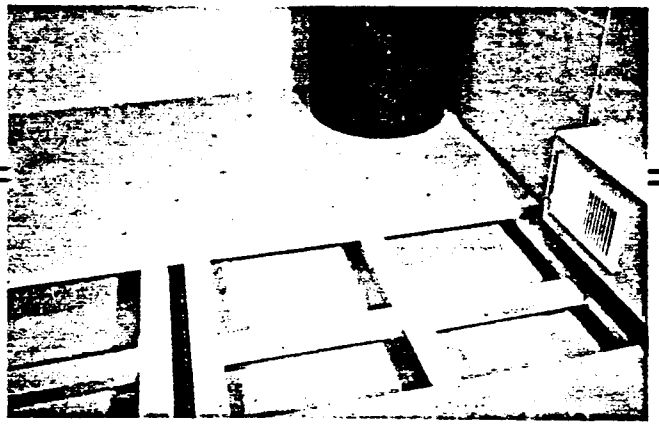
Regardless of how you equip your new Safety Storage chemical containers, you benefit in many ways:

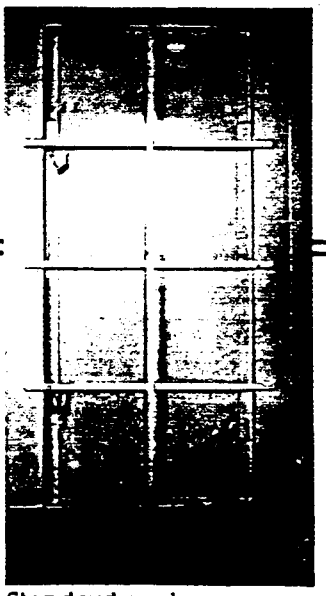
Spill containment. Soil and ground-water pollution from chemical leaks is of major concern throughout industry. Your company's possibility of liability can be reduced by using easily monitored Safety Storage containers with secondary containment for leaks and spills. We believe you will find them to be a safe, efficient solution to this potential environmental problem.

Fire protection. The risk of fire and/or explosion is always present when storing hazardous and flammable materials. Safety Storage design engineers have incorporated suggestions and recommendations from fire-protection specialists across the country to meet or exceed design and regulatory standards.

Security. Accountability and security are closely linked. It is essential in today's business climate to be

Spill-containment reservoir shown below standard plywood flooring.





Standard explosion vent panel is designed to relieve interior pressure.

A typical Model 22 plant-site installation.

Patent Pending. Copyright 1986. Safety Storage, Inc. All rights reserved.

FIGURE 14

Safety Storage

Spill Containment, Fire Protection, Security

Safety Storage chemical and hazardous material containers are readily available for delivery throughout the United States. Four different size models can be used immediately upon delivery. They are turnkey units which require a minimum of site preparation. These high-quality units meet government standards and regulations for hazardous-materials storage. You can gain in many ways when you order:

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- Can be tailored to fit your requirements.
- Avoid costly delays characteristic of on-site construction.
- Combine spill containment, security, fire protection and worker safety.
- Can be relocated on- or off-site.
- You pay only for the features you need.

Safety Storage container construction

Safety Storage containers are made of welded 10- and 12-gauge steel with supporting structural steel sections. Four models are available, the largest of which is the Model 22 with outside dimensions of 22'8" x 9' x 8'7". Three doors, each with three-point locking systems, provide access and security. The 500-gallon secondary spill-containment reservoir, the walls and the ceiling, all are covered with two coats of chemical-resistant epoxy. Maximum storage capacity is 10 tons of chemicals and hazardous materials (drums, boxes and cans). For example, thirty 55-gallon drums can be by conveniently accommodated. Loading can be by forklift or by hand. Standard floors are 1⅛" thick, epoxy-coated, fire-resistant plywood.

Safety features in this carefully engineered unit include a spill-containment sub-floor to prevent escape of hazardous liquids or solids. It is constructed of continuously welded 10-gauge steel which is epoxy coated to resist chemical attack. Blow-out panels are provided for pressure relief under explosive conditions. A static grounding connection helps to protect flammable materials from ignition by electrical discharge. And fire protection is supplied by three water sprinkler heads with a 2" NPT fitting located outside the container for sprinkler system hookup.

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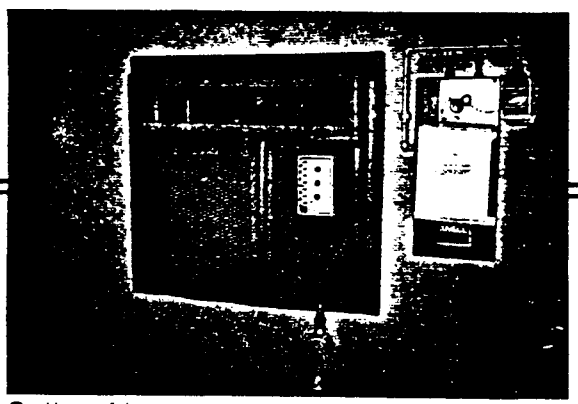
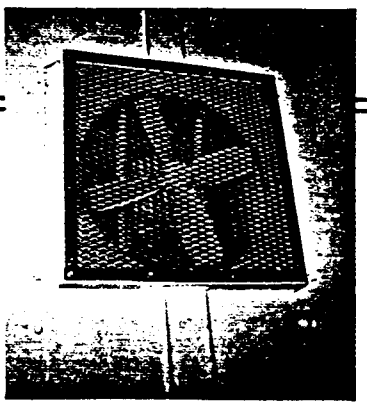
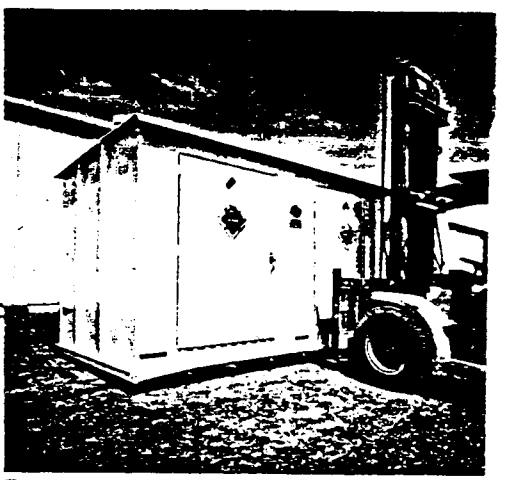


Optional temperature-control system for temperature-sensitive chemicals.

Non-sparking exhaust fan and protective aluminum shield (shown without louvered cover).





Forklift moving a Safety Storage chemical container to a new location.

FIGURE 14

able to document and account for the receipt, storage, handling, use and disposal of chemicals and hazardous materials. This includes tight control over access to Safety Storage containers with their three-point locking doors. Security is another Safety Storage cornerstone.

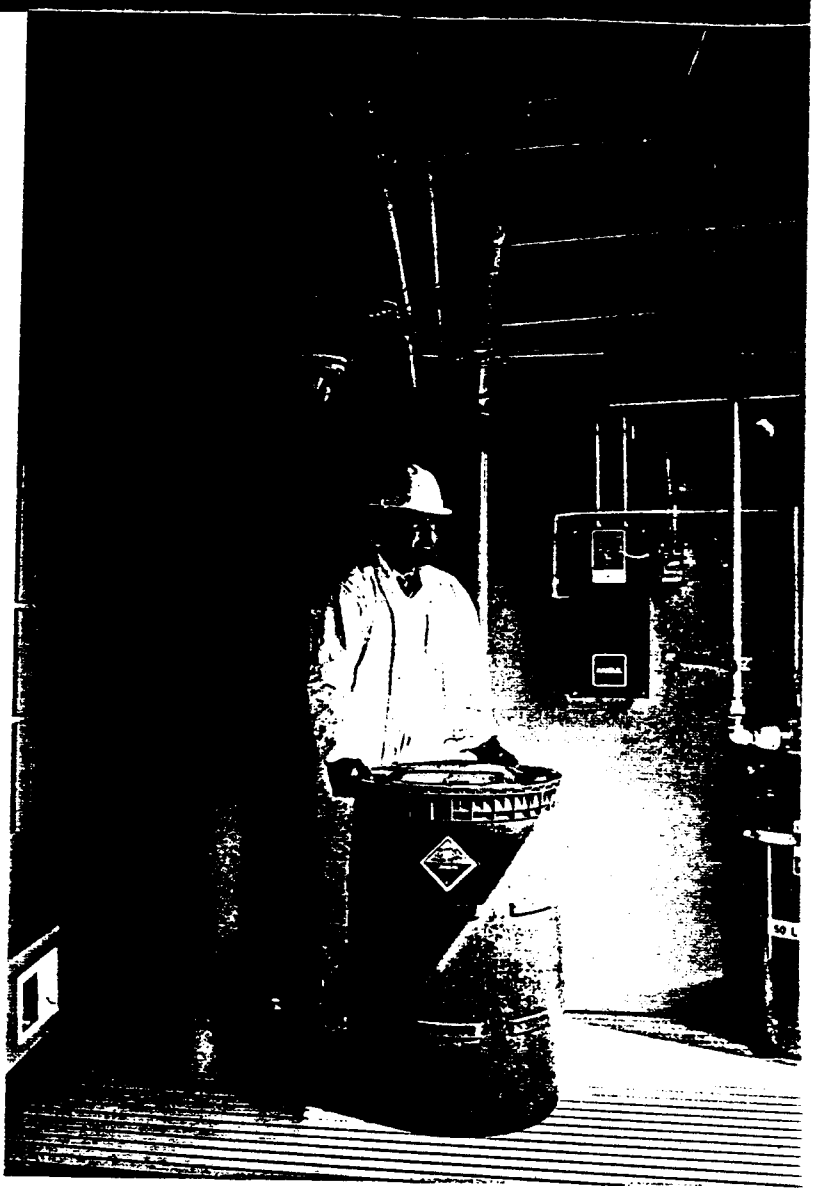
Worker safety. You can be assured that every effort has been made in the design and manufacture of these chemical storage containers to protect the safety of personnel. Safety features include warning placards, static grounding, alarms, security locks, fire and explosion protection, emergency washing facilities, ventilation, temperature control, exterior switches and sprinkler system hook-ups.

Ordering information

Features for containers manufactured by Safety Storage, Inc., can vary widely for each individual application. Therefore, design specifications are custom written to fit each model and usage. In addition, a leasing option is available to help serve your chemical-storage needs now, while conserving your capital.

Safety Storage Sales Representatives

Safety Storage sales representatives, located in most U.S. industrial communities, are trained to help you attain your safe chemical storage objectives. They will assess your chemical storage needs, prepare detailed storage-unit sketches and specifications, and provide written price quotations. Our manufacturing plants are strategically located to reduce delivery costs and shorten delivery times.



Models and basic statistics

Model	Outside Dimensions			Inside Dimensions			Weight (Lbs.)	Door Openings		Designed Storage Capacity			Sump Capacity (Gallons)
	Length	Width	Height	Length	Width	Height		Height	Width	Weight (Lbs.)	Sq. Ft.	Drums	
22	22'8"	9'0"	8'7½"	21'11¾"	8'0⅜"	7'0½"	8,600	6'9¾"	4'6"	20,000	176	24–40	570
15	15'3¾"	9'0"	8'7½"	14'7½"	8'0⅜"	7'0½"	6,000	6'9¾"	4'6"	14,000	117	16–28	380
7	8'0¼"	9'0"	8'7½"	7'3½"	8'0⅜"	7'0½"	3,400	6'9¾"	4'6"	7,000	58	8–12	190
4	6'0"	6'4½"	6'4½"	5'8½"	5'9"	4'11"	1,500	4'10"	4'7"	4,000	32½	4	85

SAFETY STORAGE, INC.
18900 Stevens Creek Blvd.
Cupertino, CA 95014
408/252-2750
1-800/621-0854 Ext. 926

The contents of this brochure outline the general capabilities of Safety Storage, Inc., containers, and should be used only as guidelines for capabilities and applicability. No warranty is implied or intended by the contents of this brochure. Individual warranties are written for each customer's specifications.

SS-101 Printed in U.S.A.

FIGURE 14

CARL HIME AND ASSOCIATES
Professional Management Services

8220 LA MIRADA RD., NE • ALBUQUERQUE, NEW MEXICO 87109 • (505) 292-3007

April 13, 1987

Ms. Karen A. Balo
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop J592
Los Alamos, New Mexico, 87545

Dear Ms. Balo:

Since my last correspondence to you, several very exciting things have happened with Safety Storage, Inc.

1. Safety Storage, Inc. has designed and brought out several new down-sized units as described on the attached price sheets and brochure. The new units are more economical to purchase and provide more flexibility for low volume users.

2. New Mexico now has four (4) of the units in use on three (3) federal agency projects or programs.

3. Safety Storage, Inc. has reengineered the Model 22 and other previously available units to reflect direct customer feedback.

4. Safety Storage Inc.'s customer list continues to grow and now looks like the who's who of high-tech manufacturing and users/generators of hazardous chemicals and wastes.

Please do not be insulted by my not having called you personally reference Safety Storage, Inc.'s products. I have followed-up on many of the inquiries, but find myself trapped between spending time with tire-kickers and real potential buyers who understand the need and cost-effectiveness of the Safety Storage Containers. This letter is an effort to let you know to let me know that you are more than a tire-kicker.

I do wish to hear from you. A note or a telephone call is all it will take to get me to call and set up an appointment with you. Please, if you have a need for the hazardous materials storage containers, let me know.

Sincerely,

, President

Carl Hime
Carl Hime and Associates

Enclosures: Price Sheets
Brochure

CH/kh

cc: Chrono

FIGURE 14

SAFETY STORAGE BUILDINGS
TEMPERATURE CONTROL OPTIONS

	Price
A. EXPLOSION-PROOF HEATING SYSTEMS (Class I, Division I, Group D)	
1. One 12,000 BTU/Hr. Heater and One Thermostat	$ 3,330
2. One 26,000 BTU/Hr. Heater and One Thermostat	4,000
3. Two 12,000 BTU/Hr. Heater and One Thermostat	4,650
4. Two 26,000 BTU/Hr. Heater and One Thermostat	6,250
5. Two 12,000 BTU/Hr. Heater and Two Thermostats	4,900
6. Three 12,000 BTU/Hr. Heater and Three Thermostats	6,700
7. Two 26,000 BTU/Hr. Heater and Two Thermostats	6,500
8. Three 26,000 BYU/Hr. Heater and Three Thermostats	9,050
B. INSULATION (R-11, with Double Wall Construction)	
1. Model 22 Safety Storage Building	
a. Ceiling, Walls, and Doors	3,700
b. Sub-Floor	1,200
2. Model 15 Safety Storage Building	
a Ceiling, Walls, and Doors	2,750
b. Sub-Floor	920
3. Model 7 Safety Storage Building	
a. Ceiling, Walls, and Doors	1,730
b. Sub-Floor	525
C. AIR CONDITIONING SYSTEMS (Explosion-Proof)	
1. Class I, Division II, Group D	
a. 10,700 BTU/Hr.	5,400
b. 16,300 BTU/Hr.	5,650
c. 24,200 BTU/Hr.	6,100
d. 35,000 BTU/Hr.	6,450
2. Class I, Division I, Group D	
a. 10,700 BTU/Hr.	6,500
b. 16,300 BTU/Hr.	6,750
c. 24,200 BTU/Hr.	7,300
d. 35,000 BTU/Hr.	7,750
D. AIR CONDITIONING/HEATING COMBINATIONS (Explosion-Proof)	
1. Class I, Division II, Group D	
a. 19,000 BTU/Hr. Cooling and 17,000 BTU/Hr. Heating	7,300
b. 34,500 BTU/Hr. Cooling and 22,000 BTU/Hr. Heating	8,250

NOTES:

1. To insulate one or two compartments of a Model 22, add a Firewall and use the Model 7 or Model 15 insulation prices for 1/3 or 2/3 building, respectively.
2. For buildings with Temperature Control and also having Ventilation Systems, add $400 to the price of the Ventilation System for Air Inlet Vents.
3. Air Conditioners require installation by end user.

FIGURE 14

MODEL 22 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 22 SAFETY STORAGE BUILDING	$14,200

- Outside Dimensions (LxWxH): 22'8" x 9' x 8'7 1/2"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 570 Gallons
- Three Doors, each with a 3-point Locking Mechanism
- Fire Sprinkler System with Three Fire Sprinklers
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- Three Interior Grounding/Bonding Lugs
- One Grounding Rod
- Three Permanent D.O.T. Placards
- Three Pressure Sensitive NFPA 704M Rating Signs

B. STRUCTURAL OPTIONS	
1. Explosion Relief Construction	2,400
2. Chemical Separation Wall, Metal	650
3. Chemical Separation Wall, 2-Hour Fire Rated	1,100
4. General-Purpose Fiberglass Grating (Building)	2,775
5. General-Purpose Fiberglass Grating (Room)	925
6. Corrosive-Resistant Fiberglass Grating (Building)	3,450
7. Corrosive-Resistant Fiberglass Grating (Room)	1,150
8. Polypropylene Sump Liner (Building)	1,440
9. Polypropylene Sump Liner (Room)	480
10. Shelving (per linear foot)	25
11. Hold-down Assembly	200
12. Gas Cylinder Wall Mount (each)	55
C. EXPLOSION-PROOF ELECTRICAL OPTIONS	
1. Ventilation System. 16" Fan. (Approx. 1,200 CFM)	1,875
2. Ventilation System. 12" Fan. (Approx. 450 CFM)	1,025
3. One Interior Light	750
4. Two Interior Lights	1,250
5. Three Interior Lights	1,650
6. One Exterior Light	800
7. Liquid Level Detector with Alarm (Per Room)	970
D. FIRE PROTECTION OPTIONS	
1. Dry Chemical Fire Suppression System (Building)	2,775
2. Dry Chemical Fire Suppression System (Room)	2,100
3. Fire Department Hookup (21/2" NHT Fitting)	75
E. MISCELLANEOUS OPTIONS	
1. Automatic Alarm-Dialing System	3,200
2. Emergency Eye/Face Wash (Permanent)	300
3. Emergency Eye/Face Wash (Portable)	720
4. Loading Ramp	850
5. Special Order Exterior Paint	400
6. Exterior Chemical-Resistant Finish	800

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

MODEL 15 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 15 SAFETY STORAGE BUILDING	$10,400

- Outside Dimensions (LxWxH): 15'4" x 9' x 8'71/2"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 380 Gallons
- Two Doors, each with a 3-point Locking Mechanism
- Fire Sprinkler System with Two Fire Sprinklers
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- Two Interior Grounding/Bonding Lugs
- One Grounding Rod
- Two Permanent D.O.T. Placards
- Two Pressure Sensitive NFPA 704M Rating Signs

B. STRUCTURAL OPTIONS	
1. Explosion Relief Construction	1,700
2. Chemical Separation Wall, Metal	650
3. Chemical Separation Wall, 2-Hour Fire Rated	1,100
4. General-Purpose Fiberglass Grating (Building)	1,850
5. General-Purpose Fiberglass Grating (Room)	925
6. Corrosive-Resistant Fiberglass Grating (Building)	2,300
7. Corrosive-Resistant Fiberglass Grating (Room)	1,150
8. Polypropylene Sump Liner (Building)	960
9. Polypropylene Sump Liner (Room)	480
10. Shelving (per linear foot)	25
11. Ho'd-down Assembly	200
12. Gas Cylinder Wall Mount (each)	55
C. EXPLOSION-PROOF ELECTRICAL OPTIONS	
1. Ventilation System. 16" Fan. (Approx. 1,200 CFM)	1,875
2. Ventilation System. 12" Fan. (Approx. 450 CFM)	1,025
3. One Interior Light	750
4. Two Interior Lights	1,250
5. One Exterior Light	800
6. Liquid Level Detector with Alarm (Per Room)	970
D. FIRE PROTECTION OPTIONS	
1. Dry Chemical Fire Suppression System (Building)	2,700
2. Dry Chemical Fire Suppression System (Room)	2,100
3. Fire Department Hookup (21/2" NHT Fitting)	75
E. MISCELLANEOUS OPTIONS	
1. Automatic Alarm-Dialing System	3,200
2. Emergency Eye/Face Wash (Permanent)	300
3. Emergency Eye/Face Wash (Portable)	720
4. Loading Ramp	850
5. Special Order Exterior Paint	350
6. Exterior Chemical-Resistant Finish	700

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

MODEL 7 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 7 SAFETY STORAGE BUILDING	$ 6,500

- Outside Dimensions (LxWxH): 8'1/4" x 9' x 8'7 1/2"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 570 Gallons
- One Door with a 3-point Locking Mechanism
- Fire Sprinkler System with One Fire Sprinkler
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- Three Interior Grounding/Bonding Lugs
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS	
1. Explosion Relief Construction	900
2. General Purpose Fiberglass Grating	925
3. Corrosive Resistant Fiberglass Grating	1,150
4. Polypropylene Sump Liner	480
5. Shelving (per linear foot)	25
6. Hold-down Assembly	200
7. Gas Cylinder Wall Mount (each)	55
C. EXPLOSION-PROOF ELECTRICAL OPTIONS	
1. Ventilation System. 12" Fan. (Approx. 450 CFM)	1,025
2. One Interior Light	750
3. One Exterior Light	800
4. Liquid Level Detector with Alarm (Per Room)	970
D. FIRE PROTECTION OPTIONS	
1. Dry Chemical Fire Suppression System	2,100
2. Fire Department Hookup (21/2" NHT Fitting)	75
E. MISCELLANEOUS OPTIONS	
1. Automatic Alarm-Dialing System	3,200
2. Emergency Eye/face Wash (Permanent)	300
3. Emergency Eye/face Wash (Portable)	720
4. Loading Ramp	850
5. Special Order Exterior Paint	300
6. Exterior Chemical-Resistant Finish	600

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

MODEL 4 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 4 SAFETY STORAGE BUILDING	$2,900

- Outside Dimensions (LxWxH): 6' x 6'4" x 6'4"
- Inside Dimensions (LxWxH): 5'8" x5'9" x 4'11"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 85 Gallons
- One Door with Safety Lock
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- One Interior Grounding/Bonding Lug
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS	
1. Shelving (per linear foot)	25
2. General Purpose Fiberglass Grating	700
3. Corrosive Resistant Fiberglass Grating	860
4. Polypropylene Sump Liner	375
5. Hold-down Assembly	200
C. MISCELLANEOUS OPTIONS	
1. Emergency Eye/Face Wash (Permanent)	300
2. Emergency Eye/Face Wash (Portable)	720
3. Loading Ramp	850
4. Special Order Exterior Paint	200
5. Exterior Chemical-Resistant Finish	450

DELIVERY TERMS: F.O.B. our California orPennsylvania factory.
PAYMENT TERMS: 10% Down payment with order, balance due on delivery.

FIGURE 14

MODEL 6 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 6 SAFETY STORAGE BUILDING	$ 3,500

- Outside Dimensions (LxWxH): 6' x 6'4" x 8'4"
- Inside Dimensions (LxWxH:) 5'8" x5'9" x 6'9""
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 85 Gallons
- One Door with Safety Lock
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- One Interior Grounding/Bonding Lug
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS	
1. Shelving (per linear foot)	25
2. General Purpose Fiberglass Grating	700
3. Corrosive Resistant Fiberglass Grating	860
4. Polypropylene Sump Liner	375
5. Hold-down Assembly	200
6. Gas Cylinder Wall Mount (each)	55
C. MISCELLANEOUS OPTIONS	
1. Emergency Eye/face Wash (Permanent)	300
2. Emergency Eye/face Wash (Portable)	720
3. Loading Ramp	850
4. Special Order Exterior Paint	250
5. Exterior Chemical-Resistant Finish	500

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F N M 0 8 9 0 0 1 0 5 1 5

II. EPA I.D. NUMBER

III. FACILITY NAME

IV. FACILITY MAILING ADDRESS

V. FACILITY LOCATION

Department of Energy
Attn: Mr. Harold Valencia
Los Alamos Area Office
Los Alamos, NM 87544

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

VI. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		NO	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		YES	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4) Geothermal	X		NO
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP L O S A L A M O S N A T I O N A L L A B O R A T O R Y

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 H A R O L D V A L E N C I A	5 0 5 6 6 7 5 1 0 5 FTS 843-5105

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 L O S A L A M O S A R E A O F F I C E

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 L O S A L A M O S	N M	8 7 5 4 4

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 L O S A L A M O S

B. COUNTY NAME

L O S A L A M O S

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 L O S A L A M O S	N M	8 7 5 4 4	

CONTINUE ON REVE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
(specify) NATIONAL SECURITY	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: LOS ALAMOS NATIONAL LABORATORY

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☒ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL, M = PUBLIC (other than federal or state), S = STATE, O = OTHER (specify), P = PRIVATE: F (specify)

D. PHONE (area code & no.): A 505 667 5021

E. STREET OR P.O. BOX: PO Box 1663 MS K490

F. CITY OR TOWN: LOS ALAMOS

G. STATE: NM

H. ZIP CODE: 87545

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): 9 N NM0028355	B. PSD (Air Emissions from Proposed Sources): 9 P
D. UIC (Underground Injection of Fluids): 9 U 2	E. OTHER (specify): 9 NM0028576 (specify) NPDES
C. RCRA (Hazardous Wastes): 9 R	E. OTHER (specify): 9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

The mission of Los Alamos National Laboratory (LANL) is the application of science and technology to solve national problems including weapons development and energy supply and conservation programs, while basic science research complements and strengthens its fundamental technical capabilities. The LANL is owned by the US Department of Energy and operated under contract by the University of California.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Harold Valencia Los Alamos Area Manager	H Valencia	11-3-88

COMMENTS FOR OFFICIAL USE ONLY

C

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

F N M 0 8 9 0 0 1 0 5 1 5

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

☐ 2. NEW FACILITY *(Complete item below.)*

C 8 — FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.
1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	S
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5	T 0 2	500 (b)	U	
X-2	T 0 3	20	E		6	T 0 3	0.56 (a)	D	
1	S 0 1	284,070 (a)+	G		7	T 0 4	N/A (a)		
2	S 0 2	6,600 (b)	G		8	T 0 4	2,534 (a)	U	
3	S 0 4	25,500 (b)+	G		9	D 8 0	0.71 (b)+	A	
4	T 0 1	7,680 (a)	U		10				

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

(a) Active units - See Part B Permit application for descriptions
(b) Inactive units to be closed under interim status - See individual closure plans for descriptions

\+ Revised as of November, 1988

See Page 2a of 5 for explanations on process codes

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: **HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

EXPLANATION OF PROCESS CODE LISTINGS AND/OR DESIGN CAPACITY

Line 1	S01	TA-54, Area L TA-50, ~~Batch Waste Treatment~~ Storage Units
Line 2	S02	TA-54, Area L Waste Oil Storage Tanks
Line 3	S04	TA-54, Area L Surface Impoundments B and D TA-35, TSL-85 and TSL-125 Surface Impoundments
Line 4	T01	TA-54, Area L TA-50, Batch Waste Treatment Unit
Line 5	T02	TA-16, Surface Impoundment
Line 6	T03	TA-16, Incinerator TA-50, Incinerator
Line 7	T04	The following open burning units are located at TA-16:

- Two burn pads (388, 399) for burning HE-contaminated solids. Each unit has a capacity of 1,000 pounds of solids per burn.

- Two pressure vessels (401, 406) for burning HE-contaminated sludges. Each unit has a capacity of 750 pounds of sludge per burn.

- One burn pad for HE-contaminated oil/solvent mixtures. This unit has a capacity of 100 gallons per burn.

- One flash pad for HE-contaminated equipment. This unit does not have a design capacity.

- One burn cage for HE-contaminated paper. This unit has a capacity of 3.0 cubic feet per burn.

The following waste detonation units are designed to open detonate explosives:

Unit	Design Capacity (pounds of HE per detonation)
TA-14-35	10
TA-15, Phermex	100
TA-36, Kappa 8	200

		TA-40, SDS	Inactive unit to be closed under interim status
		TA-39-6	100
		TA-39-57	250
Line 8	T04	Waste sludges from TA-54, Area L treatment tanks and the TA-50 Batch Waste Treatment unit are mixed with portland cement and/or Envirostone and placed in 55-gallon drums. The cement serves to bind any fluid remaining in the sludge. This process is performed at TA-54, Area L.	
Line 9	D80	TA-54, Area L TA-54, Area G TA-54, Area H TA-16, Area P	

Continued from page 2.
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Form Approved OMB No. 158-S30004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M D 8 9 0 0 1 0 5 1 5 1	W DUP 2 DUP

V. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	D001	100,000	P	S01 T03	
2	D002	300,000	P	S01 T01	
3	D003	7,500	P	S01 T01 T04	Reacted at TA-16 (See III C.)
4	D003	5,000	P	S01 T01	Lithium Hydride only+
5	D004	2,000	P	S01	
6	D005	60,000	P	S01 T01	Sand from cleanout of explosives burn pads.
7	D006	1,000	P	S01 T01	
8	D007	1,500	P	S01 T01	
9	D008	50,000	P	S01	May contain other metals (D004-D011)
10	D009	5,000	P	S01 T01	
11	D010	500*	P	S01	
12	D011	1,250	P	S01 T01	
13	D012	500*	P	S01 T03	
14	D016	1,000	P	S01 T03	
15		END OF D DESIGNATOR			
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Continued from page 2.
NOTE Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80C04

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M D 8 9 0 0 1 0 5 1 5 1	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	F001	180,000	P	S01 S02 T03 T04	Solidified if treatment standards are met
2	F002	5,000	P	S01 S02 T03 T04	
3	F003	5,000	P	S01 S02 T03 T04	
4	F004	500*	P	S01 T03	
5	F005	5,000	P	S01 S02 T03 T04	
6	F006	500*	P	S01 T01	
7	F007	12,500	P	S01 T01	
8	F008	1,000	P	S01 T01	
9	F009	6,000	P	S01 T01	
10	F027	700	P	S01 T03	
11	F028	700	P	S01 T03	
12		END OF F DESIGNATOR			
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Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 — C: 1	W — DUP — C: 2 — DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	K044	50,000	P	S01 T04	
2	K047	500*	P	S01 T04	
3	K045	2,000	P	S01 T04	+
4		END OF DESIGNATOR			
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NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 — T: 1 C: 1	W DUP T: 2 C: DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P001	500#	P	S01 T03	
2	P002	500#	P	S01 T03	
3	P003	500#	P	S01 T03	
4	P004	500#	P	S01 T03	
5	P005	500#	P	S01 T03	
6	P006	500#	P	S01 T04	
7	P007	500#	P	S01 T03	
8	P008	500#	P	S01 T03	
9	P009	500#	P	S01 T04	
10	P010	500#	P	S01	
11	P011	500#	P	S01	
12	P012	500#	P	S01	
13	P013	500#	P	S01 T01	
14	P014	500#	P	S01 T03	
15	P015	500#	P	S01	
16	P016	500#	P	S01 T03	
17	P017	500#	P	S01 T03	
18	P018	500#	P	S01 T03	
19	P020	500#	P	S01 T03	
20	P021	500#	P	S01 T01	
21	P022	500#	P	S01 T04	
22	P023	500#	P	S01 T03	
23	P024	500#	P	S01 T03	
24	P026	500#	P	S01 T03	
25	P027	500#	P	S01 T03	
26	P028	500#	P	S01 T03	

Continued from page 2.
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Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
V N M 0 8 9 0 0 1 0 5 1 5 1	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P029	500*	P	S01 T01	
2	P030	500*	P	S01 T01	
3	P031	500*	P	S01 T04 T03	
4	P033	500*	P	S01 T04 T03	
5	P034	500*	P	S01 T03	
6	P036	500*	P	S01 T03	
7	P037	500*	P	S01 T03	
8	P038	500*	P	S01 T03	
9	P039	500*	P	S01 T03	
10	P040	500*	P	S01 T03	
11	P041	500*	P	S01 T03	
12	P042	500*	P	S01 T03	
13	P043	500*	P	S01	
14	P044	500*	P	S01 T03	
15	P045	500*	P	S01 T03	
16	P046	500*	P	S01 T03	
17	P047	500*	P	S01 T03	
18	P048	500*	P	S01 T03	
19	P049	500*	P	S01 T03	
20	P050	500*	P	S01 T03	
21	P051	500*	P	S01 T03	
22	P054	500*	P	S01 T01 T04	
23	P056	500*	P	S01	
24	P057	500*	P	S01 T03	
25	P058	500*	P	S01	
26	P059	500*	P	S01 T03	

Continued from page 2.
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Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5	W DUP 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P060	500#	P	S01	T03			
2	P062	500#	P	S01	T03			
3	P063	500#	P	S01	T03	T04		
4	P064	500#	P	S01	T03	T04		
5	P065	500#	P	S01	T04			
6	P066	500#	P	S01	T03			
7	P067	500#	P	S01	T03			
8	P068	500#	P	S01	T03			
9	P069	500#	P	S01	T03	T04		
10	P070	500#	P	S01	T03			
11	P071	500#	P	S01	T03	T04		
12	P072	500#	P	S01	T03			
13	P073	500#	P	S01	T01	T04		
14	P074	500#	P	S01	T01			
15	P075	500#	P	S01	T03			
16	P076	500#	P	S01	T01	T04		
17	P077	500#	P	S01	T03	T04		
18	P078	500#	P	S01	T01			
19	P081	500#	P	S01	T04			
20	P082	500#	P	S01	T03			
21	P084	500#	P	S01	T03			
22	P085	500#	P	S01	T03			
23	P087	500#	P	S01				
24	P088	500#	P	S01	T03			
25	P089	500#	P	S01	T03			
26	P092	500#	P	S01				

Continued from page 2.
NOTE Photocopy this page before completing if you have more than 26 wastes to list.

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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M D 8 9 0 0 1 0 5 1 5	W DUP 2 DUP

V DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P093	500#	P	S01	T03			
2	P094	500#	P	S01	T03			
3	P095	500#	P	S01	T03			
4	P096	500#	P	S01	T03	T04		
5	P097	500#	P	S01	T03			
6	P098	500#	P	S01	T01			
7	P099	500#	P	S01	T01			
8	P101	500#	P	S01	T03			
9	P102	500#	P	S01	T03			
10	P103	500#	P	S01	T03			
11	P104	500#	P	S01	T01			
12	P105	500#	P	S01				
13	P106	500#	P	S01	T01			
14	P107	500#	P	S01	T04			
15	P108	500#	P	S01	T03			
16	P109	500#	P	S01	T03			
17	P110	500#	P	S01	T03			
18	P111	500#	P	S01	T03			
19	P112	500#	P	S01	T03	T04		
20	P113	500#	P	S01				
21	P114	500#	P	S01				
22	P115	500#	P	S01				
23	P116	500#	P	S01	T03			
24	P118	500#	P	S01	T03			
25	P119	500#	P	S01				
26	P120	500#	P	S01				

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CONTINUE ON REVER

(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 — F.A. C. 1	W DUP — F.A. C. 2 — DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P 1 2 1	500*	P	S 0 1 T 0 1	
2	P 1 2 2	500*	P	S 0 1 T 0 4	
3	P 1 2 3	500*	P	S 0 1 T 0 3	
4		END OF P DESIGNATOR			
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U001	500*	P	S01	T03			
2	U002	1000	P	S01	T03			
3	U003	500*	P	S01	T03			
4	U004	500*	P	S01	T03			
5	U005	500*	P	S01				
6	U006	500*	P	S01	T04			
7	U007	500*	P	S01	T03			
8	U008	500*	P	S01	T03	T04		
9	U009	500*	P	S01	T03			
10	U010	500*	P	S01	T03			
11	U011	500*	P	S01	T03			
12	U012	500*	P	S01	T03			
13	U014	500*	P	S01	T03			
14	U015	500*	P	S01	T03			
15	U016	500*	P	S01	T03			
16	U017	500*	P	S01	T03			
17	U018	500*	P	S01	T03			
18	U019	500*	P	S01	T03			
19	U020	500*	P	S01	T03	T04		
20	U021	500*	P	S01	T03			
21	U022	500*	P	S01	T03			
22	U023	500*	P	S01	T03	T04		
23	U024	500*	P	S01	T03			
24	U025	500*	P	S01	T03			
25	U026	500*	P	S01	T03			
26	U027	500*	P	S01	T03			

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CONTINUE ON REVE

(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 — W/A: 1	W — DUP — T/A/C: 2 — DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U028	500#	P	S01 T03	
2	U029	500#	P	S01 T03	
3	U030	500#	P	S01 T03	
4	U031	500#	P	S01 T03	
5	U032	500#	P	S01 T01	
6	U033	500#	P	S01 T04	
7	U034	500#	P	S01 T03	
8	U035	500#	P	S01 T03	
9	U036	500#	P	S01 T03	
10	U037	500#	P	S01 T03	
11	U038	500#	P	S01 T03	
12	U039	500#	P	S01 T03	
13	U041	500#	P	S01 T03	
14	U042	500#	P	S01 T03 T04	
15	U043	500#	P	S01 T03 T04	
16	U044	1000	P	S01 T03	
17	U045	500#	P	S01 T03 T04	
18	U046	500#	P	S01 T03	
19	U047	500#	P	S01 T03	
20	U048	500#	P	S01 T03	
21	U049	500#	P	S01 T03	
22	U050	500#	P	S01 T03	
23	U051	500#	P	S01 T03	
24	U052	500#	P	S01 T03	
25	U053	500#	P	S01 T03	
26	U055	500#	P	S01 T03	

Continued from page 2.
NOTE Photocopy this page before completing if you have more than 26 wastes to list.

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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY	
V N M 0 8 9 0 0 1 0 5 1 5	W DUP	2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U056	500*	P	S01 T03	
2	U057	500*	P	S01 T03	
3	U058	500*	P	S01 T03	
4	U059	500*	P	S01 T03	
5	U060	500*	P	S01 T03	
6	U061	500*	P	S01 T03	
7	U062	500*	P	S01 T03	
8	U063	500*	P	S01 T03	
9	U064	500*	P	S01 T03	
10	U066	500*	P	S01 T03	
11	U067	500*	P	S01 T03	
12	U068	500*	P	S01 T03	
13	U069	500*	P	S01 T03	
14	U070	500*	P	S01 T03	
15	U071	500*	P	S01 T03	
16	U072	500*	P	S01 T03	
17	U073	500*	P	S01 T03	
18	U074	500*	P	S01 T03	
19	U075	500*	P	S01	
20	U076	500*	P	S01 T03	
21	U077	500*	P	S01 T03	
22	U078	500*	P	S01 T03	
23	U079	500*	P	S01 T03	
24	U080	500*	P	S01 T03	
25	U081	500*	P	S01 T03	
26	U082	500*	P	S01 T03	

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EPA I.D. NUMBER (enter from page 1)																FOR OFFICIAL USE ONLY				
W	N	M	0	8	9	0	0	1	0	5	1	5			1	W	DUP		2	DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U083	500*	P	S01	T03			
2	U084	500*	P	S01	T03			
3	U085	500*	P	S01	T03			
4	U086	500*	P	S01	T03			
5	U087	500*	P	S01	T03			
6	U088	500*	P	S01	T03			
7	U089	500*	P	S01	T03			
8	U090	500*	P	S01	T03			
9	U091	500*	P	S01	T03			
10	U092	500*	P	S01	T04			
11	U093	500*	P	S01	T03			
12	U094	500*	P	S01	T03			
13	U095	500*	P	S01	T03			
14	U096	500*	P	S01	T03			
15	U097	500*	P	S01	T03			
16	U098	500*	P	S01	T03			
17	U099	500*	P	S01	T03			
18	U101	500*	P	S01	T03			
19	U102	500*	P	S01	T03			
20	U103	500*	P	S01	T03			
21	U105	500*	P	S01	T03			
22	U106	500*	P	S01	T03			
23	U107	500*	P	S01	T03			
24	U108	500*	P	S01	T03			
25	U109	500*	P	S01	T03			
26	U110	500*	P	S01	T03			

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CONTINUE ON REVERSE

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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 1/4 1	W DUP 1/4 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U 1 1 1	500#	P	S 0 1	T 0 3			
2	U 1 1 2	500#	P	S 0 1	T 0 3	T 0 4		
3	U 1 1 3	500#	P	S 0 1	T 0 3	T 0 4		
4	U 1 1 4	500#	P	S 0 1	T 0 3			
5	U 1 1 5	500#	P	S 0 1	T 0 3	T 0 4		
6	U 1 1 6	500#	P	S 0 1	T 0 3			
7	U 1 1 7	500#	P	S 0 1	T 0 3	T 0 4		
8	U 1 1 8	500#	P	S 0 1	T 0 3	T 0 4		
9	U 1 1 9	500#	P	S 0 1	T 0 3			
10	U 1 2 0	500#	P	S 0 1	T 0 3			
11	U 1 2 1	500#	P	S 0 1				
12	U 1 2 2	500#	P	S 0 1	T 0 3			
13	U 1 2 3	500#	P	S 0 1				
14	U 1 2 4	500#	P	S 0 1	T 0 3			
15	U 1 2 5	500#	P	S 0 1	T 0 3			
16	U 1 2 6	500#	P	S 0 1	T 0 3			
17	U 1 2 7	500#	P	S 0 1	T 0 3			
18	U 1 2 8	500#	P	S 0 1	T 0 3			
19	U 1 2 9	500#	P	S 0 1	T 0 3			
20	U 1 3 0	500#	P	S 0 1	T 0 3			
21	U 1 3 1	500#	P	S 0 1	T 0 3			
22	U 1 3 2	500#	P	S 0 1	T 0 3			
23	U 1 3 3	500#	P	S 0 1	T 0 3	T 0 4		
24	U 1 3 4	10,000	P	S 0 1	T 0 1			
25	U 1 3 5	500#	P	S 0 1	T 0 4	T 0 3		
26	U 1 3 6	500#	P	S 0 1				

Continued from page 2.

NOTE Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U137	500*	P	S01	T03			
2	U138	500*	P	S01	T03			
3	U139	500*	P	S01	T03			
4	U140	500*	P	S01	T03			
5	U141	500*	P	S01	T03			
6	U142	500*	P	S01	T03			
7	U143	500*	P	S01	T03			
8	U144	500*	P	S01				
9	U145	500*	P	S01				
10	U146	500*	P	S01				
11	U147	500*	P	S01	T03			
12	U148	500*	P	S01	T03			
13	U149	500*	P	S01	T03			
14	U150	500*	P	S01	T03			
15	U151	500*	P	S01				
16	U152	500*	P	S01	T03			
17	U153	500*	P	S01	T03			
18	U154	500*	P	S01	T03			
19	U155	500*	P	S01	T03			
20	U156	500*	P	S01	T03			
21	U157	1000	P	S01	T03			
22	U158	500*	P	S01	T03			
23	U159	1000	P	S01	T03			
24	U160	500*	P	S01	T03	T04		
25	U161	500*	P	S01	T03			
26	U162	500*	P	S01	T03			

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CONTINUE ON REVERS

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 — C 1	W — DUP — C 2 — DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U163	500*	P	S01 T03	
2	U164	500*	P	S01 T03	
3	U165	500*	P	S01 T03	
4	U166	500*	P	S01 T03	
5	U167	500*	P	S01 T03	
6	U168	500*	P	S01 T03	
7	U169	500*	P	S01 T03	
8	U170	500*	P	S01 T03	
9	U171	500*	P	S01 T03	
10	U172	500*	P	S01 T03	
11	U173	500*	P	S01 T03	
12	U174	500*	P	S01 T03	
13	U176	500*	P	S01 T03	
14	U177	500*	P	S01 T03	
15	U178	500*	P	S01 T03	
16	U179	500*	P	S01 T03	
17	U180	500*	P	S01 T03	
18	U181	500*	P	S01 T93	
19	U182	500*	P	S01 T03	
20	U183	500*	P	S01 T03	
21	U184	500*	P	S01 T03	
22	U185	500*	P	S01 T03	
23	U186	500*	P	S01 T03	
24	U187	500*	P	S01 T03	
25	U188	500*	P	S01 T03	
26	U189	500*	P	S01 T04 T03	

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 — C: 1	W DUP — C: 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U190	500#	P	S01	T03			
2	U191	500#	P	S01	T03			
3	U192	500#	P	S01	T03			
4	U193	500#	P	S01	T03			
5	U194	500#	P	S01	T03			
6	U196	500#	P	S01	T03			
7	U197	500#	P	S01	T03			
8	U200	500#	P	S01	T03			
9	U201	500#	P	S01	T03			
10	U202	500#	P	S01	T03			
11	U203	500#	P	S01	T03			
12	U204	500#	P	S01				
13	U205	500#	P	S01	T04			
14	U206	500#	P	S01	T03			
15	U207	500#	P	S01	T03			
16	U208	500#	P	S01	T03			
17	U209	500#	P	S01	T03			
18	U210	500#	P	S01	T03			
19	U211	500#	P	S01	T03			
20	U212	500#	P	S01	T03			
21	U213	500#	P	S01	T03	T04		
22	U214	500#	P	S01	T03			
23	U215	500#	P	S01				
24	U216	500#	P	S01				
25	U217	500#	P	S01	T04			
26	U218	500#	P	S01	T03			

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(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

Continued from page 2.
NOTE Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U219	500*	P	S01	T03			
2	U220	1000	P	S01	T03			
3	U221	500*	P	S01	T03			
4	U222	500*	P	S01	T03			
5	U223	1000	P	S01	T03			
6	U225	500*	P	S01				
7	U226	1500	P	S01	T03			
8	U227	500*	P	S01	T03			
9	U228	2000	P	S01	T03			
10	U230	500*	P	S01	T03			
11	U231	500*	P	S01	T03			
12	U232	500*	P	S01	T03			
13	U233	500*	P	S01	T03			
14	U234	500*	P	S01	T04			
15	U235	500*	P	S01	T03			
16	U236	500*	P	S01	T03			
17	U237	500*	P	S01	T03			
18	U238	500*	P	S01	T03			
19	U239	1000	P	S01	T03			
20	U240	500*	P	S01	T03			
21	U242	500*	P	S01	T03			
22	U243	500*	P	S01	T03			
23	U244	500*	P	S01	T03			
24	U246	500*	P	S01				
25	U247	500*	P	S01	T03			
26		END OF U DESIGNATOR						

EPA Form 3510-3 (6-80)

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(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

*All entries with an asterisk in column IV B on Page 3 are generated in small volumes only. If a new process or activity will cause more than the stated volume to be stored, treated, or disposed, a revised Part A will be submitted.

EPA I.D. NO. *(enter from page 1)*	
F NM089001051 5	T/A C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
35 49 051	106 14 015

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

☑ B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E United States Department of Energy	505-667-5105

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F Los Alamos Area Office	G Los Alamos	NM	87545

IX. OWNER 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 fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
Harold Valencia Los Alamos Area Office	H Valencia as owner and co-operator	11-3-88

X. OPERATOR 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 fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
Siegfried S. Hecker Director	Siegfried S. Hecker	11-2-88

CONTINUE ON PAGE

LIST OF FIGURES

1. Los Alamos Technical Areas.

2. Contour Map Showing the Location of the TA-54, Area L Treatment Tanks, Surface Impoundments, Waste packaging and Storage Pad, Shafts, and TA-54, Area G.

3. TA-54, Area L Waste Management Units.

4. TA-54, Area L Chemical Storage Facility Location Map.

5. TA-54, Area L Chemical Storage Facility Structural Drawing.

6. TA-54, Area L Waste Transfer, Packaging, and Storage Building.

7. Contour Map Showing the Location of TA-54, Arèa H, Shaft No. 9.

8. Contour Map Showing the Locations of the Batch Treatment System and Container Storage Area and the Waste Incinerator.

9. Locations of TA-50 Chemical Waste Incinerator and Container Storage Units.

10. Structural Diagram of the TA-50 Batch Waste Treatment Facility.

11. Treatment Development Facility Showing Locations of Chemical Waste Incinerator and Support Facilities.

12. Incinerator Process Diagram.

13. Chemical Storage TA-50.

14. Safety Storage Containers Brochure.

15. Contour Map Showing Location of TA-16 Open Burning Unit and TA-16-1150 Incinerator.

16. TA-16 Industrial Incinerator.

17. TA-16 Industrial Incinerator Structural Drawing.

18. TA-16 Pressure Vessel Structural Drawing.

19. TA-54, Area L Treatment Tanks Plan.

20. Contour Map Showing the Location of the TA-14 Firing Point and Burn Cage and the TA-40 Scrap Detonation Site.

21. Contour Map Showing the Location of the TA-15 abd TA-36 Firing Points.

22. Contour Map Showing the Location of the TA-39 Firing Points.

23. Contour Map Showing the Locations of the TA-35-125 and TA-35-85 Surface Impoundments.

24. TA-54, Area L Conceptual Drawing of Container Storage Pad.

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V. FACILITY DRAWING *(see page 4)*

LIST OF PHOTOGRAPHS

TA-14-23 and 35 - Building with firing point 35.

TA-15, Phermex - Firing point.

TA-16-387 - Burn Pad for Flashing Equipment.

TA-16-406 - Pressure Vessel for Dried HE Sludge and Associated Storage Area.

TA-16-394 - Burn Pads for HE Contaminated Oil.

TA-16-401 - Pressure Vessel for Dried HE Sludge and Associated Storage Area.

TA-16-399 - Burn Pad.

TA-16-388 - Burn Pad.

TA-36-57 - Kappa 8 - Firing Point.

TA-39-57 - Firing Point.

TA-39-6 - Firing Point.

TA-50-1 - Building Housing and Batch Waste Treatment Unit.

TA-50-1 - Batch Waste Treatment.

TA-50-1 - Batch Waste Treatment.

TA-50-114 - Hazardous Waste Treatment

TA-50-37 - Chemical Waste Incinerator Facility (east side).

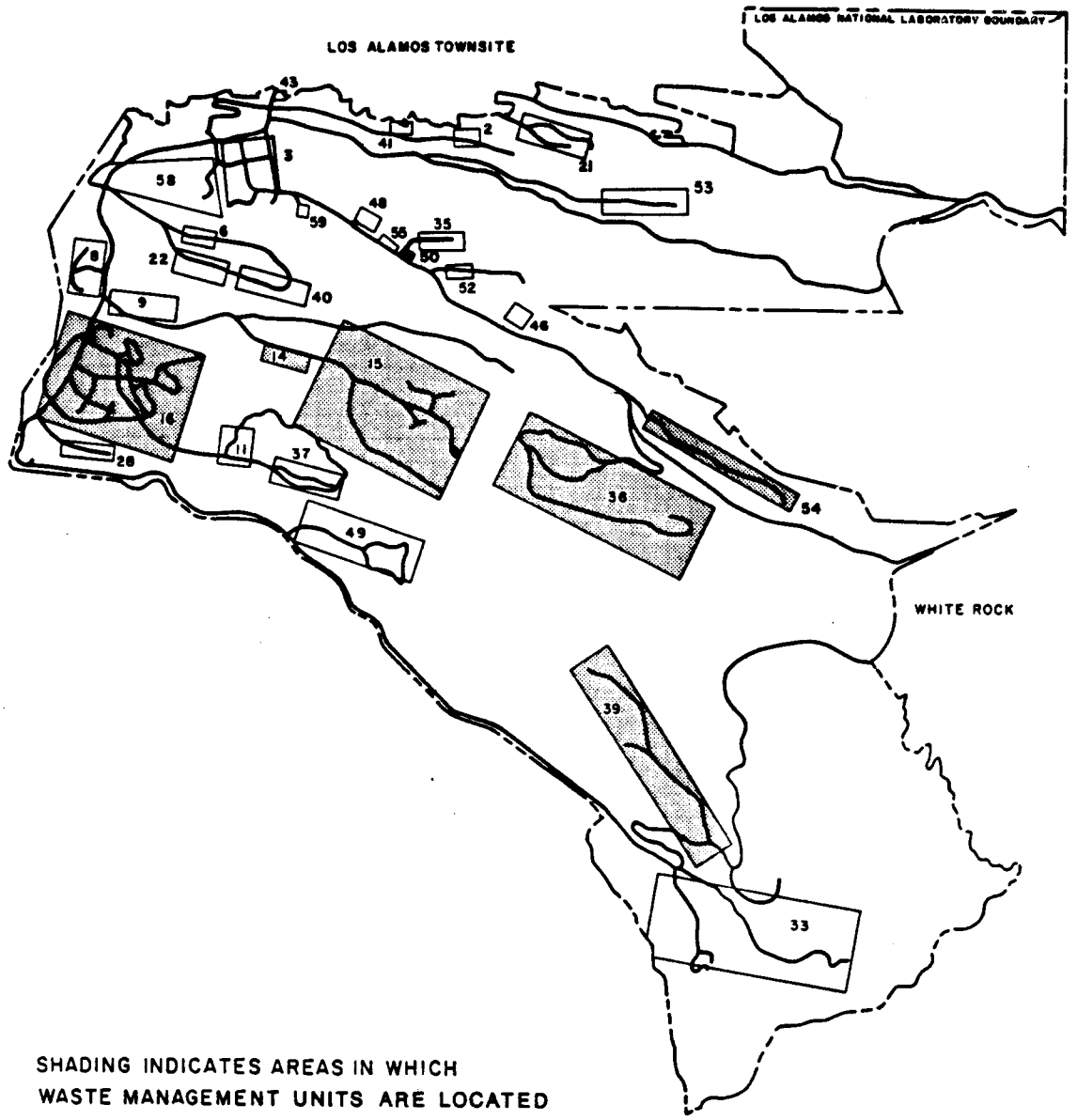
TA-54, Area L - Front Gate

TA-54, Area L - Gas Cylinder Storage.

TA-54, Area L - Treatment Tanks.

TA-54, Area L - Nonliquid Hazardous Waste Storage.

TA-54, Area L - Hazardous Waste Storage Unit.



SHADING INDICATES AREAS IN WHICH WASTE MANAGEMENT UNITS ARE LOCATED

N

4000 0 4000

SCALE

FIGURE 1

LOS ALAMOS TECHNICAL AREAS

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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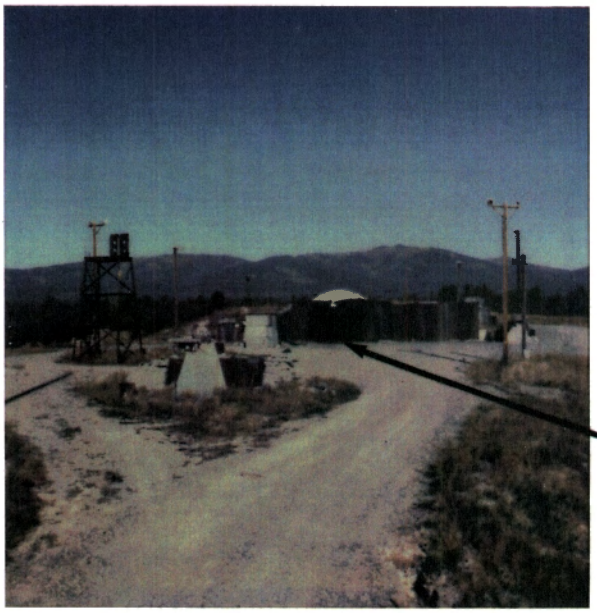
DRAWN BY KCT 10/11/88 | CHECKED BY | APPROVED BY | DRAWING NUMBER 301215 02 00 A5

DIETZGEN

TA-14-23 and 35



TA-15, Phermex

TA-16-387 ✓
Burn pad for flashing equipment

TA-16-406 ✓
Pressure Vessel for dried HE sludge and associated storage area

TA-16-394 ✓
Burn pans for HE contaminated oil

TA-16-401

Pressure vessel for dried HE sludge and associated storage area

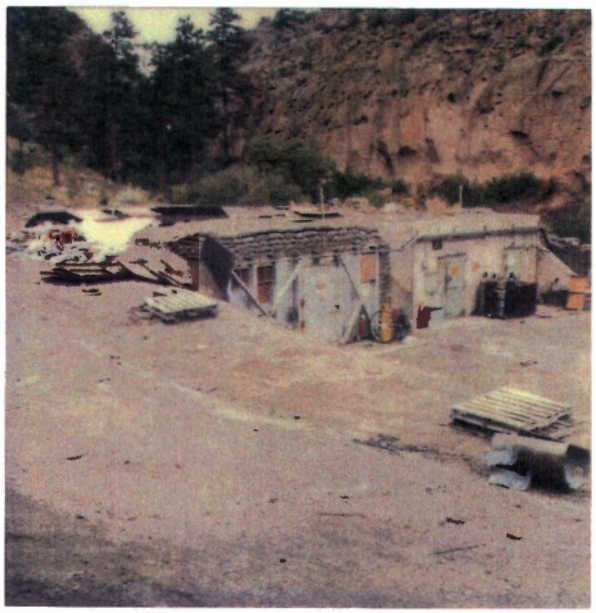
TA-16-399

Burn pad

TA-16-388
Burn pad

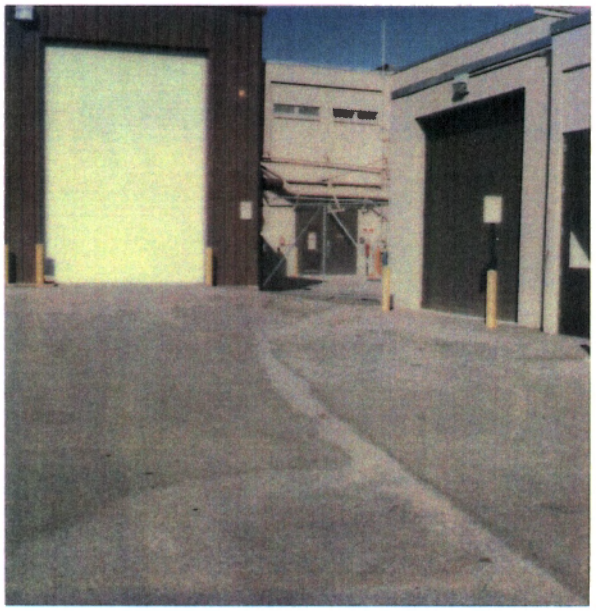
TA-36-8, Kappa 8
Firing Point

TA-39-57 ✓
Firing Point

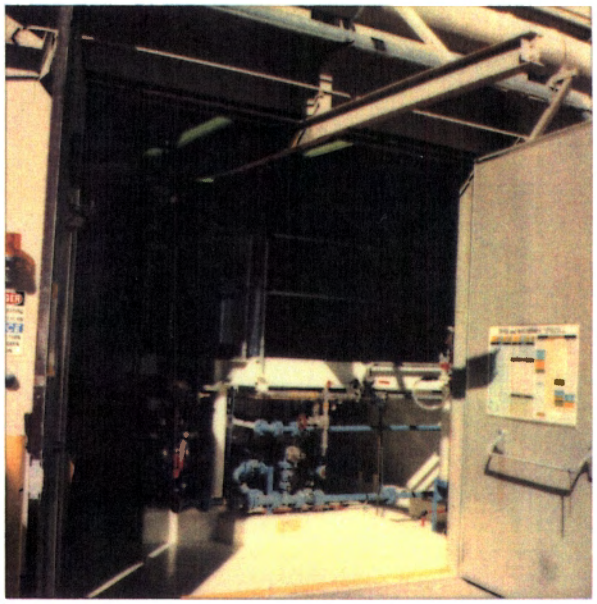


TA-39-6 ✓
Firing Point

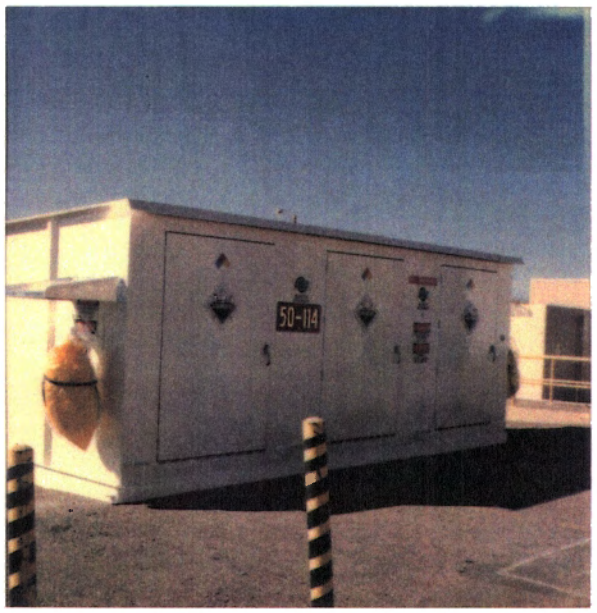
TA-50-1
Building Housing the Batch Waste Treatment Unit



TA-50-1
Batch Waste Treatment



TA-50-1
Batch Waste Treatment

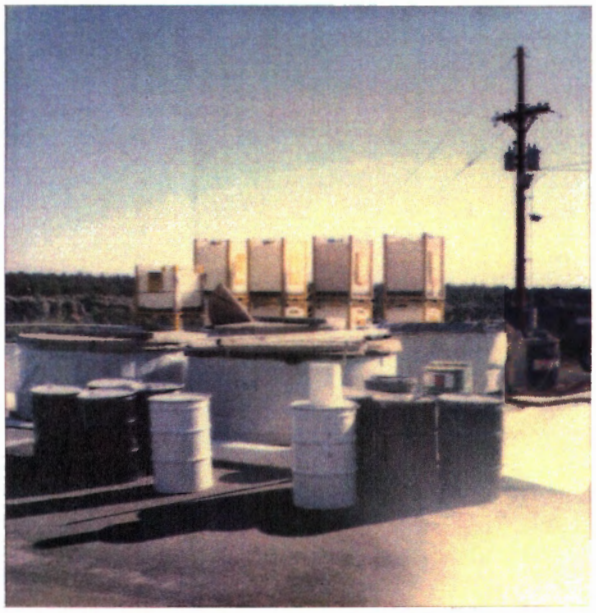


TA-50-114
Hazardous Waste Storage Module

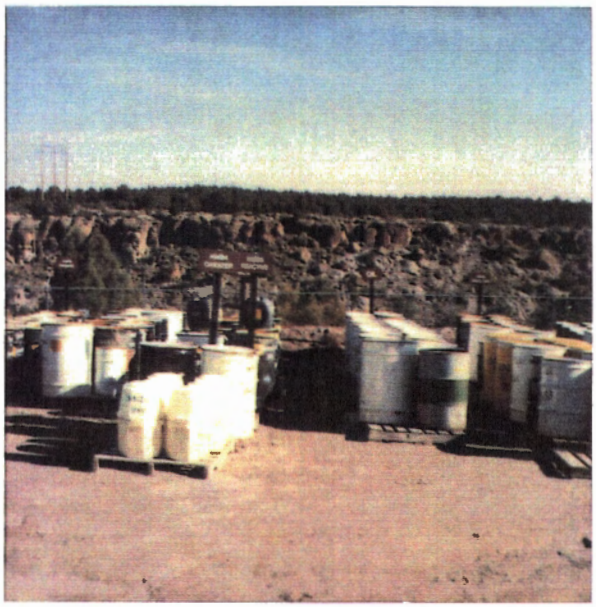
TA-50-37
Chemical Waste Incinerator Facility
(east side)

TA-54, Area L
Front Gate

TA-54, Area L
Gas Cylinder Storage



TA-54, Area L
Treatment Tanks



TA-54, Area L
Nonliquid Hazardous Waste Storage

TA-54, Area L
Hazardous Waste Storage Unit

2.0 FACILITY DESCRIPTION

2.1 GENERAL DESCRIPTION

Los Alamos National Laboratory (Los Alamos) is located in Los Alamos County in north central New Mexico (Figure 2-1). The laboratory is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The laboratory, which occupies an area of 43 square miles, and the associated residential areas of Los Alamos and White Rock are situated on Pajarito Plateau. The Plateau consists of a series of finger-like mesas separated by deep east-west trending canyons. The mesa tops range in elevation from approximately 7800 feet at the flank of Jemez Mountain (located to the west of Los Alamos) to about 6200 feet at their eastern extent where they terminate above the Rio Grande Valley. Intermittent streams lie at the bottoms of the east-west trending canyons.

Los Alamos is divided into 32 active Technical Areas (TA's) (Figure 2-2). Hazardous chemical wastes can be generated in virtually all of these areas. Hazardous waste management units addressed in this permit application are located in Technical Areas 14, 15, 16, 36, 39, 50 and 54. Hazardous waste management activities occupy only a small portion of the Laboratory. The following waste management units located as noted are addressed in this permit application:

- Technical Areas 14, 15, 16, 36, and 39
  - Open burning and open detonation units, used to burn or detonate waste high explosives, high explosives-contaminated material and reactives
- Technical Area 16
  - Industrial incinerator, used to burn high explosives - contaminated trash and liquids
- Technical Area 50
  - Batch treatment system and associated waste container storage units
  - Chemical waste incinerator and associated waste container storage area
  - Waste transfer, packaging and storage units, used for accumulation, packaging and storage of chemical wastes

- Technical Area 54, Area L
  - Waste transfer, packaging and storage units, used for accumulation, packaging and storage of chemical wastes
  - Treatment tanks, used for the neutralization, precipitation, oxidation and evaporation of various wastes.

Most of the above units have interim authority status. These units are described in the following sections.

2.1.1 Miscellaneous Units

Miscellaneous units used for both the open burning and the detonation of reactive wastes and waste high explosives (HE) are located at several Technical Areas in the Laboratory. These units are described in the following sections.

2.1.1.1 Technical Areas 14 and 16 Open Burning Units

Four types of open burning units are located at the TA-16 burning ground: a flash pad, where any HE contamination is removed from excess equipment or scrap generated within the Technical Area; two burn pads for the destruction of solid HE material; a pad with trays where HE-contaminated waste oil is burned; and two pressure vessels for reacting HE-contaminated sludge.

A 100-foot square cyclone fence surrounds the flash pad area, which is covered with sand. Material to be flashed is placed on the pad with additional fuel, if necessary, to maintain the burn until all HE has been reacted. The scrap material is then handled as solid waste.

The two burn pads, each surrounded by a 100-foot square cyclone fence, are used to destroy solid chunks of excess or off-specification HE and machine turnings. The material is placed on a sand-filled steel table lined with refractory brick and ignited.

Used oil and/or solvent which may be contaminated with HE is poured into metal trays lined with fire brick. The trays are located within a sand-filled steel tray. The oil is ignited using a remotely-operated "electric match." Approximately 100 gallons of oil are burned each month.

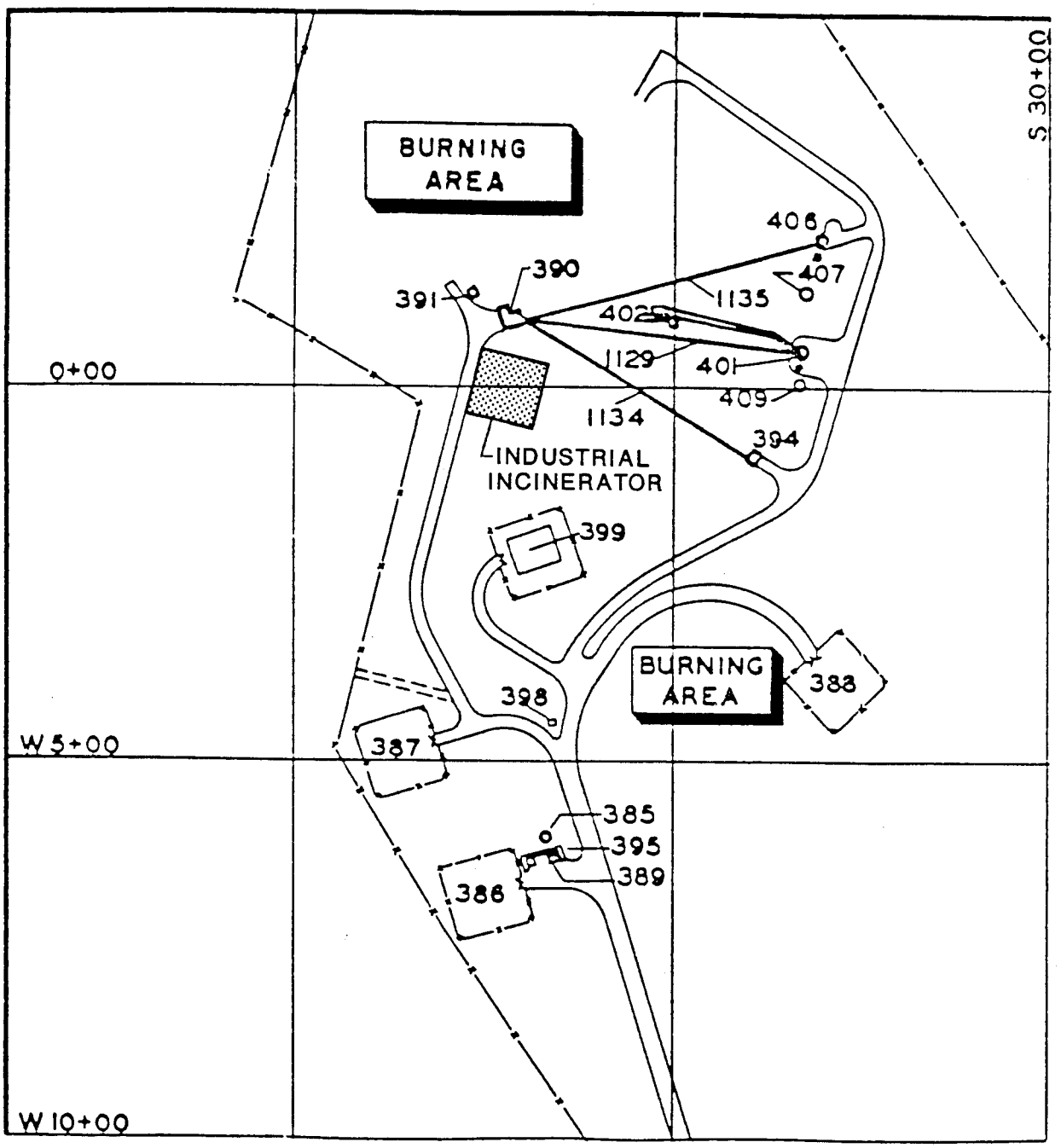


FIGURE 16

TA-16 INDUSTRIAL INCINERATOR

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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DIETZGEN

will follow methods defined in Test Methods for Evaluating Solid Wastes, USEPA SW-846, most current edition (SW-846).

The following contamination criteria will be used to determine the extent of waste and residual removal necessary to achieve a clean closure. On completion of the analytical survey, the Laboratory will prepare a risk assessment for each constituent showing significant increase over background concentrations (mean ambient background metal concentrations in soils are shown in Table 9-3). A significant increase will be determined using statistical methods described in SW 846. The risk assessment will determine the threshold concentration for each constituent that represents a significant risk to human health and the environment and will take into account all possible pathways. Soils containing regulated constituent levels above the threshold concentration will be considered contaminated.

A copy of the completed risk assessment, along with pertinent backup data, will be provided to the NMEID for review and approval of the threshold values. Should NMEID find the threshold contamination levels inadequate, the Laboratory will negotiate threshold values agreeable to both parties.

The burn cage and tray will be removed and decontaminated prior to disposal. Because the tray provides secondary containment for any releases, and because the unit covering provides run off/run on control, contamination of surrounding soils is prevented and sampling is unnecessary.

TA-15 Sampling and Analysis Survey

The TA-15 waste detonation site will be divided into a grid on 75-foot grid centers near the detonation site center expanded to 150-foot centers at a distance of 150 feet or greater from the center (Figure 9-2). Because TA-15

has been used for major detonations, the grid is expanded to cover an extensive area.

Composite sediment samples will be taken in the drainage channels at the approximate locations indicated in Figure 9-2. The location of the samples will be documented.

Four background samples (north, east, south and west) at a distance greater than 3000 feet from the detonation site and two background channel sediment samples will be taken. Considerations for selecting background sample sites are as discussed for TA-14.

Composite sampling, analysis, and determination of contamination are the same as discussed for TA-14.

TA-36 Sampling and Analysis Survey

The TA-36 open detonation unit will be divided into a grid on 75-foot centers near the site center, expanded to 150-foot centers at a distance of 150 feet or greater from the center (Figure 9-3). The center of the grid is at the firing point. Composite soil samples will be taken representing the intersection of grid lines. A composite sediment sample will be taken in the drainage channels at the approximate locations indicated in Figure 9-3.

Background samples and determination of contamination are the same as discussed for TA-14. Soil background samples will be taken at a distance greater than 3,000 feet from the detonation site. The samples will be analyzed for the constituents given in Table 9-4, which include the regulated wastes detonated at this site.

TA-39 Sampling and Analysis Survey

TA-39 open detonation units will be separated into 75-foot grids extending down the canyon floor from the detonation site (Figures 9-4 and 9-5). Composite soil samples will be taken representing the intersection of grid lines. Sediment samples will be taken in the drainage channels at the approximate locations shown on the figures. The exact locations of the sediment samples will be documented.

previously discussed, and an analysis will be conducted only for those constituents that caused the area to be contaminated.

9.2.1.10 Closure Schedule for TA-14, TA-15, TA-36, and TA-39

The year of closure is 2100. The following closure schedule allows survey and closure of the four open detonation units in a consecutive manner; that is, on completion of the initial site sampling survey at the first site, the survey will be initiated at the second site. The soil sampling survey and selection of the decontamination contractor will be completed before closure begins. All four sites will be closed together but will, by necessity, be at different stages of closure. The lengths of time required for individual survey and closure steps are shown in Table 9-5.

Contracting for analytical services will include all four sites. The sampling survey will have to be staggered from site to site for efficient use of time and must be completed at all sites before complete data are available to allow contracting for decontamination. The analytical survey for the four sites will take a cumulative 570 days and is dictated by the time required for sample analysis. Closure, followed by decontamination verification, will take 177 days for each site.

No time is allowed for removal or treatment of the final volume of wastes because there is no waste on-site except just before treatment. Closure will not commence until the last wastes from the source generator have been received and treated, and further acceptance of waste will cease.

Contracts for analytical work and soil removal are expected to exceed $100,000. Because laboratory policy requires that the work be put out for bid, 90 days are allowed to solicit and process the bids.

The location of the site is prone to snow cover in the winter months. Depending on the date NMEID approves the closure plan, the sampling survey may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling. The schedule includes a weather contingency to allow for weather delays.

9.2.1.11 Post-Closure Care

Post-Closure care plans are not required for these units because all wastes, residues, and contaminated equipment will be removed during closure.

9.2.1.12 Closure Certification for TA-14, TA-15, TA-36, and TA-39 Open Detonation Units

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the area has been closed in accordance with this plan. The letter shall be dated and signed by each party and stamped by the registered engineer, and the original copy submitted by the DOE to the Director of the NMEID. One copy shall be maintained at the DOE offices and one copy maintained by the HSE-8 Regulatory Compliance Section.

9.2.2 Technical Area 16 (TA-16) Open Burning Units

Units used to burn HE waste at TA-16 include three general types. One type consists of a sand pad on which explosives or explosives-contaminated equipment are placed and remotely burned using an "electric match" firing device. There are three such pads, measuring 30 feet by 30 feet square, and covered with two inches of sand. Each pad is located at the center of a 100- by 100-foot square area enclosed by a cyclone fence. The surface of the pads slope from the center to the edge. These are dedicated to wastes that can be burned without detonation, although unplanned detonations have occurred. The pads used for waste burning are designated as TA-16-387, TA-16-388, and TA-16-399.

A second type of unit at TA-16 consists of a sand-filled metal pan on which four smaller shallow pans lined with fire brick are located. Waste HE-contaminated fluids are poured into the smaller pans and the HE is remotely ignited with an "electric match." The outside pan is roughly 12- by 12-foot square and is filled with sand to six inches below the lip. The smaller pans are approximately two- by three-foot rectangular pans. The Laboratory has one unit of this type. About 100 gallons of waste are burned approximately once a month.

The third type of unit at TA-16 is used to burn sludges containing waste HE. These facilities consist of steel cone-shaped vessels having a diameter of about eight feet, buried with only the upper three to four feet of the vessel above ground. The steel vessels are filled with sand and gravel and an open fluids drain is located at the bottom of the cone. Sludge HE is gravity fed from vacuum trucks into the top of the cone, onto the sand and gravel bed. A heavy steel cap is then placed over the top of the cone and hot air is forced into the cone through air ducts. The hot air dries the waste sludge and liquids from the sludge migrate downward through the sand and gravel bed and through the fluids drain. Effluent from these drains is regulated by NPDES permit (NM 0028355). When the remaining explosive material is relatively free of moisture, the steel cap is removed from the cone and the filter surface residue is ignited remotely with an "electric match." Los Alamos National Laboratory has two units of this type, and both are located in Technical Area 16. Explosives are burned at these two units at a rate of about one burn per week. Each burn consists of about 750 pounds of waste explosive sludge.

9.2.2.1 Estimate of Maximum Waste in Treatment

Waste to be treated at TA-16 units is held at satellite accumulation areas at the point of generation prior to treatment. The maximum waste in treatment at one time is 454 kg (1,000 lbs). Residual barium-contaminated sand may be held in temporary storage (less than 90 days) in drums at the open burning units. The maximum volume of sand stored is two cubic meters (550 gallons).

9.2.2.2 Description of Waste Handled

The burn pads are used to burn scrap HE, equipment, and trash that have contacted HE and are considered to be contaminated. HE thought to have been burned include HMX (cyclotetramethylenetetramine), RDX (cyclonite), TNT (2, 4, 6 trinitrotoluene), PETN (pentaery thritol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine and various plastic binders. These wastes are transferred to the site by trucks. Trash and HE scrap are containerized. Large equipment is wrapped to ensure containment.

The pan burning pad handles waste oils and solvents that are considered to be contaminated with HE. Small volumes are handled in metal containers, and the contents are poured by hand into the burn pans. Larger volumes are delivered with a vacuum truck and drained through a hose into the pans.

The waste handled at the sand filter is HE-contaminated wastewater delivered to the site with a vacuum truck and drained from the truck through a hose into the filter.

Burning HE wastes can leave a residual that is EP Toxic for barium. The concentration of barium in the residual varies with the concentration of barium nitrate in the waste.

9.2.2.3 TA-16 Open Burning Units Closure Procedure

For each pad, (388 and 399) an analytical survey will be conducted to determine the nature and extent of contamination. Decontamination of the facility will include removal of contaminated soil and cleaning of equipment. Adequate decontamination will be verified by additional sampling and analysis.

The sand on the sand pad is to be handled as a regulated waste and not sampled. One composite soil sample will be taken six inches off each edge of each pad to determine if surface drainage has moved contamination off the pad. The composite will be three soil cores, one on the pad centerline and two, ten feet from centerline. To determine if unplanned detonations have caused significant contamination, twelve composite soil samples will be taken at each pad. These composite samples will be made up of three cores each taken in each direction at 25-foot intervals, the first sample 25 feet off the pad edge. One core will be taken on the centerline, the other two at the pad ends. The sampling locations are shown in Figure 9-6.

At the liquid burn pad, the sand in the large pan and the fire bricks will be handled as a regulated waste and need not be sampled. Soil samples will be taken around the pan perimeter as shown in Figure 9-7 to determine if materials have splashed out of the pan and caused contamination. Composite soil

samples of three cores will be taken along each edge of the large pan six inches and 1.5 feet off the pan edge.

The sand and gravel in the soil filters will be considered a regulated waste, packed in drums, and transported to Area L for storage and ultimate disposal at a permitted landfill. Composite soil sampling will be conducted outside the filters as shown in Figure 9-8 to determine if contamination outside the vessel has occurred. Each composite will be three cores, equally spaced, to represent a quadrant of the circumference of the vessel. Cores will be taken six inches and 1.5 feet off the vessel edge.

If contamination is found at the outside samples, the limits of the sampling area will be expanded by the same distance intervals to determine the outside perimeter of the contamination. If any soil sample shows contamination, additional sampling will be conducted at the sampler's discretion to determine the extent of contamination.

Six background samples will be taken around the site no closer than 600 feet from any pad. The exact sites for background samples will be field selected based on similar topography characteristics and geologic structure to the site and the lack of possible interference of other operating Laboratory sites.

Field relocation of sample points may be required by topographic features. In such a case, the sample will be taken as closely as possible to the designated sample point and the new location will be documented.

Soil and samples will be analyzed for the constituents listed in Table 9-2. Barium is a possible contaminant because it is in several HE mixtures. The other toxic metals are included to ensure that the materials were not included in past burns. A scan for volatile and semivolatile organics is conducted to ensure that residual from solvents used in HE preparation are not present. Analysis is not conducted for HE constituents because these are a regulated waste based on reactivity, and detonation of burning renders them nonreactive. Furthermore, none of the HE materials used at this site are 40 CFR 261 Appendix VIII (NMHWMR 201 Appendix III) constituents. Analysis, quality assurance, and quality control will follow methods defined in SW 846.

9.2.2.4 TA-16 Open Burning Units Decontamination

Sand from the burn pads, liquid burn pans, and the filters will be manually shoveled into drums and transported to Area L for storage. The pads, pans, and equipment will be scraped, swept, or brushed clean, and the resulting residue picked up and placed in drums for transport to Area L.

The sand and any fire brick will be removed manually from the burn pads and liquid burn pans with a shovel and containerized for transport to Area L. The burn pans will be scraped, swept, and/or brushed to remove residuals, which will be placed in drums for transport to Area L. The pans will then be washed internally with the warm Liquinox or Alconox solution, the dirty wash water sampled to determine decontamination, then transported to Area L in drums for evaporation. Washing will be repeated until decontamination is demonstrated by testing the wash water. The decontaminated pan is a nonregulated waste and will be sold as scrap, or landfilled.

The filter vessels will be manually emptied of sand and gravel with shovels, and the sand and gravel will be placed in drums for transport to Area L. Residues will be removed by scraping, wiping, and/or brushing, and the residues placed in drums for transport to Area L. The internal walls of the filter vessels will be washed with warm Liquinox or Alconox solution in

water solution. The wash water will be placed in drums for transport to Area L where the water will be evaporated in open tanks.

The residues from evaporating wash water at Area L will be placed in drums and disposed of off-site at a permitted facility.

The Laboratory recognizes that if extensive contamination has occurred, the closure plan presented here may be impractical. If the site analytical survey proves this to be true, the Laboratory will provide the survey data to the Director of NMEID within 30 days of the completion of the analytical work. Within 60 days of submission of the survey data, the Laboratory will provide an amended closure plan. The plan may also be amended under other circumstances as per 40 CFR 265.112(b) [NMHWMR 206.C.2.c.(2)].

9.2.2.5 Decontamination Verification

Decontamination of the site soil will be demonstrated by additional sampling. Because removal of contaminated soil will leave an exposed surface, the disturbed surface will be resampled in the same places used to define the contaminated area. Analysis and the determination of contamination are as discussed in Section 9.2.1.7, and an analysis will be conducted only for those constituents that caused the area to be contaminated.

For a washed surface, a minimum of two samples of the clean Liquinox or Alconox solution will be sampled and, along with the wash water samples, analyzed for the constituents shown as discussed in Section 9.2.2.3. Equipment will be considered contaminated if the dirty wash water analyses show a significant increase over the clean wash solution. A significant increase is determined using statistical methods defined in SW 846.

9.2.2.6 Closure Schedule for TA-16 Open Burning Units

The year of closure is 2100. All pads and equipment at TA-16 will be closed at the same time. The time required for individual survey and closure steps are shown in Table 9-6.

Because wastes are not stored on site and closure will not start until the last wastes are treated, no time is allowed for treatment or removal of final

wastes. Closure will not commence until the last wastes from generating organizations have been received and treated and further acceptance of waste will cease. Soil sampling and contractor selection will be completed before closure begins. Closure including decontamination and decontamination verification, will take 180 days.

Contracts for analytical work and soil removal are expected to exceed $100,000. Because laboratory procedures require that the work be put out for bid, 90 days are required to solicit and process the bids.

The location of the site is prone to snow cover in the winter months. Depending on the date NMEID approves the closure plan, the sampling survey may be delayed until the site is free of snow and the ground is thawed adequately to allow the core sampling. The schedule includes a weather contingency to allow for this potential delay.

9.2.2.7 Closure Certification for TA-16 Open Burning Units

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the area has been closed in accordance with this plan. The letter shall be dated and signed by each party and stamped by the registered engineer, and the original copy submitted by the DOE to the Director of the NMEID. One copy shall be maintained by the HSE-8 Regulatory Compliance Section.

9.2.2.8 Post-Closure for TA-16 Open Burning Units

Post-closure plans are not required for these units because all wastes, residues, and contaminated equipment will be removed during closure.

9.2.3 Technical Area 16 (TA-16) Industrial Incinerator

The industrial incinerator is located outdoors in the northeastern part of TA-16 (Figure 9-19) and is equipped for combustion of potentially HE-contaminated trash and machine oils. The incinerator consists of a primary combustion chamber, a secondary combustion chamber, and a settling chamber. Both primary and secondary chambers are equipped with gas/oil fired power burners supplied by small volumes of waste oil and propane. The outer shell

The concrete pad underlying the incinerator will be scraped, swept, or brushed clean, and the resulting residue placed in 55-gallon drums. The drums will be transferred to TA-54, Area L for appropriate disposal. A small trench will be dug around the concrete pad, with a sump at one corner. The trench and sump will be lined with sheet plastic. The pad will then be scrubbed with a warm Liquinox or Alconox solution in water. The run-off from the pad, collected in the sump, will be sampled, then bailed into drums and transported to TA-54, Area L where the solution will be evaporated in open treatment tanks.

Residue from this evaporation will be disposed of off-site at a permitted facility. Section 9.5 describes sampling procedures for this water. The washing will be repeated until decontamination is demonstrated. The clean pads will be treated as a nonregulated waste and left in place, or if removed, the resulting rubble used as landfill. Personnel involved in decontamination and disassembly activities will wear rubber gloves, safety glasses, and coveralls. Personnel involved in dust-generating activities, such as scraping residue and filling drums, will wear dust masks to present inhalation of contaminated dust.

9.2.3.4 Closure Schedule for TA-16 Industrial Incinerator

The year of closure is 2100. Closure will observe the schedule provided in Table 9-13.

The contract for equipment disassembly is expected to exceed $100,000. Because laboratory policy requires that work be put out to bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 180 days.

9.2.3.5 Closure Certification

An independent, registered professional engineer and the owner/operation of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the unit has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the

Director of the NMEID. One copy shall be maintained at the DOE office and one copy maintained by the HSE-8 Regulatory Compliance Section.

9.2.3.6 Post-Closure for TA-16 Industrial Incinerator

Post-closure plans are not required for hazardous waste incinerators.

9.3 CLOSURE PLAN FOR TA-50 STORAGE, BATCH TREATMENT, AND INCINERATION UNITS

9.3.1 Batch Treatment System and Container Storage Area

The Batch Treatment System is located in Building 1 at Technical Area 50 (Figure 9-9). The system consists of a totally enclosed, vented, 500-gallon pressure vessel equipped with a filtering system, condenser, and vacuum transfer lines. Total system wash-down between batches allows for the treatment of incompatible wastes in the unit. Wastes treated in the Batch Treatment System include cyanide, chromate plating solutions, and solutions of acids, bases, and heavy metals. The batch treatment equipment is mounted on a crack-free concrete floor that is curbed to contain the contents of the process equipment should a leak occur.

A waste transfer and packaging area is also housed in the room in which the Batch Treatment System is located. This area consists of a small space that is covered with a ventilation hood. Small quantities of waste are repackaged within this area, when necessary.

Containerized wastes scheduled for treatment at the unit will be stored in three prefabricated modular storage buildings south of Building 1 (Figure 9-9). These storage units are self-contained and are capable of storing a maximum of thirty 55-gallon drums. Each storage unit is equipped with chemical separation walls to prevent mixing of incompatible wastes, a corrosive-resistant fiberglass floor grating, and a polypropylene building sump liner.

9.3.1.1 Estimate of Maximum Waste in Storage

The maximum inventory of hazardous wastes in storage or treatment at the TA-50 storage and Batch Treatment System, including drum storage and pipe and vessel inventory, is estimated at 21 cubic meters (5,500 gallons).

9.3.1.2 Description of Waste Handled

Three waste streams compose the bulk of the waste treated in the Batch Treatment System, although the system is flexible enough to allow treatment of other wastes that may be generated through new Laboratory projects. These streams are an acid/base waste that contains copper, chromate plating waste, and waste cyanide plating solutions. Treatment includes neutralization of acids and bases, decomposition of cyanides and precipitation of metals.

Upon completion of treatment, the resulting solution is filtered and the filtered liquid discharged to the effluent tank at (TA-50) the wastewater treatment plant. The effluent from the wastewater treatment plant is discharged under an NPDES permit. Metal sludges recovered in the filters are taken to Area L for storage, and with ultimate off-site disposal at a permitted facility.

9.3.1.3 Closure Procedures and Decontamination

The treatment system at TA-50 consists of versatile wet chemical processing equipment capable of neutralizing acids and bases, oxidizing cyanides, and precipitating heavy metals. Wastes in storage at the initiation of closure will be treated using the standard operating procedure (SOP) for the waste, and no more waste will be received.

Following the treatment of the last waste, the system will be washed down using the unit's wash-down system, and the resulting liquid will be collected in approved containers, sampled, and analyzed for hazardous constituents. Non-hazardous wastes, or waste requiring only neutralization, will be discharged to the industrial wastewater sewer. Hazardous waste liquids will be placed in the TA-54, Area L treatment tanks for evaporation. Residue from the effluent evaporation in the tanks will be removed and mixed with cement in drums and stored at Area L prior to off-site disposal at a permitted facility. This is consistent with normal operating procedures for system wash-down between treating noncompatible wastes and acknowledges that analytical procedures associated with previous treatment have reduced hazardous constituents to a level allowable for discharge. Following wash-down, the system filter cartridges will be replaced with new cartridges. The used cartridges

"Dirty" wash-down solutions will also be analyzed for the constituents listed in Table 9-8. Analytical procedures will conform to methods found in SW 846. Equipment will be considered to be contaminated if the "dirty" wash solutions show a significant increase in the listed constituents over the clean wash solutions. A significant increase is determined using statistical methods defined in SW 846.

The constituents listed in Table 9-8 include regulated constituents normally stored and treated in the plant, and additional metals that may have been inadvertently included in treated solutions. A scan for volatile and semivolatile organics is performed to ensure that solvents commonly used within the Laboratory have not contaminated the equipment.

9.3.1.5 Closure Schedule

The year of closure for the TA-50-1 Batch Treatment Plant and the modular storage buildings is 2100. Closure will observe the schedule given in Table 9-9.

The contract for equipment disassembly is expected to exceed $100,000. Because laboratory policy requires that the work be put out for bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 180 days.

9.3.1.6 Closure Certification

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Director of the NMEID. One copy shall be maintained at the DOE office and one copy maintained by the HSE-8 Regulatory Compliance Section.

9.3.1.7 Post-Closure

Post-closure plans are not required for these units.

9.3.2.4 Closure Procedure

All remaining wastes will be incinerated before shutting down the incinerator. If for some reason it is not possible to incinerate all the waste on the site, the waste will be sent to a designated treatment or disposal facility.

When all the waste inventory has been properly disposed of, the unit will be decontaminated as follows: First, the entire incineration system (incinerator, all relevant lines and pumps, and the air pollution control system) will be cleaned. The two incinerator chambers, including all attached refractory and residual solid residue, will then be sealed and sent to a designated treatment or disposal facility. Next, the remaining components of the system will be steamed for a minimum of 24 hours, after which they will be visually inspected, may be dismantled, and will be disposed of in an appropriate manner. The manner of disposal will depend on any residual radionuclide contamination as well as any residual hazardous waste contamination. All radioactive components will be decontaminated to the extent practicable and disposed of according to appropriate regulations.

A detailed description of decontamination procedures for the incinerator upon closure is not possible at this time because the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedures for handling radioactive contaminated equipment. Exact procedures are a function of the degree of contamination at the time of closure.

Upon the decision to close the unit, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination. Using the Laboratory guidelines and procedures, a decommissioning document will be prepared describing in detail the methods and procedures for decontamination, demolition, packaging, and disposal. All materials generated from decontamination and demolition will be treated as radioactive or mixed waste and disposed of in accordance with appropriate regulations.

"Dirty" wash-down solutions will also be analyzed for the constituents listed in Table 9-14. Analytical procedures will conform to methods found in SW 846. Equipment will be considered to be contaminated if the "dirty" wash solutions show a significant increase in the listed constituents over the clean wash solutions. A significant increase is determined using statistical methods defined in SW 846.

9.3.2.6 Closure Schedule

Characterization of the final delivery of hazardous waste may require up to 30 days. An estimated 60 days will be required to schedule and process the final wastes received.

The survey of the incinerator and associated equipment to determine the nature and level of contamination and to prepare the decommissioning document is estimated to take one year. Decommissioning and final disposal are estimated to take up to two years.

The year of closure for the TA-50-37 container storage area is 2100. Closure will observe the schedule given in Table 9-15.

9.3.2.7 Closure Certification

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the area has been closed accordingly. The letter shall be dated and signed by each party and stamped by the registered engineer, and the original copy shall be submitted by the DOE to the Director of the NMEID. One copy shall be maintained at the DOE offices and one copy maintained by the HSE-8 Regulatory Compliance Section.

9.3.2.8 Post-Closure

Post-closure plans are not required for incinerators and container storage units.

9.3.3 TA-50 Storage Pad

9.3.3.1 TA-50 Storage Pad Description

The TA-50 Storage Pad is used to store hazardous chemical waste labpacks in 55-gallon drums and other storage containers meeting DOT specifications. The Storage Pad consists of a roofed concrete pad encompassing 1,596 square feet located south of Building TA-50-37 (Figure 9-20). The wastes are segregated into compatible waste types upon arrival at the unit and placed within one of the six storage cells. A total of 304 55-gallon drums can be stored on the pad. In addition, two 225-gallon polyethylene storage containers are also located on the pad. Additional 255- or 330-gallon containers may replace some 55-gallon drums. All containers meet DOT specifications.

9.3.3.2 Estiamte of Maximum Waste in Storage

The maximum amount of waste in storage at the TA-50 storage pad is 65 cubic meters (17,220 gallons).

9.3.3.3 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are brought to the TA-50 Storage Pad, including wastes from basic and applied chemistry R&D programs (small quantities of different acids, bases, organics, inorganics,and reactive metals), processing waste (sludge resulting from treatment at TA-50-1 Batch Treatment Plant), and chemically contaminated equipment containerized for off-site disposal at a permitted facility.

9.3.3.4 Closure Procedure

Closure for the TA-50 Storage Pad will be done in sequential order. Before decontamination, all wastes in storage will either be treated or transferred to TA-54, Area L for disposal off-site at a permitted facility. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off-site. Organic wastes will be burned at the CAI (Controlled-Air Incinerator) at TA-50-37. Any wastes compatible with permitted treatment at the TA-50-1 Batch Treatment Plant or the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off-site to a permitted facility.

Following removal or treatment of the wastes on-site at the start of closure, the storage unit will be decontaminated by washing with Liquinox or Alconox in water. The resulting wash solutions will be evaporated in the TA-54, Area L treatment tanks. When the wash water has evaporated, the residue in the tanks and the tank liners will be removed, placed in drums, and transported off-site to a permitted facility.

Personnel involved in decontaminating the storage area will wear protective equipment, including: acid/solvent-resistant coveralls, head protection, neoprene-coated gloves, and boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators will be used if specified by the Laboratory's Industrial Hygiene Group, HSE-5, following a field inspection.

The protective clothing and tools used during wash down will be cleaned with detergent and water. The wash water will be collected and analyzed. If the wash water is non-hazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on-site or transported off-site to a permitted facility. Mops and rags used for clean-up will be placed in drums for transport to TA-54, Area L, for disposal off-site at a permitted facility.

9.3.3.5 Decontamination Verification

Before the first wash down, at both the batch treatment system and the modular storage units, two samples will be taken of the clean Liquinox or Alconox solution in water and analyzed for the constituents listed in Table 9-16. The constitutents listed in Table 9-16 include regulated constituents normally stored at the unit.

One additional clean solution sample will be taken for each additional wash-down event. These analytical results provide background data for decontamination verification.

"Dirty" wash-down solutions will also be analyzed for the constituents listed in Table 9-16. Analytical procedures will conform to methods found in SW 846.

Equipment will be considered to be contaminated if the "dirty" wash solutions show a significant increase in the listed constituents over the clean wash solutions. A significant increase is determined using statistical methods defined in SW 846.

9.3.3.6 Closure Schedule

The year of closure for the TA-50 Storage Pad is 2100. Closure will observe the schedule given in Table 9-17.

9.3.3.7 Closure Certification

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the area has been closed in accordance with this plan. The letter shall be dated and signed by each party and stamped by the registered engineer, and the original copy submitted by the DOE to the Director of the NMEID. One copy shall be maintained by the HSE-8 Regulatory Compliance Section.

9.3.3.8 Post-Closure

Post-closure plans are not required for storage facilities.

9.4 CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE MANAGEMENT UNITS

9.4.1 TA-54 Area L Description

TA-54 Area L consists of waste transfer, packaging and storage units and liquid treatment tanks (see Figure 9-10).

The storage units consist of a single-story metal building encompassing 196 square feet, a roofed concrete storage pad encompassing 1,595 square feet, and specified areas within the fenced portions of Area L for storage of solid containerized waste. These areas are used for the accumulation, packaging, and storage of waste containers, which are generated throughout the laboratory and delivered to the facility routinely. They are segregated into compatible types and placed upon the three fiberglass grates inside the metal building or within one of the six storage cells on the roofed concrete pad. Wastes in small containers are put into lab-packs. Wastes suitable for recycling are

consolidated into drums, and any damaged or leaking drums are repackaged into larger drums in this area. Solid containerized wastes are stored on pallets, or otherwise elevated four inches, in cleared areas within the fenced portions of Area L, subject to the limitations of NMHWMR 206.D.4.F.(3) and 206.D.4.F.(4). Such containers are stored within ten feet of the perimeter force, nor ten feet of closed disposal unit covers, nor five feet on either side of buried or overhead utility lines, nor twenty feet of any structure, nor five feet of any paved or unpaved roadway.

Four 1,665-gallon, 10-gauge steel treatment tanks are located at Area L. They are lined with plastic (except when treating reactive wastes) and used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad. The waste most commonly oxidized in these tanks is lithium hydride. Aqueous ammonium biflouride solution (a "non-RCRA" waste) is the waste most commonly evaporated in the tanks.

9.4.1.1 Estimate of Maximum Waste in Storage and Treatment

The maximum amount of waste stored in the metal building at Area L is 220 gallons. The maximum amount of waste stored at the concrete storage pad is 16,720 gallons. No more than 3,600 55-gallon containers of solidified wastes will be stored within the fenced area at Area L. The maximum amount of waste treated in the tanks is 5,700 gallons.

9.4.1.2 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are brought to Area L, including wastes from basic and applied chemistry R&D programs (small quantities of different acids, bases, organics, inorganics and reactive metals), processing wastes (sludge resulting from treatment either at Area L or at TA 50-1 Batch Treatment Plant), and chemically contaminated equipment, to be stored, recycled, treated or packaged for off-site disposal at a permitted facility.

9.4.1.3 Partial Closure

Within the fence at Area L are 34 shafts that were used for landfill of wastes and two impoundments used for evaporation of non-RCRA wastes. The landfill and ponds will be closed under interim status. Closing of individual shafts

occurred as they were filled and the dates of shaft closings are in Figure 9-10. The landfill will be closed in 1986. The impoundments will be closed in 1988. No partial closure of the storage and treatment units at Area L is anticipated.

9.4.2 Closure Procedure

Cleanup and closure for treatment and storage units at Area L will be done in sequential order, culminating in the disposal of any residues or contaminated material by shipment off-site to a permitted facility. Before decontamination, all wastes in storage in either the roofed storage pad, the metal building, or solidified wastes within the fenced area will either be treated on-site or disposed of off-site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off-site. Organic wastes will be burned at the CAI (Controlled-Air Incinerator) at TA-50-37. Any wastes compatible with permitted treatment at the TA-50-1 Batch Treatment Plant or the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off-site to a permitted disposal facility.

Following removal or treatment of the wastes on-site at the start of closure, the metal building and roofed concrete pad will be decontaminated by washing with Liquinox or Alconox in water. The resulting wash solutions will be evaporated in the four treatment tanks. When the wash water has evaporated, the residue in the tanks and the tank liners will be removed, placed in drums and transported off-site to a permitted facility.

The tanks will then be decontaminated by washing and the decontaminated tanks handled as a nonregulated waste.

The closure steps are discussed in more detail in the following text.

9.4.2.1 Waste Removal

The waste on-site at the start of closure includes containerized wastes, as well as liquids and residues in the treatment tanks. Containerized wastes

the original copy shall be submitted by the DOE to the Director of the NMEID. One copy shall be maintained at the DOE offices and one copy maintained by the HSE-8 Regulatory Compliance Section.

9.4.6 Post-Closure

Post-closure care is not required for the Area L storage and treatment units. Post-Closure care for the landfill closed under interim status is discussed in the closure plan for that unit.

9.5 SAMPLING AND ANALYTICAL PROCEDURES

The following sections define procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate.

9.5.1 Soil Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished. A check-list of items required for field sampling is given in Table 9-12.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler (Figure 9-13).

9.5.1.1 Cleaning of Sampler

It is important to clean the samplers after each site is sampled. The samplers will be washed with a warm Liquinox or Alconox solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Lack of cross-contamination is of particular importance in these samples, because they will be taken for regulatory purposes. One-quart glass containers will be used for the samples because they are compatible with the waste. Sampling will be conducted in

TABLE 9-1

SUMMARY OF ACTIVE HAZARDOUS WASTE UNITS AT LOS ALAMOS NATIONAL LABORATORY

Facility	Treatment	Storage
TA-14	Open Detonation	None
TA-15	Open Detonation	None
TA-16	Open Burning Incineration	None
TA-36	Open Detonation	None
TA-39	Open Detonation	None
TA-50	Batch Chemical Incineration	Container
TA-54	Solidification Neutralization Oxidation	Container

TABLE 9-2

ANALYTICAL PARAMETERS AND METHODS FOR TA-14, TA-15, TA-16, AND TA-39

EPA Hazardous Waste Number	Metals	EPA Analytical Method[1]
D004	Arsenic	6010
D005	Barium	6010
D006	Cadmium	6010
D007	Chromium	6010
D008	Lead	6010
D009	Mercury	7470 or 7471
D010	Selenium	6010
D011	Silver	6010
--	Nickel	6010
Organic Scan		
	GC/MS for volatiles	8240
	GC/MS for semivolatiles	8250 or 8270
Other		
	Cyanide	9010
	Nitrates	9200

[1]Analytical methods are taken from Test Methods for Evaluating Solid Waste, EPA SW 846, and may be superceded by more current or alternate methods from SW 846.

TABLE 9-3

AMBIENT TOTAL METALS IN SOIL

PARAMETER	MEAN AMBIENT BACKGROUND[1] Western U.S. (mg/kg)	Eastern U.S. (mg/kg)
Matrix Type	Soil	Soil
Aluminum	5.4	3.3
Chromium	38	36
Barium	560	500
Beryllium	0.6	0.6
Cobalt	8	7
Copper	21	14
Iron	20,000	15,000
Nickel	16	13
Manganese	390	290
Zinc	51	36
Boron	22	36
Vanadium	66	46
Silver	-	--
Arsenic	6.1	5.4
Antimony	150	--
Selenium	0.25	0.39
Thallium	--	--
Mercury	0.055	0.096
Tin	10	10
Cadium	1	1
Lead	18	14
Ammonia	--	--
Cyanide	--	--
Sulfide	--	--

[1]Ambient background concentrations apply only to soil matrix samples. Values obtained form "Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States," United States Geological Survey Professional Paper 574 F, 1975.

TABLE 9-4

ANALYTICAL PARAMETERS AND METHODS FOR TA-36

EPA Hazardous Waste Number	Metals	EPA Analytical Method[1]
D004	Arsenic	6010
D005	Barium	6010
D006	Cadmium	6010
D007	Chromium	6010
D008	Lead	6010
D009	Mercury	7470 or 7471
D010	Selenium	6010
D011	Silver	6010
--	Nickel	6010
--	Zinc	6010
--	Thallium	6010
--	Selenium	6010
Organic Scan		
GC/MS for volatiles		8240
GC/MS for semivolatiles		8250 or 8270
Total Organic Halogen		9020 or 9022
Other		
Cyanide		9010
Soil pH		9045
Sulfides		9030
Nitrates		9200

[1]Analytical methods are taken from Test Methods for Evaluating Solid Waste, EPA SW 846, and may be superceded by more current or alternate methods from SW 846.

TABLE 9-5

SAMPLING SURVEY AND CLOSURE SCHEDULE FOR TA-14, TA-15, TA-36, AND TA-39 OPEN DETONATION UNITS

Activity	Maximum Time Required
Sampling Survey and Contracting	
Contract for sampling and/or analytical services	90 days
Conduct the first sampling survey	30 days
Analyze the first samples	60 days
Determine contaminated areas	20 days
Conduct the second sampling survey	30 days
Weather delay contingency	60 days
Analyze the second samples	60 days
Determine contaminated areas	20 days
Contract for decontamination, if necessary	90 days
Closure	
Remove soil, if necessary	90 days
Decontaminate equipment	7 days
Weather delay contingency	30 days
Conduct verification samples	20 days
Analyze samples	30 days

Many of the above steps will be taken concurrently, and the total closure period will not exceed 180 days.

TABLE 9-6

SAMPLING SURVEY AND CLOSURE SCHEDULE FOR TA-16 OPEN BURNING UNITS

Activity	Maximum Time Required
Sampling Survey and Contracting	
Contract for sampling and/or analytical services	90 days
Conduct the first sampling survey	30 days
Analyze the first samples	60 days
Determine contaminated areas	20 days
Conduct the second soil sampling survey	30 days
Weather delay contingency	60 days
Analyze the second samples	60 days
Determine areas of contamination	20 days
Contract for decontamination, if necessary	90 days
Closure	
Decontaminate equipment, if necessary	20 days
Soil removal, if necessary	90 days
Weather delay contingency	20 days
Conduct verification samples	20 days
Analyze samples	30 days

Many of the above steps will be taken concurrently, and the total closure period will not exceed 180 days.

TABLE 9-7

ANALYTICAL PARAMETERS AND METHODS FOR TA-50-1 BATCH TREATMENT SYSTEM

EPA Hazardous Waste Number	Metals	EP Toxic Regulated Concentrations	EPA Analytical Method[1]
D004	Arsenic	5.0 mg/l	6010
D005	Barium	100.00	6010
D006	Cadmium	1.0	6010
D007	Chromium	5.0	6010
D008	Lead	5.0	6010
D009	Mercury	0.2	7470 or 7471
D010	Selenium	1.0	6010
D011	Silver	5.0	6010
--	Nickel	-	6010
--	Zinc	-	6010
--	Thallium	-	6010
--	Selenium	-	6010
Organic Scan			
GC/MS for volatiles			8240
GC/MS for semivolatiles			8250 or 8270
Other			
Cyanide			9010
pH			9045
Nitrates			9200

[1]Analytical methods are taken from Test Methods for Evaluating Solid Waste, EPA SW 846, and may be superceded by more current or alternate methods from SW 846.

TABLE 9-8

CLOSURE SCHEDULE FOR TA-50 BATCH TREATMENT SYSTEM AND MODULAR STORAGE BUILDINGS

Activity	Maximum Time Required
Treatment of final wastes	30 days
Internal wash down	10 days
External wash down	20 days
Equipment disassembly	70 days
Floor wash down	10 days
Final cleanup	20 days
Decontamination verification	20 days
Total	180 days

TABLE 9-9

ANALYTICAL PARAMETERS AND METHODS FOR TA-54, AREA L UNITS

EPA Hazardous Waste Number	Metals	EP Toxic Regulated Concentrations	EPA Analytical Method[1]
D004	Arsenic	5.0 mg/l	6010
D005	Barium	100.00	6010
D006	Cadmium	1.0	6010
D007	Chromium	5.0	6010
D008	Lead	5.0	6010
D009	Mercury	0.2	7470 or 7471
D010	Selenium	1.0	6010
D011	Silver	5.0	6010
--	Nickel	-	6010
--	Beryllium	-	6010
Organic Scan			
GC/MS for volatiles			8240
GC/MS for semivolatiles			8250 or 8270
Other			
Cyanide			9010
Nitrates			9200
Sulfides			9030
pH (liquids)			9040
Soil pH			9045

[1]Analytical methods are taken from Test Methods for Evaluating Solid Waste, EPA SW 846, and may be superceded by more current or alternate methods from SW 846.

TABLE 9-10

SAMPLING SURVEY AND CLOSURE SCHEDULE FOR TA-54, AREA L UNITS

Activity	Maximum Time Required
Sampling Survey and Contracting	
Contract for sampling and/or analytical services	90 days
Conduct first soil sampling survey	30 days
Analyze first soil samples	60 days
Conduct second soil sampling survey, if needed	30 days
Analyze second soil samples, if needed	60 days
Contract for soil decontamination	90 days
Weather delay contingency	60 days
Closure	
Treat or remove final wastes from waste transfer, packaging and storage areas	90 days
Decontaminate waste packaging, transfer and storage areas	30 days
Evaporate waste wash water from treatment tanks	90 days
Dispose of tanks and residue	60 days
Remove soil	30 days
Weather delay contingency	30 days
Conduct verification samples	20 days
Analyze samples	30 days

Many of the above steps will be taken concurrently, and the total closure period will not exceed 180 days.

TABLE 9-11

CHECKLIST OF SUGGESTED ITEMS FOR FIELD SAMPLING

Quantity	Item	Use	Supplier
1	Field log book	To keep sample records	Office supply stores
1	Disposable towels or rags	To clean sampling equipment	Terry towels or equivalent; available at chemical supply houses
6	Large polyethylene bags	To store waste papers, rags, etc.	Plastic supply houses
12	Polyethylene bags	To store sample containers	Plastic supply houses
4	Waterproof pens	To complete records and labels	Stationary stores
1	Apron, oil and acid proof	Protective garment	McMaster-Carr Co. P. O. Box 4355 Chicago, IL
1	Face mask	Protective garment	MSA 400 Penn Center Boulevard Pittsburgh, PA 15235
1	Liquinox or Alconox Detergent	Used to clean sampler	

TABLE 9-12

CLOSURE SCHEDULE FOR TA-16 INDUSTRIAL INCINERATOR

ACTIVITY	MAXIMUM TIME REQUIRED
Treatment of final wastes	30 days
Residue removal from incinerator	10 days
Internal/external wash down	10 days
Equipment disassembly	75 days
Residue removal from concrete pad	10 days
Concrete pad wash down	5 days
Final cleanup	20 days
Decontamination verification	20 days
TOTAL	180 days

TABLE 9-13

ANALYTICAL PARAMETERS AND METHODS FOR THE TA-50-37 CONTAINER STORAGE AREA

EPA Hazardous Waste Number	Metals	EP Toxic Regulated Concentrations	EPA Analytical Method[1]
D004	Arsenic	5.0 mg/l	6010
D005	Barium	100.00	6010
D006	Cadmium	1.0	6010
D007	Chromium	5.0	6010
D008	Lead	5.0	6010
D009	Mercury	0.2	7470 or 7471
D010	Selenium	1.0	6010
D011	Silver	5.0	6010
Organic Scan			
GC/MS for volatiles			8240
GC/MS for semivolatiles			8250 or 8270
Other			
pH			9045

[1]Analytical methods are taken from Test Methods for Evaluating Solid Waste, EPA SW 846, and may be superceded by more current or alternate methods from SW 846.

TABLE 9-14

CLOSURE SCHEDULE FOR THE TA-50-37 CONTAINER STORAGE AREA

ACTIVITY	MAXIMUM TIME REQUIRED
Removal of final wastes	60 days
Floor wash down	10 days
Analyze samples	50 days
Final cleanup	10 days
Decontamination verification	50 days
TOTAL	180 days

TABLE 9-15

ANALYTICAL PARAMETERS AND METHODS FOR THE TA-50 STORAGE PAD

EPA Hazardous Waste Number	Metals	EP Toxic Regulated Concentrations	EPA Analytical Method[1]
D004	Arsenic	5.0 mg/l	6010
D005	Barium	100.00	6010
D006	Cadmium	1.0	6010
D007	Chromium	5.0	6010
D008	Lead	5.0	6010
D009	Mercury	0.2	7470 or 7471
D010	Selenium	1.0	6010
D011	Silver	5.0	6010
Organic Scan			
GC/MS for volatiles			8240
GC/MS for semivolatiles			8250 or 8270
Other			
pH			9045

[1]Analytical methods are taken from Test Methods for Evaluating Solid Waste, EPA SW 846, and may be superceded by more current or alternate methods from SW 846.

TABLE 9-16

CLOSURE SCHEDULE FOR THE TA-50 STORAGE PAD

ACTIVITY	MAXIMUM TIME REQUIRED
Removal of final wastes	60 days
Floor wash down	10 days
Analyze samples	50 days
Final cleanup	10 days
Decontamination verification	50 days
TOTAL	180 days

301215 02 09 A13

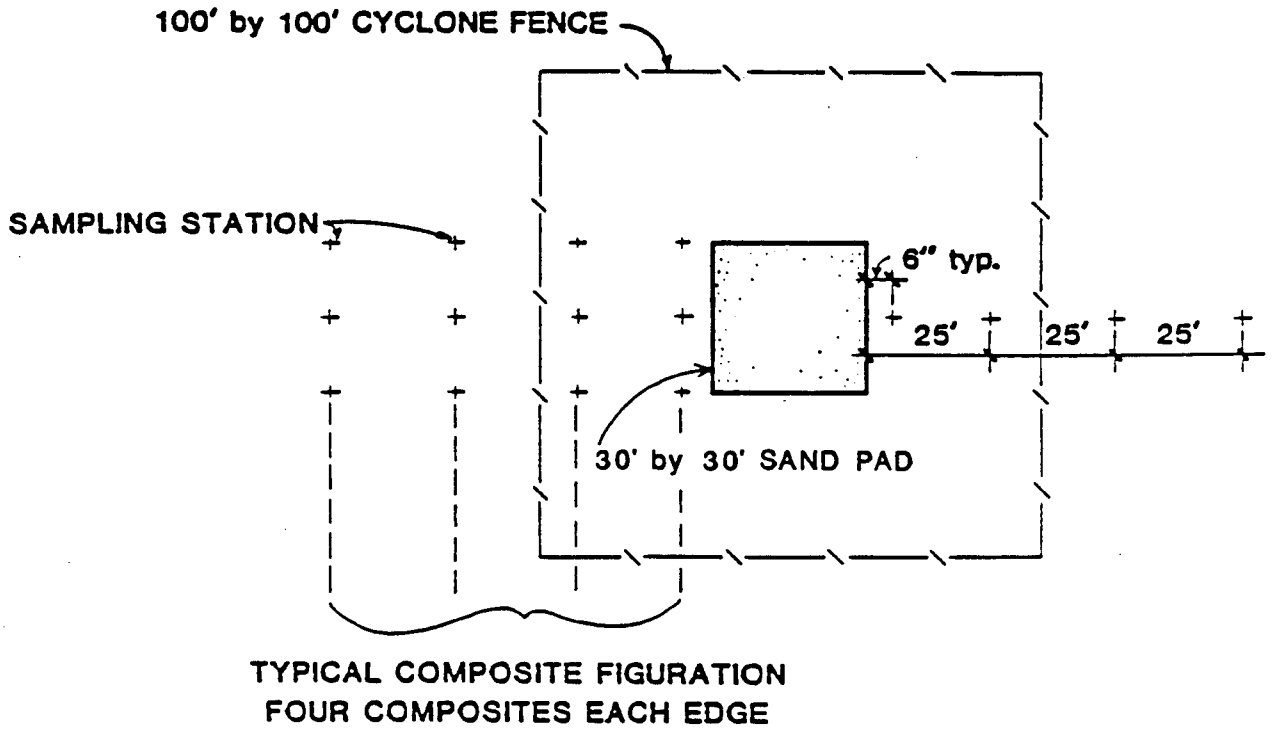

FIGURE 9-6 TA-16 BURN PAD SAMPLE LOCATIONS

301215 02 09 A11

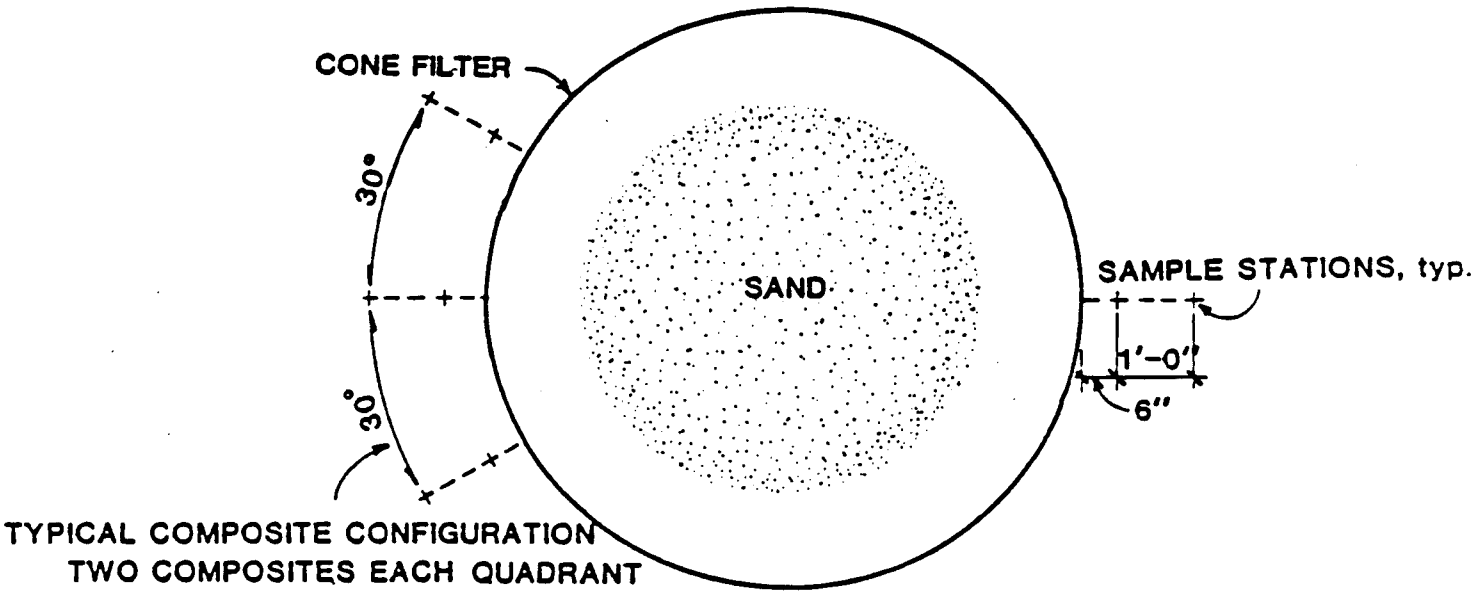

FIGURE 9-8 TA-16 PRESSURE VESSEL SAMPLE LOCATIONS

9 0 1215 02 09 A9

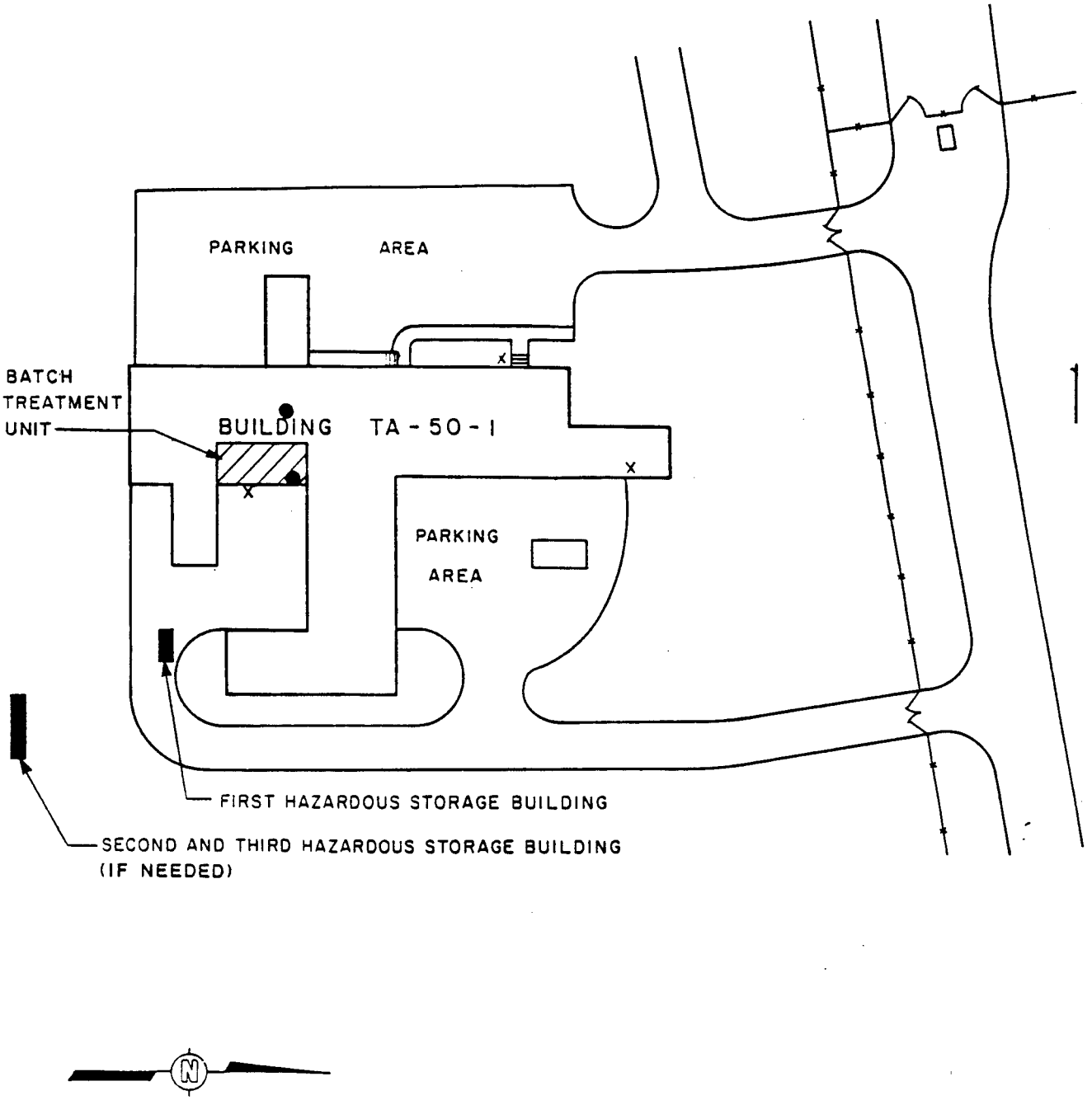

FIGURE 9-9 BATCH TREATMENT UNIT BLDG. TA-50-1

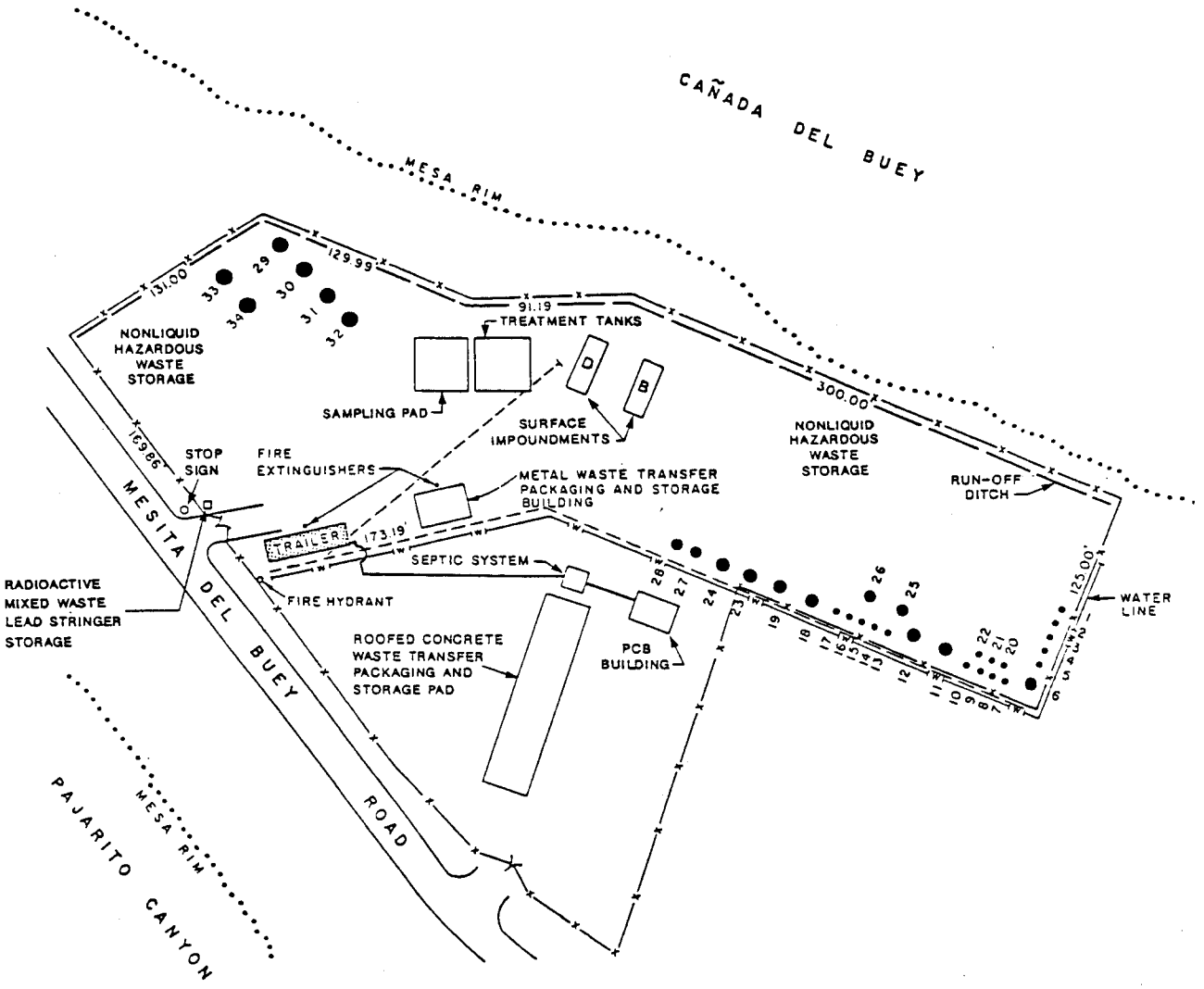

FIGURE 9-10 TA-54 AREA L

301215 02 09 A10

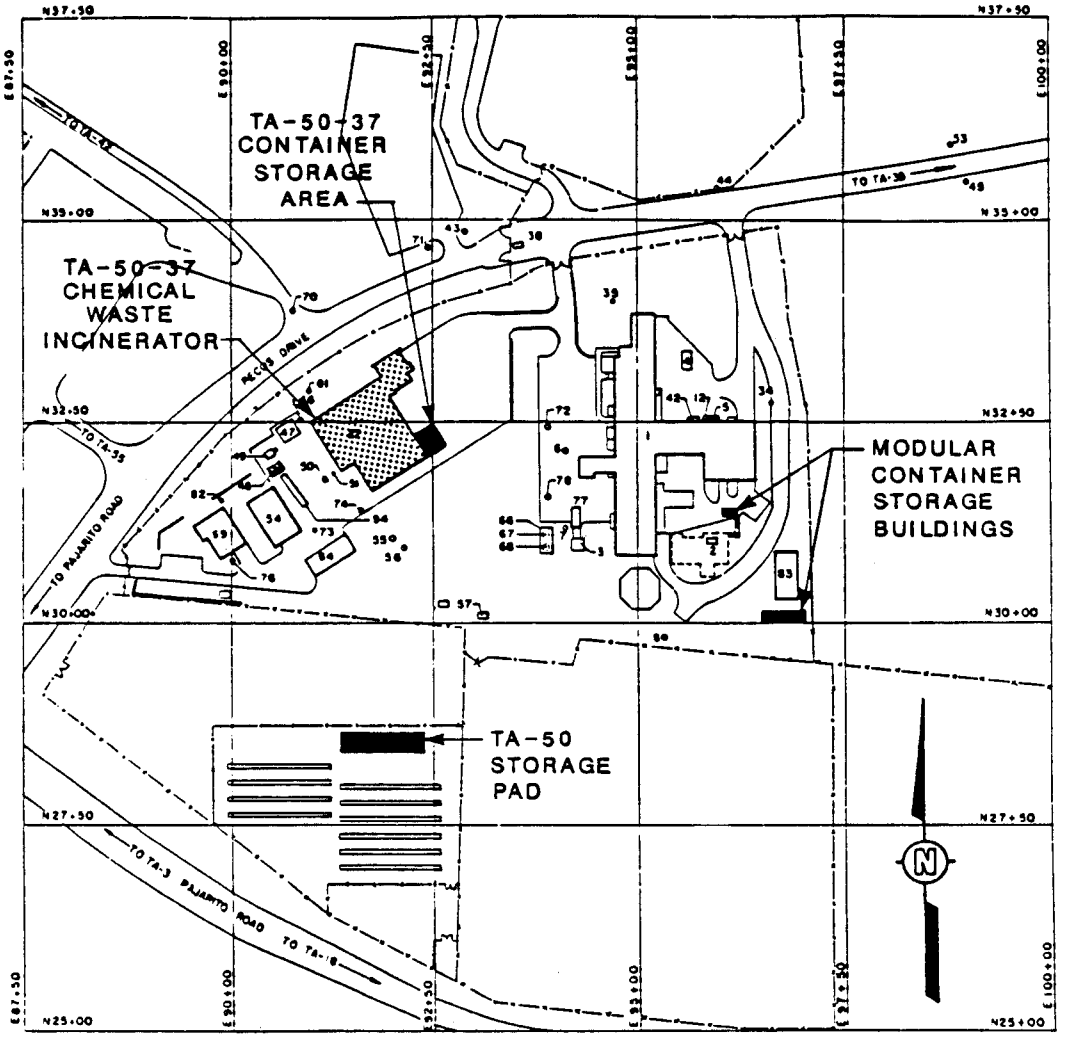

FIGURE 9-20 LOCATION OF TA-50 CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS

11.0 CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designe to assure that qualified personnel properly gather and evaluate the informa. on submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Siegfried S. Hecker
Director
Los Alamos National Laboratory
Operator

11-2-88
Date Signed

Harold E. Valencia
Area Manager, Los Alamos Area Office
U.S. Department of Energy
Albuquerque Operations
Owner/Co-operator

11-3-88
Date Signed

12.0 LIST OF REFERENCES

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INTERNATIONAL TECHNOLOGY CORPORATION

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RCRA Part B Permit Application

Los Alamos National Laboratory
Los Alamos, New Mexico

Los Alamos National Laboratory
Environmental Surveillance Group HSE-8
Los Alamos, New Mexico 87545

RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

APPENDIX R

HAZARDOUS WASTE FACILITY CONTINGENCY PLAN FOR THE LOS ALAMOS NATIONAL LABORATORY

CONTINGENCY PLAN AUTHORIZATION

This document presents the essentials of the Los Alamos National Laboratory's Hazardous Waste Facility (HWF) Contingency Plan and associated emergency procedures as required by 40 CFR 264, Subpart D. The plan is designed to minimize hazards to human health or to the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous wastes. The provisions of the plan will be carried out immediately whenever there is a fire, explosion, spill or release of hazardous waste constituents that could threaten human health or the environment.

In the event of a contingency not specifically addressed in this plan, the Emergency Preparedness Duty Office (EPODO) will take whatever actions, based on his/her best judgment, are necessary. He will use whatever HSE-Division or support resources available to first protect human life and secondly, protect the environment.

A copy of the HWF Contingency Plan and all current revisions to the plan shall be maintained at the HSE-Division Office, the HSE-7 Group Office, the HSE-8 Group Office, and at each operating hazardous waste unit. A copy of the Contingency Plan and current revisions shall also be submitted to any group required to respond to emergency situations in accordance with this plan.

To assure proper implementation in the event of any emergency, the HWF Contingency Plan must be studied and understood by all personnel involved in the handling, storage, or treatment of hazardous waste and by all personnel required to respond to emergency situations involving hazardous wastes.

Authorization Signature

_____ _____

(Name) (Title) (Date)

HAZARDOUS WASTE FACILITY CONTINGENCY PLAN FOR THE LOS ALAMOS NATIONAL LABORATORY

ISSUED 10/9/85

Amendment Number	Date	Authorization Signature

HAZARDOUS WASTE FACILITY CONTINGENCY PLAN

The Los Alamos National Laboratory's Hazardous Waste Facility (HWF) Contingency Plan (also referred to as the Contingency Plan) has been prepared in compliance with 40 CFR §270.14(b)(7) (NMHWMR 302.A.4.b[1]) and specific requirements as stated in 40 CFR §264.51 through §264.56 (NMHWMR 206.B.10) as applicable.

1.0 INTRODUCTION

The Los Alamos National Laboratory and the resident communities of Los Alamos and White Rock are located in north central New Mexico on the Pajarito Plateau, situated west of the Rio Grande on the eastern slopes of the Jemez Mountains. The Laboratory site covers about 111 km^2 (27,500 acres) in and adjacent to Los Alamos County and includes 32 active Technical Areas (TAs) (Figure 1).

The principal mission of the Laboratory is the design and development of weapons for the nation's nuclear arsenal; however, considerable research and development (R&D) is directed toward the development of advanced technology. In executing its research mission, the Laboratory produces hazardous wastes in small quantities, the nature of which varies with changes in the research projects conducted. The potential exists for hazardous waste generation to occur at virtually all of the technical areas.

Overall responsibility for Hazardous Waste Management is with the HSE-7 Waste Management Group in the Health, Safety and Environment (HSE) Division (Figure 2). Generators of hazardous wastes are responsible for proper identification, segregation, and documentation of their wastes. Except for HE wastes, packaging, transportation, and final disposition of hazardous wastes are the responsibility of HSE-7 Low-Level Waste/Chemical Waste Operations.

HE wastes are handled by Dynamic Testing (M) and Design Engineering (WX) Division groups whose central purpose is the design and testing of explosives.

HMX, RDX (cyclonite), TNT (2,4,6 trinitrotoluene), PETN (pentaerythritol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine and various plastic binders. Nearly all the HE waste substances are ignitable or reactive and barium nitrate is EP toxic. Residues from HE waste are generated by flashing, burning, or detonating HE waste at TA-14, 15, 16, 36, and 39. These residues are typically present in the uppermost layer of sand that covers the burn pads. The sand from the pressure vessels at TA-16 is considered hazardous due to its high barium content when barium nitrate is burned on these pads.

1.1.4 Chemically Contaminated Equipment

Empty drums, tanks and gas cylinders are typical contaminated items. Generation of this type of hazardous waste occurs throughout the Laboratory facilities and produces a wide variety of waste types. The hazards are the same as those associated with contaminating constituents.

1.2 HAZARDOUS WASTE UNITS

The safe handling, treatment, and/or storage of hazardous wastes is the responsibility of HSE-7. Daily operations involving hazardous wastes are performed by Solid Waste Operations. HE wastes are an exception, their treatment being the responsibility of M and WX Divisions. HSE-7 is only responsible for residuals from HE treatment when these residuals are determined to be hazardous wastes.

Hazardous Waste Units currently in operation are summarized in Table 2. The locations of the units are shown as the shaded areas on Figure 1. The flow plan for hazardous wastes within the Laboratory is shown in Figure 3.

1.2.1 Technical Area 16 (TA-16) Open Burning Units

Four types of open burning units are located at the TA-16 burning ground: a flash pad, where any HE contamination is removed from excess equipment or scrap generated within the Technical Area; two burn tables for the destruction of solid HE material; a pad with trays where HE-contaminated waste oil/solvent is burned; and two pressure vessels for reacting HE-contaminated sludge.

Cyclone fences 100-foot square surround the flash pad and each of the two burn tables. Material to be flashed is placed on a layer of sand in the center of the fenced area with additional fuel, if necessary, to maintain the burn until all HE has been reacted. The scrap material is then handled as solid waste.

The two burn tables are used to destroy solid chunks of excess or off-specification HE and machine turnings. The material is placed on a 15 pound asphalt felt pad within a steel, sand-filled table and ignited. Used oil or solvent which may be contaminated with HE is poured into metal trays lined with fire brick at the liquid burn pad. The trays are located within a sand-filled steel tray. The oil is ignited using a remotely-operated "electric match." Approximately 100 gallons of oil are burned each month.

HE-contaminated wash water is collected in sumps at HE fabrication facilities located in several Technical Areas. HE settles out of the wash water as sludge and is taken to TA-16 for treatment. The sludge is gravity fed from a vacuum truck to one of two pressure vessels buried in the ground. Up to 750 pounds of sludge can be burned in a vessel at one time. The vessels contain sand and gravel, and a fluid drain connects the base of the cone-shaped vessel to a carbon-filter wastewater treatment facility located nearby. Treated effluent is regulated by a NPDES permit (NM 0028355).

Waste laboratory paper, rags, filters, and sandpaper potentially contaminated with experimental HE are disposed of in the small burn cage at TA-14. The cage, a metal cylinder covered by a wire mesh screen, is contained within a steel tray placed on the ground. The burn cage is typically used once a month or less. Burn residues are drummed and sent to HSE-7 for analysis and disposal.

1.2.2 TA-14, 15, 36, and 39 Open Detonation Units

Open detonation sites used for the destruction of excess or waste HE are located at Los Alamos in Technical Areas 14, 15, 36, and 39. These sites are used routinely to detonate scrap HE, failed experimental detonations, unneeded classified explosives shapes, and small quantities of reactive chemicals. These sites consist of detonation points on the open ground, often located within a small canyon. Material to be detonated is placed on a wooden table

or on a layer of sand at the firing point and is detonated with a remote firing mechanism. Associated facilities at these sites include bunkers which are occupied by technical personnel during detonations. Prior to all firings, nearby roads are checked and kept clear.

1.2.3 TA-50-01 Batch Treatment System and Modular Container Storage Buildings

The Batch Treatment System is located in Building 1 at Technical Area 50 (Figure 4). The system consists of a totally enclosed, vented, 500-gallon pressure vessel equipped with a filtering system, condenser, and vacuum transfer lines (Figure 5). Wastes treated in the Batch Treatment System include cyanide, chromate plating solutions, and solutions of acids, bases and heavy metals.

Three chemical waste modular storage buildings are located South of Building 1. Storage space consists of a three prefabricated, totally enclosed safety storage buildings. Each building is designed to accommodate up to 30 55-gallon waste drums. Wastes are stored in this area prior to treatment in the Batch Treatment System or other units. Only compatible wastes are stored in compartments of the buildings at one time. A ventilated hood is provided for transferring wastes between drums inside Building 1.

1.2.4 TA-50-37 Chemical Waste Incinerator and Room 117 Storage Area

The waste incinerator is located in Building 37 at Technical Area 50 (Figure 6). The highly modified, controlled air incinerator is rated at a nominal 45 kilograms per hour waste feed throughput. The incinerator was developed as part of a continuing incinerator study and demonstration program being conducted by Los Alamos and is currently permitted by the EPA to burn PCB-contaminated materials. Modifications to the incinerator include additions of liquid and solid waste feed preparation lines, a continuous ash removal system, a high-efficiency off-gas cleanup system, and backup utility systems (Figure 7). Standard combustion equipment has been modified to permit effective incineration of waste in solid, liquid, slurry, or gaseous form. Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms. The liquid waste blowdown is directed to the TA-50 industrial waste treatment plant. Samples of liquid

waste blowdown will be collected as specified in the Incinerator Trial Burn Plan.

A chemical waste storage area is located in Room 117 of Building 37. Storage space consists of a 23 foot by 40 foot room with a sub-floor spill containmentarea. The storage area is designed to hold a maximum of 63 55-gallon drums or 11 330-gallon containers. Only compatible wastes are stored in this area at one time.

1.2.5 Technical Area 54 (TA-54), Area L Units

Waste Transfer, Packaging and Storage Units

A single-story metal building encompassing 196 square feet and a roofed concrete storage pad encompassing 1595 square feet are located in Area L of Technical Area 54. These units are used for the accumulation, packaging and storage of waste containers generated from throughout the Laboratory (Figure 8). Area L of TA-54 is an area of about three acres surrounded by an eight-foot-high chain-link and barbed-wire fence (Figure 8). Currently active waste management units located within this area include four waste treatment tanks and as well as the transfer, packaging and storage units. The metal building has a concrete floor having a design standard load-bearing capacity of 250 pounds per square foot. Three shallow sumps covered by fiberglass grates are located within the floor of the building. The storage pad has a concrete floor having a design standard load-bearing capacity of 700 pounds per square foot.

Hazardous waste containers generated at the various Los Alamos laboratories are delivered to these units on a routine basis. Wastes are segregated into compatible types and placed upon the three fiberglass grates located in the metal building, or within one of the six storage cells on the roofed concrete pad. Wastes, packaged in small containers, are placed into lab packs. Also, vermiculite is added to 55-gallon drums containing liquids in these units. Wastes suitable for recycling are consolidated into drums and any damaged or leaking drums are repackaged into larger drums in these units. Containerized solid waste is also stored at Area L in 55-gallon drums.

Treatment Tanks

Four 1665-gallon ten-gauge steel tanks are located at Area L of TA-54. The tanks are lined with plastic. These tanks are used to neutralize, oxidize,

a copy of which is included as an attachment to this document. There are no agreements with other agencies.

2.1.10 WX and M Division Personnel

Personnel in WX and M Divisions are trained to safely handle and dispose of highly reactive materials (High Explosives). Any spill or uncontrolled release of material at the burning grounds (TA-14 and -16) or the detonation pads (TAs 14, 15, 36, and 39) will be cleaned up by personnel from these divisions. The Fire Department may be called to respond if a burn or detonation results in an uncontrolled fire.

2.2 Emergency Equipment

A list of emergency equipment for use at the Laboratory and the location of this equipment can be found in Table 4. The equipment immediately available for use is located at TA-54, Area L, the TA-50 batch treatment system and modular container storage buildings, the TA-50 waste incinerator and Room 117 storage, the TA-16 incinerator, and the TA-50 storage pad.

In addition, PAWS, the Fire Department, and HSE-2 maintain emergency equipment. Major emergency facilities are shown in Figure 9.

2.3 Communications

Effective emergency response at Los Alamos National Laboratory requires an efficient communication system which will integrate all personnel into the emergency response procedure.

There are two central alarm systems (CAS) at the Laboratory; an emergency CAS and a mechanical CAS. The emergency CAS is activated by:

- Telephone communication (9-911)
- Automatic fire alarms
- Manual pull alarms
- Computer interface (to warn of critical events or loss of confinement at selected facilities)
- Break-in security
- Radio communications

The emergency CAS is located in the central control room in Building 440 at TA-3. The control room is manned 24 hours a day and is equipped with telephones, medium and short range radios, direct line telephones, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and pull fire alarms.

within the Laboratory boundary, and most are accessible only to employees during work hours.

The types of routine surveillance conducted at these stations includes radiation measurements and collection of air particulates, waters, soils, sediments, and foodstuffs for subsequent analysis.

Additional samples are collected to gain information about particular events such as major runoff events and nonroutine releases. Data are used for comparison with standards, background radiation levels, and dose calculations.

4.0 SUDDEN RELEASES

This section deals with incidents involving sudden release such as spills, fires, or explosions which pose a significant threat to human health or the environment and includes the release of hazardous materials and hazardous wastes. Hazardous materials are chemical substances that become a regulated waste as the result of the incident and can include hazardous raw materials that are spilled, products of combustion, and products of uncontrolled reactions.

4.1 Hazardous Waste Emergency Coordination

The EPODO is responsible for coordinating all emergency response measures involving sudden releases of hazardous wastes with the exception of the open burning and open detonation units at TA-14, 15, 16, 36, and 39. HE waste handling is the responsibility of M and WX divisions, who have developed Standard Operating Procedures (SOPs) based on safe handling practices designed to eliminate the risk of fire and explosions. Unplanned detonation or combustion of HE renders the HE waste nontoxic. In some cases, residuals contain barium. Cleanup of barium contaminated areas due to unplanned detonations shall be coordinated with the EPODO.

The EPODO can be reached during working hours by contacting the Emergency Management office (7-6211) or the CAS Dispatcher during off hours.

- Any building, grass, forest, nonhazardous waste fire that threatens to ignite hazardous wastes.

4.2.2 Emergency Notification

Immediately upon discovery of an imminent or actual incident involving hazardous wastes or hazardous materials, the EPODO will be notified first. In the case of fire involving hazardous wastes or hazardous materials, this is superseded by the Laboratory fire alarm system. A fire is reported by dialing 9-911, activation of automatic alarms, or activation of a fire pull box. All fire alarms simultaneously alert the CAS Dispatcher, the Fire Department, and the Mason and Hanger Pro-Force. For fire involving hazardous wastes, hazardous materials, or hazardous waste units, the CAS Dispatcher shall contact the EPODO (Figure 10). Orange 1 signs on buildings which contain HE are a warning to fire fighters not to approach or enter the building without obtaining information from WX or M Division personnel about the nature and location of HE materials in the building.

During off hours, all incidents involving hazardous wastes or hazardous materials shall be reported to the CAS Dispatcher, who will contact the on-call EPODO.

The EPODO shall proceed to the incident and assess the nature of the problem. On an as-needed basis, the EPODO shall contact response groups directly or instruct the CAS Dispatcher to contact them or contact the HSE-Duty Officer (HSE-DO) who will notify the appropriate HSE groups. Table 3 shows the assistance available from each emergency response group. The EPODO will use this list as criteria to determine which groups to contact in an emergency.

Each response group maintains an on-call person and/or a call-down procedure to answer emergencies.

Because the initial observer may not be able to recognize the involvement of hazardous materials, the EPODO shall be notified of any incident as described in Section 4.1. The EPODO shall use whatever means available including the assistance of other response groups, computer data searches, and sampling to

determine if a hazardous waste is generated. HSE-5 and HSE-8 have the expertise to determine the nature and extent of contamination, the chemicals involved in the incident, and the characteristics of the hazardous waste.

- Time and type of incident
- Name and quantity of materials involved, to the extent known
- The extent of injuries, if any
- The possible hazards to human health or the environment outside the facility

6. Advise the response groups as needed to minimize personnel exposure and expedite control; and

7. For the Batch Treatment Plant and Controlled Air Incinerator, where the emergency stops operations, HSE-7 personnel must monitor for leaks, pressure buildup, gas generation or equipment ruptures. The instruments that are monitored during shutdown and what they are monitored for are shown on Table 7 for the Batch Treatment Plant and Table 8 for the Incinerator.

Once control of the emergency is established, the EPODO shall:

1. Arrange for site cleanup

2. Provide for treating, storing, or disposing of recovered wastes, contaminated soil or contaminated surface waters

3. Provide for decontamination of equipment as needed

4. Replace and/or repair equipment as needed

5. Conduct testing as needed to verify successful cleanup

6. Within 15 days of the incident, submit to the Regional Administrator and Environmental Improvement Division the report described in Section 10.

5.0 SPECIFIC EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS WASTE UNITS

The following section summarizes the guidelines for handling emergencies.

5.1 Chemical Spills

Hazardous wastes are handled and stored in small containers, lab packs, 55-gal. drums, and dumpster tanks. The individual volumes handled are small. Handling of hazardous materials may involve truckload quantities of material such as solvents, fuels, acids, and bases.

The general steps in handling hazardous wastes are:

- Containment including spreading of absorbents or forming of temporary dikes,
- Waste pickup and packaging in sound containers, and
- Decontamination followed by testing to assure adequate clean-up.

The emergency preparedness procedures related to flammable organic solvent spills call for stabilization of the spilled material with the organic solvent spill kit. Other chemical spills are to be stabilized using the acid and caustic spill kits or by the addition of absorbents such as vermiculite. Personnel protective equipment will be worn during spill control and cleanup. The stabilized material will be treated as hazardous waste. Runoff which might occur from spills outside containment areas during precipitation must be contained and handled as a hazardous waste unless analyzed and found to be nonhazardous. Temporary dikes can be constructed to contain runoff.

5.1.1 Spill Control Procedures

Vermiculite or Pell-O-Cell will be used to control all chemical spills except hydrofluoric acid spills. Vermiculite and Pell-O-Cell are compatible with all chemicals except fluorine and hydrofluoric acid. Hydrofluoric acid is only handled in very small volumes, in small containers, so that a spill would be limited to a very small volume (less than 1 gallon). A hydrofluoric acid spill will be neutralized by carefully adding calcium hydroxide to the spill. After an excess of calcium hydroxide has been added and the reaction has ceased, the resulting solution will be cleaned up using vermiculite. Vermiculite and calcium hydroxide are stored at all the TSD units at the Laboratory.

Type 17H 55-gallon drums will be used to collect all spilled material and contaminated absorbent. There are many drums of this type, located at all treatment and storage facilities at the laboratory. For corrosives, the drums will be lined with polyethylene drum liners. The list of emergency equipment (Table 4) shows the equipment available at each area to be used to control a spill. The ultimate disposition of any contaminated absorbent or waste

be prevented, or that the response to them may be more effective. Following each event requiring the implementation of the HWF Contingency Plan, the EPODO shall meet with representatives of all response functions to determine the adequacy of the response.

9.0 EMERGENCY RECORDS

The details of any incident that requires implementation of the HWF Emergency Contingency Plan must be noted in that unit's log book. This record must include the time, date, and full description of the incident.

10.0 EMERGENCY REPORTS

Any emergency that requires implementation of the HWF Emergency Contingency Plan will be reported in writing within 15 days to the EPA Regional Administrator and to the New Mexico Environmental Improvement Division (EID).

The report shall include the following data:

- Name, address, and phone number of owner or operator
- Name, address and phone number of the facility
- Date, time, and type of incident (e.g. fire, explosion, spill)
- Name of material involved
- Quantity of material involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of material recovered from the incident

11.0 CONTINGENCY PLAN AMENDMENT

The Contingency Plan shall be reviewed by the HSE-7 Group Leader and immediately amended if determined to be inadequate to handle nonsudden and sudden releases, and whenever:

TABLE 2

SUMMARY OF HAZARDOUS WASTE UNITS
LOS ALAMOS NATIONAL LABORATORY

Technical Area and Building or Area Designation	Wastes Handled	Activity Description
TA-14, 15, 16, 36, and 39	High explosives (HE)	Open burning/open detonation units used to react waste HE and HE-contaminated material
TA-50-01	Electrochemistry wastes Isotope separation wastes	Chemical batch treatment by neutralization, metal precipitation, and cyanide destruction
TA-50 Modular Storage Units	Shops department wastes Wastes from Basic and Applied Chemistry R&D programs Electrochemistry wastes Isotope separation wastes	Storage of wastes prior to treatment, incineration
TA-50-37	Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials	Waste incineration with flue gas treatment
TA-50-37 Room 117 Storage Area	Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials	Storage/Staging area for incinerator
TA-50 Storage Pad	Shops department wastes Wastes from Basic and Applied Chemistry R&D programs	Waste storage prior to treatment, incineration, or shipment off-site
TA-54 Area L	Shops department wastes Wastes from Basic and Applied Chemistry R&D programs	Wastes are segregated and stored prior to treatment, incineration, recycling, or shipment off-site

TABLE 4

EMERGENCY EQUIPMENT

EMERGENCY EQUIPMENT AT THE TA-50 BATCH WASTE TREATMENT UNIT (BWTR)

Fire Control Equipment:

2 fire extinguishers (B,C)

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

East wall of Batch Waste Treatment Room (BWTR)
West wall of adjoining room (Rm. 24) to west of BWTR

Fire alarm pull box

Description of General Capabilities:
Manually operated fire alarm which may be activated by any employee in the event of fire to notify Central Alarm Station.

Located on east wall immediately outside BWTR
1 automatic thermal alarm

Sprinkler system

Description of General Capabilities:
The sprinkler system is an automatic system which delivers a maximum of 200 psi of water spray through shower heads placed at locations which maximize fire suppression range capability. In the event of fire, this system should function automatically, requiring no manual assistance.

2 sprinkler heads in ceiling of BWTR, set off at 212°F

Communication Equipment:

Telephones

Description of General Capabilities:
Telephones for internal communication at the Laboratory and off-site communication with Federal, State, County and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Located in Room 24 and at the BWTR
Telephones equipped with building-wide paging system

Evacuation alarm, single tone horn

Description of General Capabilities:
The evacuation alarm activates the central alarm system, which automatically activates the emergency response procedures.

TABLE 4
(Continued)

EMERGENCY EQUIPMENT AT THE BURNING GROUND AND THE OPEN DETONATION PADS, TAs 14, 15, 16, 36, AND 39

Fire Control Equipment

Fire Extinguisher in each vehicle used to transport HE material
Fire Extinguisher in each control bunker

Description of General Capabilities

These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of a fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.

Communication Equipment

Telephones
Two-way radios

Description of General Capabilities

Telephones for internal communication at teh Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Located in each control bunker, in the control building at the burning ground, and at the waste wataer treatment facility at the burning ground. Radios allow communication between each vehicle.

TABLE 6
HAZARDOUS WASTE EMERGENCY COORDINATORS

(To be notified in succession)

Primary Coordinators	Laboratory Telephone	Home Telephone	Home Address
1. Donald Winston, Emergency Management	7-6211	662-2453	450 Navajo Road, Los Alamos, NM
2. James F. Griffin, Emergency Management Coordinator	7-6211	662-5436	1057 Cedro Court, Los Alamos, NM
3. Z. Edward MacBain, Emergency Management Coordinator	7-6211	662-6211	1856 Cooper Place, Los Alamos, NM
4. James S. Griffiths, Emergency Management Coordinator	7-6211	662-9155	190 Manhattan Loop, Los Alamos, NM

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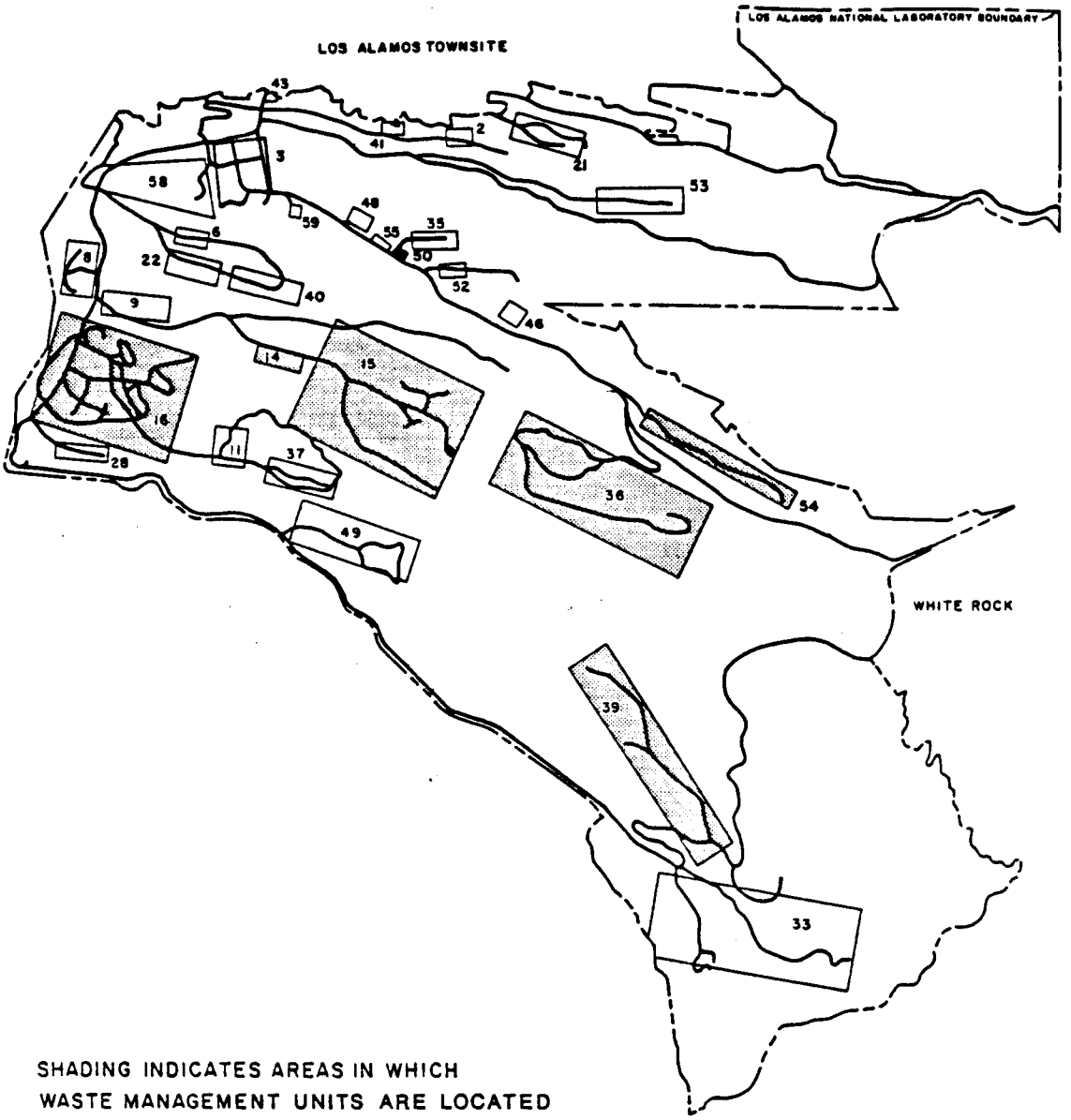

SHADING INDICATES AREAS IN WHICH WASTE MANAGEMENT UNITS ARE LOCATED

N

4000 0 4000

SCALE

FIGURE 1

LOS ALAMOS TECHNICAL AREAS

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY LOS ALAMOS, NEW MEXICO

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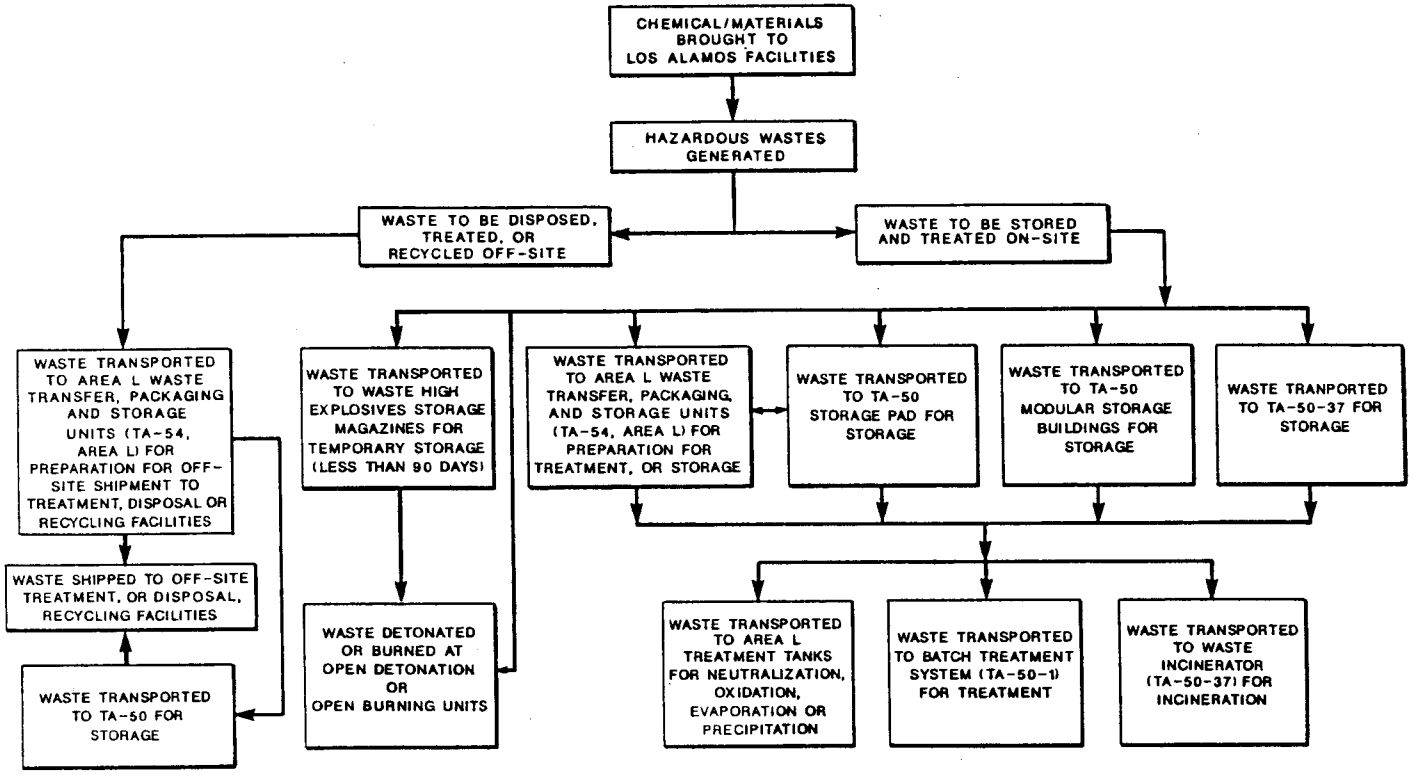

FIGURE 3

SCHEMATIC DIAGRAM OF LOS ALAMOS HAZARDOUS WASTE MANAGEMENT ACTIVITIES

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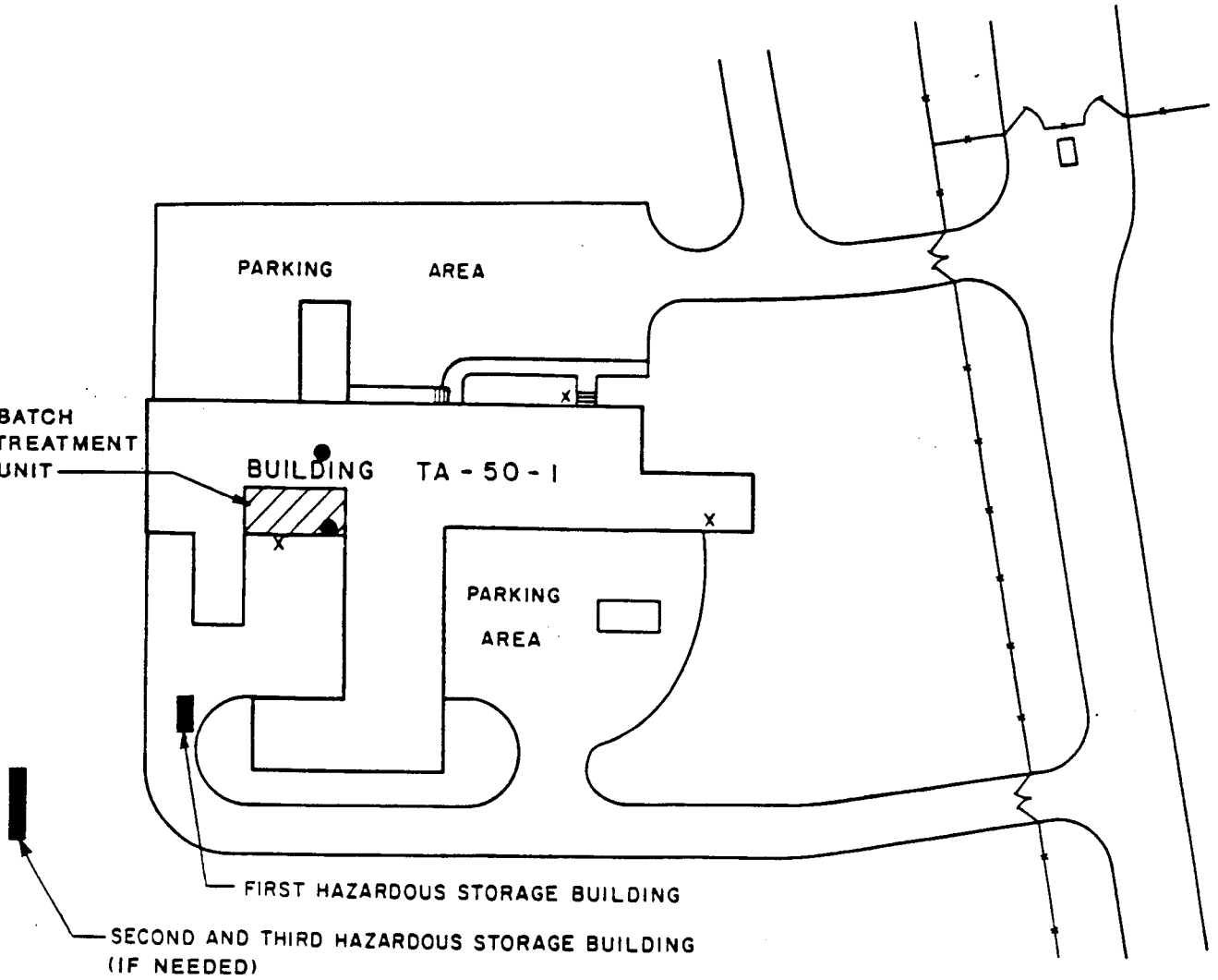

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X ALARM PULL BOXES

● FIRE EXTINGUISHERS

FIGURE 4

LOCATION OF BATCH TREATMENT UNIT IN BUILDING I IN TA-50

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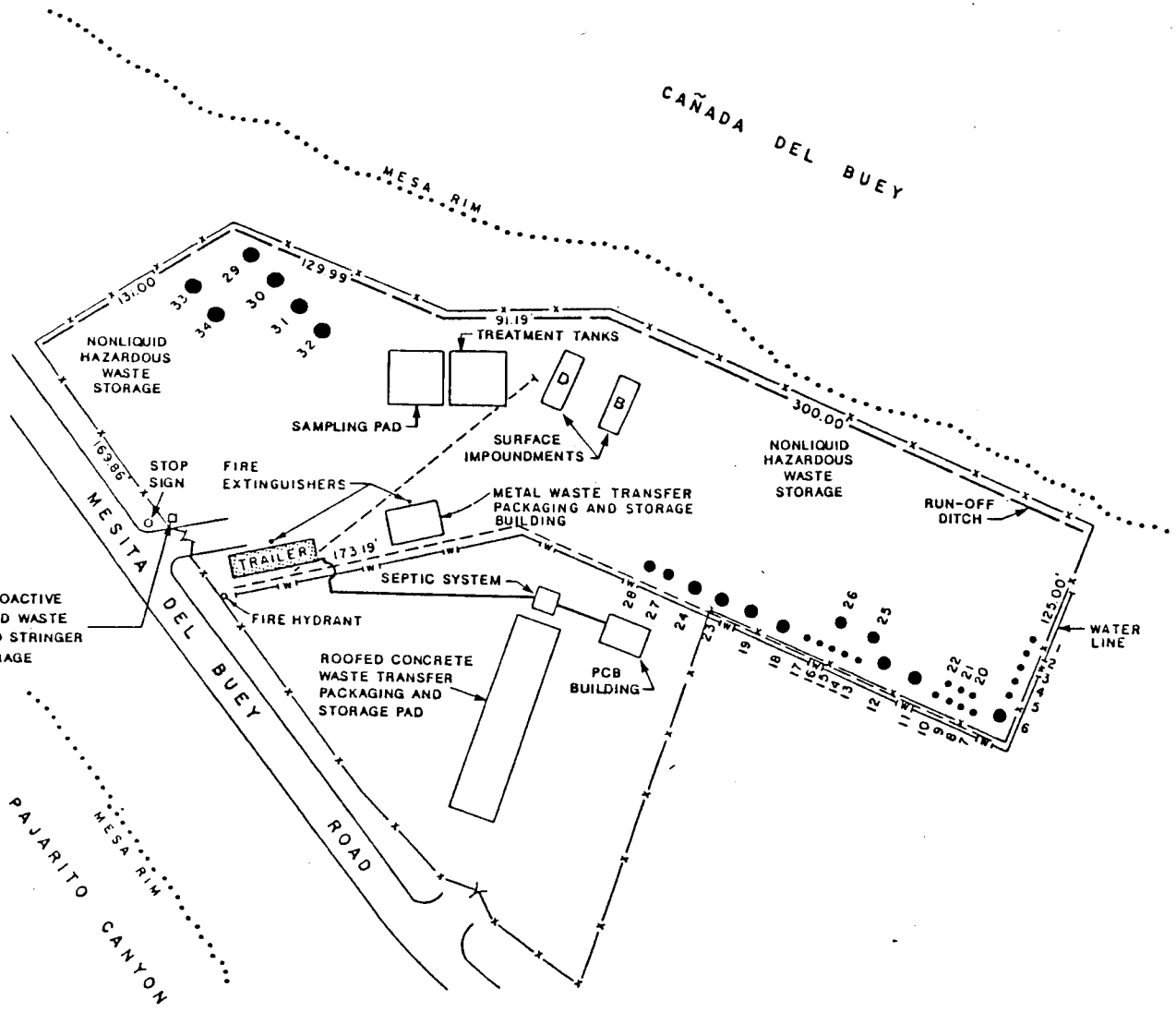

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LEGEND

● LOCATION OF AREA L INACTIVE SHAFTS

FIGURE 8

TA-54 AREA L WASTE MANAGEMENT UNITS

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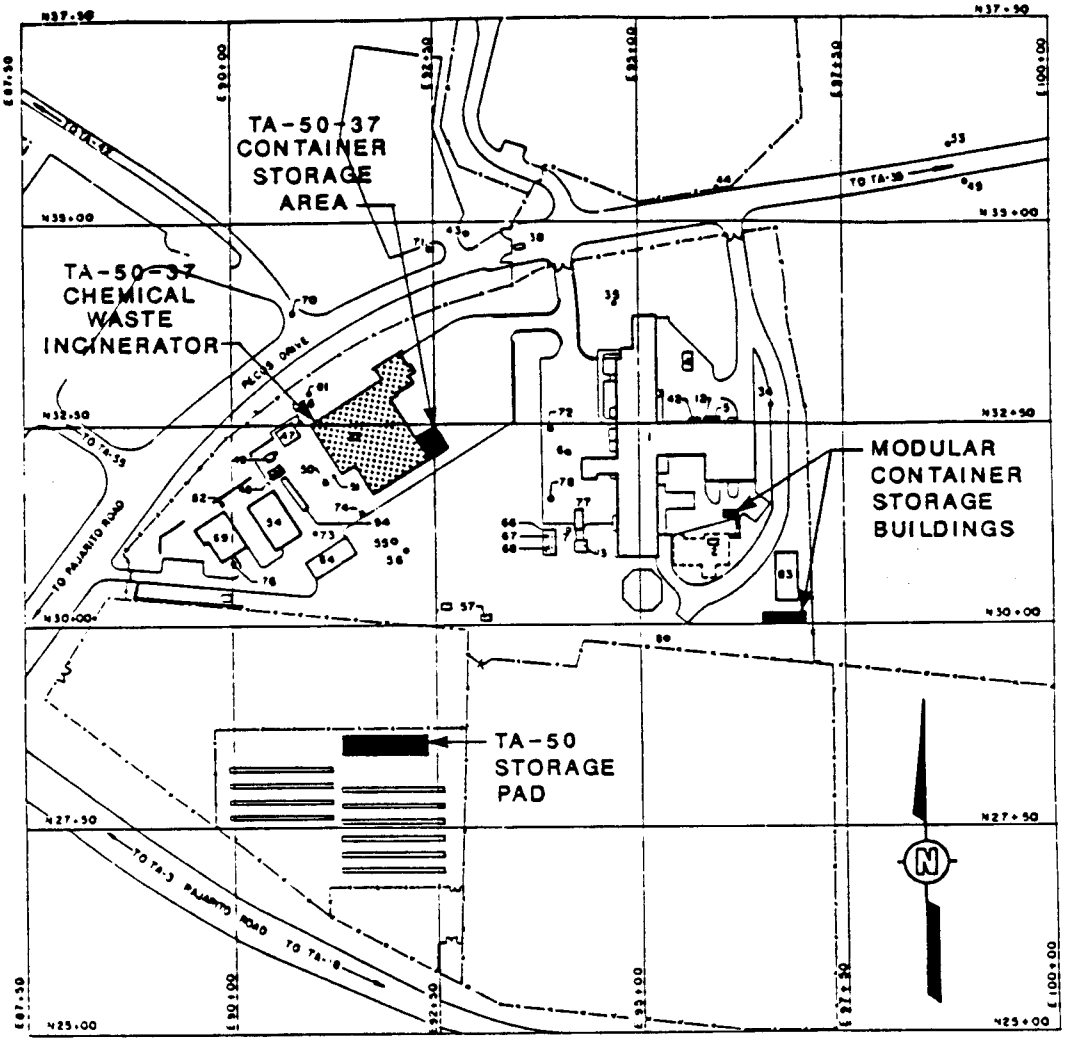

FIGURE 16. LOCATIONS OF TA-50 CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS

RCRA JOB DESCRIPTION

TITLE: **Technical Supervisor IV (M-7)**
W. Patterson

A. Required Skills:

- Familiarity with State and Federal Regulations regarding hazardous materials and waste.
- Good knowledge of problems associated with high explosives handling and use.
- Strong electronics background.

B. Required Education/Training:

Internal Class (IC), External Class (EC), On-The-Job (OTJ)

- RCRA Provisions (IC/EC)
- Personal Safety (OTJ)
- Hazardous waste handling and Operations Handling of HE waste (OTJ)
- M-7 Emergency Procedures (OTJ)
- Recordkeeping/Inspections (OTJ)
- On-Site Transportation (OTJ)

C. Duties:

- Supervise test firing of HE technicians (M-7 Emergency Procedures, Supervisory Experience).
- Provide on-the-job training of explosives technicians (RCRA Provisions, Personal Safety, Handling of HE waste, On-Site Transportation).
- Responsible for maintenance of operational records (RCRA Provisions/ Inspections/Recordkeeping).

RCRA JOB DESCRIPTION

TITLE: **Safety Officer (M-8)**
C. M. Montoya

A. Required Skills:

- Familiarity with State and Federal Regulations regarding hazardous materials and waste.
- Knowledge of problems associated with high explosives (HE) handling and use.

B. Required Education/Training:

Internal Class (IC), External Class (EC), On-The-Job (OJT)

- RCRA Provisions (IC/EC)
- Personal Safety (OJT)
- Hazardous waste handling and operations (OJT)

  a. Handling of HE waste

- M-8 Emergency Procedures (OJT)
- Recordkeeping/Inspections (OJT)
- Respirator or SCBA (IC/OJT)

C. Duties:

- Participates in writing SOPs for group operations (M-8 Emergency Procedures Training and RCRA Provisions Training).
- Maintains files of SOPs (RCRA Provisions Training).
- Arranges Health and Safety Training for group personnel (RCRA Provisions Training, Inspections/Recordkeeping Training, M-8 Emergency Procedures Training, and Personal Safety Training).
- Conducts necessary inspections of M-8 facilities (RCRA Provisions Training and Recordkeeping/Inspections Training).
- Assures group operations in compliance with Laboratory Health and Safety Manual (M-8 Emergency Procedures Training, Personal Safety Training, and RCRA Provisions Training).
- Assures group operations in accordance with approved SOPs (RCRA Provisions Training, M-8 Emergency Procedures Training, and Recordkeeping/Inspections Training).

RCRA JOB DESCRIPTION

TITLE: Disposal Operations Materials Technician (WX-3)
Johnny Maestas
Steven Ortiz
Joseph Gallegos
Robert Garcia
Arsenio Montaño

A. Required Skills:

- Familiarity with State and Federal Regulations regarding hazardous materials and waste.
- Good technical knowledge of problems associated with high explosives (HE) handling and disposal.
- Knowledgeable of specific group SOPs and procedures for disposal operations.
- Competence in disposal operations.

B. Required Education/Training:

Personnel assigned to the Disposal Crew are trained on the job. Most come to the job from other technical positions in WX-3 and are well grounded in explosives safety. They have knowledge of relevant SOPs, and their competence in the disposal operations is recorded by the Supervisor. They attend monthly meetings and participate in safety training.

Internal Class (IC), External Class (EC), On-The-Job (OJT)

- RCRA Provisions (IC/EC)
- Personal Safety (OJT)
- Hazardous Waste Handling and Operations (OJT)

  a. Detonation/Burning HE Waste

- WX-3 Contingency Plan (OJT)
- Recordkeeping/Inspections (OJT)
- On-Site Transportation (OJT)

C. Duties:

- Participates in the operations of a truck-mounted vacuum tank for the removal of sump waste (Detonation/Burning HE Waste Training).
- Prepares HE Waste for burning. Uses squibs and firing circuitry to start the burning operations (Detonation/Burning HE Waste Training).

- Responsible for preparing HE waste for burning (Detonation/Burning HE Waste Training).

- Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the operation (RCRA Provisions Training and Personal Safety Training).

- Charged with practicing good housekeeping for the proper level of cleanliness of the facilities and equipment (Recordkeeping/Inspections Training).

RCRA JOB DESCRIPTION

TITLE: **Certifying Agent (WX-12)**
Bill McCormick
Jimmy Martinez

A. Required Skills:

- Familiarity with State and Federal Regulations regarding hazardous materials and waste.
- Good technical knowledge of problems associated with high explosives (HE) handling and disposal.
- Knowledgeable of specific group SOPs and procedures for disposal operations.
- Competence in verification by visual inspection or application of appropriate tests that equipment or materials leaving TA-16 are free of explosives.
- Certifies equipment or materials is fór general use with no qualifications.

B. Required Education/Training:

The Certifier is trained on the job by senior personnel. Qualified Certifiers are senior technicians knowledgeable in explosives safety and explosives used in specific facilities.

Required Courses:

Internal Class (IC), External Class (EC), On-The-Job (OJT)

- RCRA Provisions (IC/EC)
- Personal Safety (OJT)
- Hazardous Waste Handling and Operations (OJT)
  a. Detonation/Burning HE Waste
- WX-12 Contingency Plan (OJT)
- Recordkeeping/Inspections (OJT)
- On-Site Transportation (OJT)

C. Duties:

- Completely remove high explosives from contaminated equipment and materials. Certify the equipment and materials for general use with no qualification (Detonation/Burning HE Waste Training and Recordkeeping/ Inspection Training).

RCRA JOB DESCRIPTION

TITLE: High Explosives Technician (M-1)
C. C. Bieri

A. Required Skills:

- Familiarity with State and Federal Regulations regarding hazardous materials and waste.
- Good technical knowledge of problems associated with high explosives handling and use.

B. Required Education/Training:

Internal Class (IC), External Class (EC), On-The-Job (OTJ)

- RCRA Provisions (IC/EC)
- Personal Safety (OTJ)
- Detonation/Burning HE (OTJ)
- Emergency Procedures (OTJ)
- Recordkeeping/Inspection (OTJ)
- On-Site Transportation of Explosives (OTJ)

C. Duties:

- Remove waste from satellite storage for disposal at TA-14 detonation/burning site.
- Small-scale sensitivity testing of explosives.
- Small-scale evaluation of explosives performance.

RCRA JOB DESCRIPTION

TITLE: Plant Engineering Specialist TEC IV (WX-12)
D. Sharpless

A. Required Skills:

- Demonstrated technical and administrative proficiency in plant operation in maintenance.
- Good technical knowledge of problems associated with high explosives handling and use.

B. Required Education/Training

Internal Class (IC), External Class (EC), On-The-Job (OTJ)

- RCRA Provisions (IC/EC)
- Spill Response/Contingency Plan (IC/OTJ)
- Personal Safety (OTJ)
- Detonation/Burning HE (OTJ)
- Emergency Procedures (OTJ)
- Recordkeeping/Inspection (OTJ)
- On-Site Transportation (OTJ)

C. Duties:

- Investigate all proposed actions involving the physical plant and equipment to assure that the results will be compatible with the operational requirements and plant of the operating division.
- Track, monitor, and expedite operations involving contractor and off-site personnel that affect the area, buildings, facilities, and equipment.
- Serve as construction coordinator and maintenance inspector.
- Ensure that operations of contractor and off-site personnel are safe, compatible with existing facilities and operations, and minimize impact on the work of division personnel.
- Function as certifying agent, which involves inspection and testing for explosives contamination of items leaving the explosives area and many items to be transferred within the explosives area.
- Provide direct supervision of all craft work related to vacuum systems, dust collectors, and other equipment that may be internally contaminated with high explosives.

- Supervision of jobs in progress to assure that job requirements are met, including timely completion of jobs, adherence to S-Site safety rules and procedures, and prompt resolution of problems.

- Provide safety leadership at S-Site, including recommendation of changes to existing safety rules and procedures affecting contractor and off-site personnel work in the area.

INTERNATIONAL TECHNOLOGY CORPORATION

Project No. 301215.02.09
November 1988

Volume III - Appendices Rev. 4.1

RCRA Part B Permit Application

Los Alamos National Laboratory
Los Alamos, New Mexico

Los Alamos National Laboratory
Environmental Surveillance Group HSE-8
Los Alamos, New Mexico 87545

RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

Waste handling equipment used at this unit include the following:

- Hand trucks
- Drum pumps
- Fork lift.

The drums will be stored on wooden pallets (only upper layer); the pallets are moved, positioned, and stacked at the roofed storage area by use of a forklift.

4.5.1 Secondary Containment Areas

The concrete storage pad is divided into six bermed cells. Steel grating lies above the floor of each cell so that waste drums and tanks are elevated several inches above the floor. The floor of each cell slopes toward a sump. The concrete storage pad will be maintained free of unsealed cracks and unchecked deterioration. The six cells have a combined secondary containment capacity of 11,008 gallons. This secondary containment volume is significantly greater than that required based on the maximum liquid waste storage in the area. The containment volume and the maximum liquid waste storage of each cell on the pad is listed below:

Cell[1]	Secondary Containment Volume (gallons)	Maximum Liquid Waste Storage in Cell (gallons)[2]
1	2,676	4,400
2	1,717	2,640
3	1,111	1,570
4	1,717	2,640
5	1,111	1,570
6	2,676	4,400

[1] Numbered left to right as shown in Figure 2-7.

[2] The actual maximum liquid volume will be below these amounts because some of the drums in each cell will be lab packs or contain solid wastes.

The concrete floors at the storage area are presently in good condition, free of any cracks, gaps or holes. The concrete floors are coated with Semstone® epoxy to prevent damage in the event of a spill. The Semstone® epoxy was chosen for its resistance to a wide range of acids, alkalis, solvents and water solutions (see Appendix I-1 for vendor information).

4.5.2 Current Management Practices

The TA-50 Storage Pad is fenced, the access gates are locked, and the area is patrolled by Los Alamos security personnel during unattended hours. Container management practices and the drum numbering and recording system utilized at TA-50 are identical to those described for the TA-54, Area L Storage Pad, contained in Sections 4.3.3 and 4.3.3.2, respectively. No repackaging of drummed waste occurs at the TA-50 Storage Pad.

4.6 TA-16 INDUSTRIAL INCINERATOR

Los Alamos wishes to permit an outdoor installed and operated industrial incinerator near the TA-16 burning area. The incinerator is manufactured by Spronz Incinerator Corporation of Rochester, New York. Specifications for the TA-16 incinerator are provided in Appendix U. The TA-16 incinerator will be used to burn approximately 3,200 pounds per day of Incinerator Institute of America Type "Zero" trash potentially contaminated with HE from TA-16. Type "Zero" trash consists of a mixture of highly combustible waste such as paper, cardboard cartons, wood boxes, and combustible floor sweepings from industrial activities. The mixture may contain up to 10 percent by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags, and plastic or rubber scraps. The incinerator is equipped with an oil burner and is anticipated to dispose of approximately ten gallons per month of potentially HE-contaminated hydraulic oil, tramp oil and ignitable solvents from machining operations at TA-16.

The TA-16 incinerator is designed for outdoor or indoor operation and consists of a primary combustion chamber and a secondary combustion chamber separated by a baffle, and a settling area at the base of the combustion chamber. Both primary and secondary chambers are equipped with gas/oil-fired power burners supplied by small volumes of waste oil and by a local propane tank. The outer shell is fabricated from hot rolled carbon steel (12 gauge) and four-inch vertical buck stays. The incinerator is mounted on four-inch H-Beams and attached to a six-inch thick concrete pad. Incinerator controls are remote, unattended, time-delay type with local manual controls.

4.6.1 Current Management Practices

The TA-16 incinerator is located within a high security/controlled access area within TA-16. The area is patrolled by Los Alamos security personnel during unattended hours. The incinerator is used primarily to dispose of approximately 3,200 pounds per day (four loads) of potentially HE-contaminated, Type "Zero" trash and small amounts of waste oil. Only wastes described by NMHWMR Sections 206.D.8.a.(2)(a)(i), (ii), (iii), or (iv) [40 CFR§ 264.340(b)(1)(i), (ii), (iii), or (iv)], and that contain insignificant concentrations of hazardous constituents listed in 201 Appendix III [40 CFR Part 261, Appendix VIII], are disposed of in the TA-16 incinerator.

Trash is loaded into the primary chamber by a front-end loader. The burn cycle is then initiated. After the burn and cool-down cycles are complete, ash is removed from the settling chamber by shovels, hoes, and other common hand tools. Waste ash is placed into 55-gallon drums and transferred to the TA-54 Area L storage units.
The ash is then mixed with cement and disposed of in accordance with its hazard characteristics. Each 810-pound burn produces approximately four cubic feet of ash.

4.6.2 Secondary Containment Areas

Because only small amounts of liquid (less than 10 gallons per month) are to be handled at the TA-16 incinerator, secondary containment areas are not required for safe operation of the systems. The incinerator itself is situated on a concrete pad, and thus any small drips and spills of liquid will be retained in the area and cleaned up.

4.7 TA-14 AND TA-16 OPEN BURNING UNITS

The burn cage at TA-14 is used to dispose of combustible materials such as paper, tape, cotton swabs, and other items potentially contaminated with experimental HE. These materials are not transported to TA-16 for incineration for any of the following reasons:

1. The HE may be very sensitive and considered unsafe for transport or treatment at TA-16.

2. Compatibility of the experimental HE with explosives or solvents present in TA-16 waste is unknown.

The cage is a small metal cylinder approximately two feet tall and two feet in diameter covered by a wire mesh screen. Approximately two cubic feet of contaminated combustibles are disposed of in the burn cage every two months. The cage sits within a steel tray on the soil surface. The cage and tray are covered when not in use.

HE contaminated combustible material generated at TA-14 is not sent to the TA-16 incinerator because of the nature of the experimental HE formulated at TA-14. Experimental explosives are often not on the list of HE which can be handled at TA-16. Often the HE waste is considered too sensitive to be transported to another Technical Area. The compatibility of the experimental HE with other explosives or solvents handled at TA-16 may not be known, and disposal in the TA-14 burn cage is considered appropriate for this HE contaminated waste.

The burning grounds at TA-16 contain six units in which HE-contaminated waste materials are burned to completely react the HE components. The six units fall into four different types of open burning pads; the "flashing" pad (TA-16-387), the open burn tables (TA-16-388 and -399), the liquid (oil/solvent) burn tray (TA-16-394), and the pressure vessels (TA-16-401 and -406). The construction of each type of unit is described below.

The flash pad (TA-16-387) and the two open burn pads tables (TA-16-388 and -399) are each located within a 100-foot by 100-foot cyclone fence. The flash pad consists of a layer of sand several inches thick over the soil surface. The excess equipment and noncombustible material to be flashed is placed in the center of the fenced area. The two open burn pads each contain a metal table which stands approximately two feet off the ground. Each table is approximately 21 feet long and 3 feet wide. A sloped steel cover can be wheeled into place over each table when it is not in use. The flashing pad does not include any trays or covers.

The liquid burn unit, designated TA-16-394, consists of a 12-foot by 12-foot by 1-foot metal tray filled with sand to a depth of six to eight inches. The tray contains four shallow steel pans lined with fire brick. The four smaller

pans each have a sloped steel cover which is moved into place when the trays are not in use. Waste HE-contaminated oil/solvent is poured into the four smaller pans and ignited.

The pressure vessels (TA-16-401 and -406) are cone-shaped, steel containers approximately eight feet in diameter and ten feet deep which are set into the ground. Each vessel narrows at the base and is connected to a fluid drain which transports liquid from the cone to the carbon filter wastewater treatment unit (TA-16-228) nearby. Each cone contains a surface layer of sand overlying layers of fine and then coarse gravel.

4.7.1 Current Waste Management Practices

The burning ground at TA-16 is managed by WX-3, the Service Organization of Division WX, responsible for the safe treatment and handling of HE-contaminated waste material generated by the WX HE production facilities at TA-16. The group is also responsible for the safe handling of some HE-contaminated materials generated by M Division, the group responsible for HE Research and Development. Several kinds of HE-contaminated waste materials are reacted at the burning ground and include the following:

- Inert - mock explosives, may contain oxidizers
- Solid chunk - includes consolidated turnings, reject parts, and excess HE
- Sludge - HE-contaminated sludge which settles out of contained wash water from research and fabrication laboratories
- Waste Oil/Solvents - assumed to be contaminated with HE
- Scrap - any machinery, equipment, or furniture used in the Area is considered contaminated with HE and is not allowed out of the Area until the HE has been removed.

Administrative controls within M and WX Divisions ensure that the chemical composition of every HE developed or routinely used at the Laboratory is known. In addition, the compatibility of each HE with other HE compounds and with any solvents or bonding agents with which it may be used is determined by the research group before the HE is routinely used at the laboratory. Experimental HE developed by M Division may not be totally characterized during development, but the management of that waste is controlled by M Division.

The packaging and collection of waste material for disposal at the TA-16 burning ground is defined by established WX-3 procedures; current practice is discussed in the following paragraphs. Excess or waste HE is packaged by the generator in containers which are clearly identified. Permanent receptacles, such as Dempster Dumpsters, drums, garbage cans, and disposal cans must have the contents for which they are intended stenciled on their sides. Cardboard boxes containing potentially HE-contaminated waste must have contents identified on the outside of the box; identification by marking pen is sufficient. Boxes containing HE (turnings, excess, waste) must have a completed explosives record card (Form WX-3-41) attached to the outside of the box. All receptacles containing wastes regulated by RCRA must have the words "Hazardous Waste" posted on the outside.

Pressed and cast HE is placed in separate boxes. A reinforcing piece of cardboard is placed in the bottom of cardboard boxes containing HE waste. If more than one large piece of waste HE is placed in a box, a cushioning material, such as Kimpak, must be placed between the pieces in such a manner that rubbing or colliding cannot occur during transport. All boxes are closed and the lids taped securely shut. Pieces of HE that weigh more than 50 pounds are placed in a suitably-sized HE transportation container with a lid that can be securely closed. HE with boosters or metal attachments must be labeled and packaged separately from other explosives.

Waste HE and HE-contaminated material is collected from designated pickup points by WX-3 personnel on a schedule determined by good housekeeping policy. A periodic inspection of all active pickup points is made by disposal personnel to ensure that there are no unsafe or untidy buildup of materials at any waste storage point.

HE-contaminated solvents are packaged as follows:

- Flammable solvents, including toluene, acetone, and alcohol, are poured into red disposal cans or 55-gallon drums stenciled FLAMMABLE. The cans and drums are equipped with flame arresters.

- Halogenated hydrocarbons, such as trichloroethylene and methylchloroform are poured into white disposal cans stenciled NONFLAMMABLE.

- Dimethylsulfoxide (DMSO) is poured into disposal cans stenciled "DMSO only."

Used hydraulic fluids drained from explosive processing equipment are stored in disposal cans or 55-gallon drums marked "Hold for Disposal" until the presence or absence of HE in the fluid is determined. Group WX-12 maintenance personnel identify each container, or group of containers if the material has a common source, with an identification number and record of the source, fluid type, and date of removal. Representative samples of drained hydraulic fluid from HE processing equipment are sent to the Group M-1 Analytical Laboratory and analyzed for HE. Fluid containing more than 0.25 percent of HE is labeled "HE CONTAMINATED FLUID" and is burned at the oil/solvent burn pad, TA-16-394, or the TA-16 incinerator. Fluids with less than 0.25 percent HE may also be burned, or may be sent to HSE-7 for disposal. Drained hydraulic fluid from non-HE processing equipment is not sampled for HE analysis but handled by HSE-7 after being certified free of HE by an Authorized Certifying Agent.

Each equipment room in the Explosives Area is equipped with an oily waste receptacle. Potentially HE-contaminated oily rags are placed in these receptacles. When the receptacle is full, the rags are emptied into a dumpster marked "INCINERATOR" located outside each building.

All pickups of scrap HE are recorded on Form WX-3-70. All trash pickups are recorded on Form WX-3-40.

The procedure for collecting HE-contaminated sludge from sumps associated with development and fabrication labs is briefly summarized here. Any pieces of HE retained in the small wire basket located at the sump inlet is placed in paper or plastic bags which are packaged in cardboard boxes. The flexible hose from the WX-3 vacuum truck is inserted into the HE slurry at the bottom of the tank, and up to 500 gallons of slurry and waste water can be collected. After completion of the settling tank cleaning operations, the truck is driven to the pressure vessels at the burning ground.

Prior to any burning operation, the gate on the access road is closed by the burning crew. Operations are not conducted at the burning ground if an elec-

trical storm is in progress or approaching. No more than two persons are involved in setting the ignition train and squibs in preparation for a burn. Personnel engaged in explosives disposal activities are thoroughly trained in regard to the hazards involved in handling, transporting, and disposing of explosives, and in the precautions necessary for personal protection. All personnel are instructed in and are expected to follow the applicable portions of WX-3 procedures. Operators engaged in disposal operations at the burning ground wear flameproof coveralls, industrial safety shoes, and appropriate eye protection.

Disposal Operations at the Flashing Pad (TA-16-387)

Disposal personnel deliver HE-contaminated, unburnable materials to the burning ground. Materials to be flashed are inspected for reservoirs of oils, other fluids, and excessive deposits of explosives, which are removed before flashing. Valves on any sealed containers are opened or removed. Kindling wood or scrap lumber may be placed on the bottom of the burn pad. The amount of wood used is determined by the type and quantity of materials to be flashed, but is always sufficient to ensure that the flashing is complete and no HE contamination remains. An ignition train is prepared with a one- to two-foot train of excelsior up to the material on the pad. The excelsior is dampened with kerosene. The squibs are placed approximately one inch from the excelsior, and ignition is initiated according to the steps outlined in current WX-3 procedures. A minimum of 24 hours must lapse after burning before ashes and other debris can be collected. Flashed material is disposed of as solid waste.

Disposal Operations at the Open Burn Tables (TA-16-388 and -399)

When HE materials are delivered to the burning ground, the delivery truck is backed up to the entrance of the burn pad to be used and boxes of explosives are unloaded and left inside the pad fence. The truck is driven outside the burning ground and the motor turned off. A layer of 15 pound asphalt felt or roofing paper is placed over the sand in the elevated burn table, and HE material is removed from boxes and placed on the felt in a single layer. After the containers have been emptied, they are placed beside or on top of the HE for burning, or are returned to the truck. Any unidentified material or material that should not be burned, i.e., detonators, is removed from the

felt and repackaged. An ignition train is prepared and ignited as described above. No more than 1,000 pounds of HE may be burned at one time. After 24 hours, ashes and surface sand are removed from the tray and placed in a 55-gallon drum. The drum is managed by HSE-7 as a hazardous waste if the burn residues are found to contain EP toxic concentrations of barium.

Disposal Operations at the Liquid (Oil/Solvent) Open Burn Pad (TA-394)

Generally, no more than 100 gallons of waste oil and solvents are handled in a single burning operation. In addition to standard apparel, respirators must be worn when volatile solvents will be treated during a burn. Face shields or other suitable eye protection are worn during periods when liquid is discharged and during cleanup operations when airborne particles constitute an eye hazard. HE-contaminated waste oils/solvents are collected in containers and delivered to the liquid burn pad. Small (five gallon) containers are unloaded by hand; the truck boom may be used to unload larger (55 gallon) containers from the vehicle. After unloading, the truck is driven outside the burning ground and parked. HE-contaminated liquids are poured into the burn trays by hand if in small containers, or using a plastic plug, valve, and hose to empty large containers. A grounding strap is attached to the container and the tray being filled. Equipment used to load the trays must be thoroughly cleaned before being stored at the burning ground. Excelsior and squibs are used to initiate ignition as described above. Burn residues are removed from the burn trays as necessary, drummed, and, based on analytical results, managed as a hazardous waste by HSE-7.

Disposal Operations at the Pressure Vessel (TA-16-401 and -406)

HE-contaminated sludge is delivered to the pressure vessel in the vacuum truck. The end of the discharge hose is placed in the filter, the valve on the bottom of the tank is opened, and the slurry is gravity-fed to the pressure vessel. Liquid passes through the sand/gravel filter bed into the fluid drain at the base of the vessel and through the wastewater treatment unit located near the pressure vessels. Filtered effluent is discharged to the nearby canyon through a NPDES-regulated discharge point. After the slurry is drained from the tank, the inside of the tank and the discharge hose are washed with water. Rags or Kimwipes are used to clean explosives off the inspection port cover, and these are placed in the pressure filter for dispo-

sal. Waste chunks collected from the wire cage in the sump are added to the sludge. When the filter is full, the wet waste is distributed to a uniform thickness, not to exceed three inches (approximately 750 pounds), with a spark-proof rake. The pressure filter cover is positioned on the vessel and secured, and hot air is blown into the vessel. When the waste sludge is dry, the vessel cover is removed and the sludge is ignited with excelsior and squibs as described above. Ashes and a small amount of sand are removed from the pressure filter when the burn is complete. These are drummed and managed by HSE-7 as a hazardous waste based upon analytical results. Fresh sand is added to the pressure vessel as necessary.

Disposal Operations at the TA-14 Burn Cage

Current procedures outline the steps to be taken in burning HE contaminated combustible material at the TA-14 burn cage. Materials potentially contaminated with experimental HE considered to be more hazardous than usual or of uncertain properties, are disposed of in the cage. This method is primarily intended for the destruction of cleaning rags, Kimwipes, sandpaper, filter paper, and charcoal. Packaging, labeling, and special precautions are the same as for disposal by detonation as discussed below. An ignition train is laid to the cage and the waste is remotely fired from within the control bunker.

4.8 TA-14, 15, 36 AND 39 OPEN DETONATION UNITS

Five open detonation units located in four Technical Areas at the Laboratory are used for detonation of waste HE. These are listed below:

- TA-14, Firing Point 35
- TA-15, Phermex Firing Point
- TA-36, Kappa 8 Firing Point
- TA-39, AC-6 Firing Point
- TA-39, AC-57 Firing Point.

Waste HE which cannot be burned or which is too sensitive to be transported to TA-16, is detonated at one of these detonation points. The detonation points consist of a wooden table placed on a flat ground surface or on a layer of sand over a flat ground surface. Additional firing points are located within the technical areas identified above, but are used to detonate product HE for experimental purposes only.

4.8.1 Current Waste Management Practices

All the detonation points where waste HE is detonated are managed by M Division personnel, and all are operated in a similar fashion, as outlined in this section. Current M Division procedures detail waste handling and disposal methods outlined below.

Pieces of waste explosive sufficiently large to be identified, whether resulting from a misfire, sensitivity experiment, or assembly operations, are collected in plastic-lined cardboard boxes. Individual pieces are wrapped before being placed in the box to prevent pieces rubbing together during transport. Each box is sealed with tape to prevent the escape of small fragments. The waste is destroyed by open detonation at a firing point using a bursting charge sufficiently large to ensure complete destruction of the HE.

When waste HE is generated as a result of a misfire or an incomplete detonation of an experimental charge at the firing point, the Site Leader conducts a thorough search of the area and collects all identifiable pieces of explosive. The waste is destroyed by open detonation at a firing point using a bursting charge sufficiently large to ensure complete destruction of the HE.

Only exploding bridgewire detonators and electrically-driven foil detonators are used for normal operations. These types of detonators require a high-voltage, high-energy electrical source to react with sufficient violence to initiate detonation in an acceptor explosive. The energy source routinely used is a capacitor discharge unit (CDU).

Detonation procedures require that access to each firing point be strictly controlled along with access to each firing circuit. The area designated as the hazardous zone for an open detonation event is carefully cleared before any detonation is initiated.

When the hazard zone has been cleared, the firing site leader secures the firing bunker door, unlocks the firing circuit (thus, starting it), and ascertains that warning systems (which are typically lights or sirens) are

operating. If warning systems are not operational, the firing operation is shut down. Under normal operating conditions, the site leader connects the detonator cable to the CDU. The site leader detonates the waste HE by pushing the FIRE button. Detonation is completed by disconnecting the detonator cables from the firing unit and then locking the firing circuit. Verbal notice of completion or cancellation of the firing operation must originate with the firing site leader and be transmitted to all involved personnel. No one is to leave the shelter until receipt of this notice.

4.9 RELEASE PATHWAYS FOR OPEN DETONATION/OPEN BURNING UNITS

Processes of open detonation and open burning result in airborne releases of gasses and particulates. The exact composition of the releases vary with the waste being treated. Open detonation occurs at Technical Areas TA-14, 15, 36 and 39. Open burning occurs at TA-14 and TA-16.

Based on waste characteristics and handling procedures, liquid releases are not expected to occur. Open detonation involves only solid material, and thus, no potential for liquid spills exists. Waste to be treated at the open burning units may be either solid or liquid. Solid materials which are composed of or potentially contaminated with HE are reacted in a metal tray layered with sand. No potential for liquid releases is associated with this treatment. Liquid wastes containing HE are reacted in four shallow waste containment trays placed within a larger metal tray filled with sand. This secondary containment tray serves to contain any liquid spills.

Operational procedures require that open detonation and open burning not be undertaken at a time of impending electrical storms, and, for open burning, high wind conditions. Burns are carried out within steel vessels containing absorbent sand. The steel vessels are covered within 24 hours after treatment to prevent storm runoff. The contaminated sand and residues are subsequently collected, drummed, and managed as dictated by analytical results.

The predominant exposure pathway for open burning and open detonation of reactive wastes is inhalation of airborne degradation products. To assess

operational consequences, the concentration of airborne contaminants at the closest point of public access was estimated for each unit. Air dispersion of the releases from the open burning units in TA-14 and TA-16 were predicted using the EPA Industrial Source Code model for Air Dispersion (Short Term). The release period for open burning units was taken to be one hour. Air dispersion of releases from open detonation units was modeled using the EPA PUFF program model. The puff release cloud was assumed to pass the nearest receptor location over a 15 minute period. In both cases, meteorological conditions were selected and a ground-level release assumed to maximize resulting downwind air concentrations. The distances from each unit to the closest point of public access were determined from USGS maps of the area and taken to be the nearest road open to public use. This represents a conservative estimate of receptor exposure, since an individual on the road would not be expected to remain at this location throughout the period of cloud passage.

Various types of explosive mixtures are treated in the open detonation units. Releases from detonation processes have been characterized as those typical in the detonation of high explosives, such as TNT, for the purpose of evaluating the potential magnitude of human exposure. The principal pollutants produced by detonation of such high explosives are carbon monoxide, nitrous oxides, methane, ammonia, hydrogen cyanide and other trace organic chemicals (EPA, 1986). At TA-14 and TA-15, a maximum of one kilogram of lead emissions are assumed for HE waste detonation. The maximum waste loadings for each HE detonation unit are specified in Table 4-2.

Releases from open burning treatment at TA-16 vary. HE-contaminated sludges are burned in steel-walled pressure vessels in which a maximum of 34 kilograms (750 pounds) are treated. Sludges are assumed to contain typical TNT components. An average sludge composition, based on a previous study of high security or menu declaration Laboratory air emissions (PEI, 1988), was used as the source term for evaluating this treatment process. HE-contaminated oil/solvent waste burning is carried out in trays having a maximum total capacity of 378.5 liters (100 gallons). The typical composition of these wastes include primarily dichloromethane, dichloroethane, toluene, xylene and tetrachloroethylene, along with other trace compounds. Releases from the burn

cage at TA-14 are assumed to be typical combustible refuse with 1 percent HE contaminants. The burn cage has a capacity of two cubic feet, and the maximum waste loading per burn is assumed to be 22.7 kilograms (50 pounds).

The air concentrations of hazardous chemicals resulting from individual treatment events at each unit are presented in Table 4-2. The table also includes the location and distance to the closest point of public access, and applicable health based standards for safe exposure level. Air concentrations are compared to Time Weighted Average Threshold Limit Values for burn units. Air concentrations of releases from detonation units are compared to the 15-minute short-term exposure levels. This provides a very conservative indication of health risks in that the standards are intended to establish safe levels for continuous occupational exposure. The maximum duration of exposure to open burning and open detonation releases is unlikely to exceed one hour for burning, or 15 minutes for detonations. Further, this would most likely be a one time occurrence for any individual receptor. Therefore, if these occupational exposure limits are not exceeded, the releases may be considered within a range protective of human health and the environment. As Table 4-2 demonstrates, no air concentrations exceed health-protective limits.

Los Alamos maintains an extensive environmental monitoring program of air, soils and water in the Los Alamos area. The combined environmental consequences of all Los Alamos activities are evaluated in the report, "Annual Surveillance at Los Alamos During 1987" (LANL, 1988). Releases associated with both HE experimental activities and HE waste treatment are included in the total reported environmental concentrations. In no case do these collective releases cause health-based environmental limits to be compromised. This evidence also supports the conclusion that there are no adverse human health or environmental consequences associated with open burning or open detonation of reactive waste.

TABLE 4-2

MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS

TREATMENT LOCATION/EMISSION	LOCATION/DISTANCE OF NEAREST PUBLIC ACCESS (FT)	MAXIMUM HE PER DETONATION (KG)	AVERAGE AMOUNT RELEASED PER DETONATION (KG)	MAXIMUM AIR CONCENTRATION AT NEAREST PUBLIC ACCESS (mg/m^3)	RECOMMENDED SHORT TERM EXPOSURE LEVEL (STEL) (mg/m^3)
TA-14/35	Pajarito Road/5100	4.536			
Carbon Monoxide			1.805	4.17	440
Nitrous Oxide			0.181	4.19 E-1	10 (1)
Methane			0.032	7.49 E-2	A (2)
Ammonia			0.066	1.52 E-1	27
Hydrogen Cyanide			0.061	1.41 E-1	10 (3)
Acetylene			0.274	6.34 E-1	A (2)
Ethane			0.003	5.76 E-3	A (2)
Lead			1.000	2.29	4.8 (4)

(1) Limit for nitrogen dioxide; no nitrous oxide STEL
(2) A = Simple asphixiant; no published limit.
(3) Eight-hour Time Weighted Average Threshold Limit Value (TWA TLV) for skin exposure only; no STEL for inhalation.
(4) STEL derived by weighting the eight-hour TWA TLV over a fifteen minute exposure period.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

TREATMENT LOCATION/EMISSION	LOCATION/DISTANCE OF NEAREST PUBLIC ACCESS (FT)	MAXIMUM MATERIAL PER BURN[1] (KG)	AVERAGE AMOUNT RELEASED PER BURN (KG)	MAXIMUM AIR CONCENTRATION AT NEAREST PUBLIC ACCESS (mg/m^3)	TIME WEIGHTED AVERAGE TLV (mg/m^3)
TA-14/Burn Cage	Pajarito Road/5100	22.680			
Carbon Monoxide			0.187	9.97 E-3	55
Nitrous Oxide			0.009	4.85 E-4	6[2]
Nitrogen Oxides (NO_x)			0.006	3.19 E-4	6[2]
Methane			0.016	8.69 E-4	A[3]
Ammonia			0.003	1.76 E-4	18
Hydrogen Cyanide			0.003	1.65 E-4	10
Sulfur Oxides (SO_x)			0.001	5.86 E-5	5
Particulates			0.018	9.65 E-4	10
Non-Methane VOCs			0.049	2.61 E-3	A[3]

(1) Includes 22.45 kg of combustible refuse and 0.227 kg of HE.
(2) Limit for Nitrogen Dioxide; no nitrous oxide TWA-TLV.
(3) A = Simple Asphyxiant; no published limit.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

TREATMENT LOCATION/EMISSION	LOCATION/DISTANCE OF NEAREST PUBLIC ACCESS (FT)	MAXIMUM HE PER DETONATION (KG)	AVERAGE AMOUNT RELEASED PER DETONATION (KG)	MAXIMUM AIR CONCENTRATION AT NEAREST PUBLIC ACCESS (mg/m^3)	RECOMMENDED SHORT TERM EXPOSURE LEVEL (STEL) (mg/m^3)
TA-15	Pajarito Road/3200	45.360			
Carbon Monoxide			18.052	8.24 E+1	440
Nitrous Oxide			1.814	8.44	10 (1)
Methane			0.324	1.50	A (2)
Ammonia			0.658	3.06	27
Hydrogen Cyanide			0.612	2.84	10 (3)
Acetylene			2.740	1.27	A (2)
Ethane			0.026	1.16 E-1	A (2)
Lead			1.000	4.80	4.8 (4)

(1) Limit for nitrogen dioxide; no nitrous oxide STEL
(2) A = Simple asphixiant; no published limit.
(3) Eight-hour Time Weighted Average Threshold Limit Value (TWA TLV) for skin exposure only; no STEL for inhalation.
(4) STEL derived by weighting the eight-hour TWA TLV over a fifteen minute exposure period.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

TREATMENT LOCATION/EMISSION	LOCATION/DISTANCE OF NEAREST PUBLIC ACCESS (FT)	MAXIMUM MATERIAL PER BURN[1]	AVERAGE AMOUNT RELEASED PER BURN (KG)	MAXIMUM AIR CONCENTRATION AT NEAREST PUBLIC ACCESS (mg/m^3)	TIME WEIGHTED AVERAGE TLV (mg/m^3)
TA-16/ Oil Solvent Burning	West Jemez Road/5162				
SOLVENTS:		378.500 LITERS			
Arsenic			6.35 E-5	3.30 E-6	0.2
Cadmium			4.99 E-4	2.59 E-5	0.05
Chloroform			1.95 E-3	1.02 E-4	50
Chromium			1.54 E-3	7.99 E-5	0.5
Dibromoethane			2.13 E-3	1.11 E-4	M [2]
Dichloroethane			4.99 E-2	2.59 E-3	40
Dichloromethane			1.22 E-1	6.31 E-3	350
Manganese			1.54 E-3	7.99 E-5	5
Nickel			3.13 E-3	1.63 E-4	1
PCBs			3.40 E-4	1.77 E-5	1
Tetrachloroethylene			1.32 E-1	6.85 E-3	335
Toluene			1.27 E-2	6.56 E-4	270
Xylene			4.11 E-1	2.13 E-2	435
HIGH EXPLOSIVES:		4.54 KG			
Carbon Monoxide			1.33E-2	6.91E-4	55
Nitrogen Oxides			2.56E-1	1.33E-2	6 [3]
Hydrocarbons			1.51E-3	7.84E-5	--
Phosphorus Pentoxide			4.36E-3	2.26E-4	1 [4]
Hydrochloric Acid			7.68E-3	3.99E-4	7
Hydrofluoric Acid			0		
Soot (Particulates)			2.73E-1	1.42E-2	10

(1) 378.5 liters solvent and 4.54 kg HE contaminant.
(2) Limit must be calculated for mixture as outlined in Appendix C of ACGIH TLV list.
(3) Limit for Nitrogen Dioxide.
(4) Total dust.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

LOCATION/DISTANCE TREATMENT LOCATION/EMISSION	MAXIMUM OF NEAREST PUBLIC ACCESS (FT)	AVERAGE AMOUNT HE PER BURN (KG)	MAXIMUM AIR CONCENTRATION AT RELEASED PER BURN (KG)	TIME WEIGHTED NEAREST PUBLIC ACCESS (mg/m^3)	AVERAGE TLV (mg/m^3)
TA-16/ Sludge Burning	West Jemez Road/5162	340.200			
Carbon Monoxide			6.676	3.47 E-1	55
Nitrous Oxides			19.178	9.94 E-1	6 (1)
Hydrocarbons			0.113	5.91 E-3	--
Phosphorous Pentoxide			0.327	1.69 E-2	1 (2)
Hydrochloric Acid			0.576	2.98 E-2	7
Soot (Particulates)			20.485	1.06	10 (3)

(1) Limit for nitrogen dioxide; no nitrous oxide TWA TLV.
(2) Limit for phosporic acid, the hydrated form of phosphorous pentoxide.
(3) Total dust.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

LOCATION/DISTANCE TREATMENT LOCATION/EMISSION	MAXIMUM OF NEAREST PUBLIC ACCESS (FT)	AVERAGE AMOUNT HE PER DETONATION (KG)	MAXIMUM AIR CONCENTRATION AT RELEASED PER DETONATION (KG)	RECOMMENDED SHORT TERM NEAREST PUBLIC ACCESS (mg/m^3)	EXPOSURE LEVEL (STEL) (mg/m^3)
TA-36	Pajarito Road/5320	90.720			
Carbon Monoxide			36.110	7.55 E+1	440
Nitrous Oxide			3.630	7.58	10(1)
Methane			0.650	1.35	A(2)
Ammonia			1.320	2.75	27
Hydrogen Cyanide			1.230	2.56	10(3)
Acetylene			5.490	1.15 E+2	A(2)
Ethane			0.050	1.04 E-1	A(2)

(1) Limit for nitrogen dioxide; no nitrous oxide STEL.
(2) A = Simple asphixiant; no published limit.
(3) Eight-hour Time Weighted Average Threshold Limit Value (TWA TLV) for skin exposure only; no STEL for inhalation.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

LOCATION/DISTANCE TREATMENT LOCATION/EMISSION	MAXIMUM OF NEAREST PUBLIC ACCESS (FT)	AVERAGE AMOUNT HE PER DETONATION (KG)	MAXIMUM AIR CONCENTRATION AT RELEASED PER DETONATION (KG)	RECOMMENDED SHORT TERM NEAREST PUBLIC ACCESS (mg/m^3)	EXPOSURE LEVEL (STEL) (mg/m^3)
TA-39/6	State Road 4/2920	45.360			
Carbon Monoxide			18.052	9.62 E+1	440
Nitrous Oxide			1.814	9.68	10[1]
Methane			0.324	1.73	A[2]
Ammonia			0.658	3.50	27
Hydrogen Cyanide			0.612	3.26	10[3]
Acetylene			2.740	4.620	A[2]
Ethane			0.026	1.33 E-1	A[2]

(1) Limit for nitrogen dioxide; no nitrous oxide STEL
(2) A = Simple asphixiant; no published limit.
(3) Eight-hour Time Weighted Average Threshold Limit Value (TWA TLV) for skin exposure only; no STEL for inhalation.

TABLE 4-2
MAXIMUM AIR EMISSIONS AND OFFSITE
CONCENTRATIONS FOR OPEN DETONATION/OPEN BURNING UNITS
(CONTINUED)

LOCATION/DISTANCE TREATMENT LOCATION/EMISSION	MAXIMUM OF NEAREST PUBLIC ACCESS (FT)	AVERAGE AMOUNT HE PER DETONATION (KG)	MAXIMUM AIR CONCENTRATION AT RELEASED PER DETONATION (KG)	RECOMMENDED SHORT TERM NEAREST PUBLIC ACCESS (mg/m^3)	EXPOSURE LEVEL (STEL) (mg/m^3)
TA-39/57 (White Rock)/5320	Pajarito & State Road 4 113.406				
Carbon Monoxide			45.133	9.43 E+1	440
Nitrous Oxide			4.535	9.48	10[1]
Methane			0.810	1.70	A[2]
Ammonia			1.645	3.45	27
Hydrogen Cyanide			1.530	3.20	10[3]
Acetylene			6.850	1.44 E+1	A[2]
Ethane			0.063	1.30 E-1	A[2]

(1) Limit for nitrogen dioxide; no nitrous oxide STEL
(2) A = Simple asphixiant; no published limit.
(3) Eight-hour Time Weighted Average Threshold Limit Value (TWA TLV) for skin exposure only; no STEL for inhalation.

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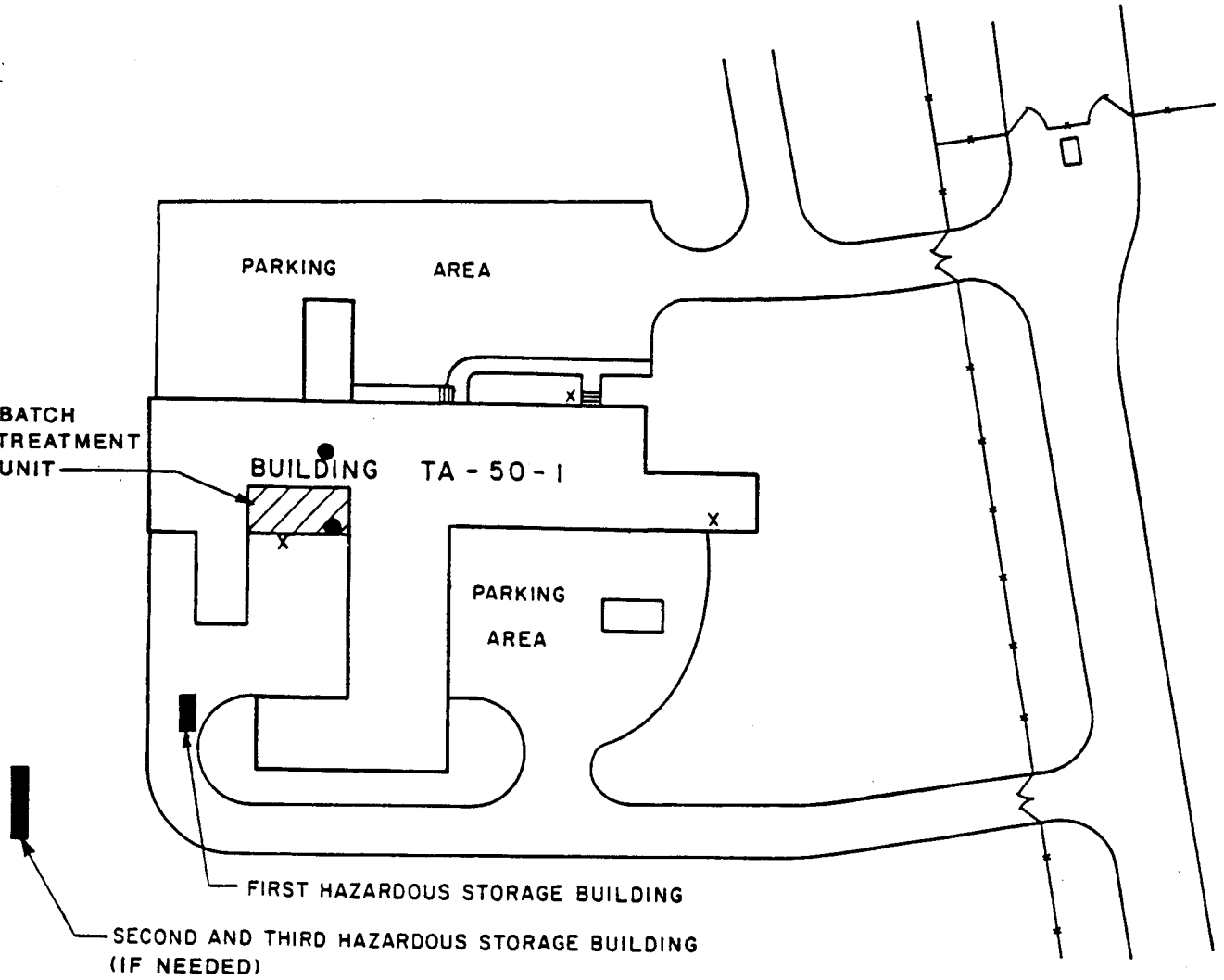

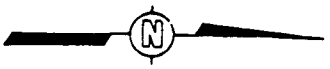

X ALARM PULL BOXES

● FIRE EXTINGUISHERS

FIGURE 4-1
LOCATION OF
BATCH TREATMENT UNIT
IN BUILDING I IN TA-50

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6.0 PROCEDURES TO PREVENT HAZARDS

The information provided in this section is submitted in accordance with the requirements of 40 CFR §270.14 (NMHWMR 302.A.4.b). The following subject areas are addressed in this section: general security provisions, inspection schedules and requirements; preparedness and prevention requirements; and prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes. Guidelines for personnel working in potentially hazardous situations can be found in the Los Alamos National Laboratory Health and Safety Manual (Appendix N).

6.1 SECURITY

All Laboratory hazardous waste units are located within fenced areas which are locked during nonworking hours. The Protective Force (the group responsible for Laboratory security) maintains Laboratory security by manning check stations, patrolling facilities and locking access gates. This security system prevents unknowing entry and minimizes the possibility for unauthorized entry of persons or livestock into any of the hazardous waste units. In most cases, the Protective Force is limited to external surveillance of buildings and open areas so that the potential contact with Laboratory hazards is avoided.

The TA-50 batch treatment system, modular container storage buildings, waste incinerator and storage area, and the TA-50 storage pad are located in fenced areas. The fence is an eight-foot chain link "hurricane" type topped by three strands of barbed wire. The buildings and gates are locked during nonworking hours, and externally patrolled by Protective Force guards. All visitors must check in with the reception desk during working hours.

Area L within TA-54 is enclosed by a cyclone security fence with a single 45 degree barbed wire out-rigging. The entrance gates are open during weekday working hours only and manned so that access is limited to authorized personnel. The entrance gates are locked by the users (HSE-7) and externally patrolled by the Protective Force once every four hours, from 5 p.m. to 8 a.m. on weekdays, and all day on weekends and holidays.

The two open burning pads and the "flashing" pad located at TA-16 are each within a fenced area which can be locked if materials must be left on the pad for a period of time or while burned or flashed material is cooling. The Technical Area is fenced and access is limited by a security force which is present 24 hours a day. The burning ground is routinely patrolled by security personnel. The open detonation pads at Technical Areas 14, 15, 36, and 39 are not individually fenced, but are routinely patrolled. Access to each Technical Area is limited by fences and a full-time security force.

6.2 WARNING SIGNS

Warning signs are posted at all entrances to hazardous waste facilities and at other appropriate areas. The letters and colors of the signs are chosen to insure 25 foot legibility.

Warning signs are posted in English and Spanish at all entries to the room containing the TA-50 batch treatment system and to the modular container storage building area. The signs read, "Danger, Unauthorized Personnel Keep Out."

Warning signs in English and Spanish are posted on the doors at the TA-50 waste incinerator and Room 117 storage area and read, "Danger, Unauthorized Personnel Keep Out." There are warning signs posted on the door to the waste incinerator building, all external doors are locked, and access is only with keys and administrative controls. The two doors to the change rooms have electric strike plates for administrative control of access.

Warning signs in Area L read, "Danger, Unauthorized Personnel Keep Out" and "Hazardous Waste Storage Area." Signs in English and in Spanish are on all approachable fences and on the front gate.

Warning signs at the TA-50 storage pad read "Danger, Unauthorized Personnel Keep Out" and "Hazardous Waste Storage Area." Signs in English and Spanish are on all approachable fences and on the front gate.

Warning signs posted at the gate to the TA-16 burn area read "Danger, Unauthorized Personnel Keep Out." Signs in English and Spanish are

at the front gate. Technical Area 14, 15, 36, and 39 have warning signs on all approachable fences and on each front gate.

Los Alamos is not in a county which borders Mexico; however, in the interest of safety, Spanish language warning signs are posted in Area L.

6.3 INSPECTION SCHEDULES AND REQUIREMENTS

Fire hydrants, alarms, extinguishers and sprinkler systems at all locations are inspected and maintained according to guidelines in the "Manual of Fire Protection Policies and Procedures" (Appendix O). The DOE Fire Department and Pan Am World Services (PAWS), a captive contractor to the Laboratory, are responsible for inspecting the fire fighting equipment. All other equipment is inspected and maintained by the operating group. Equipment is inspected according to Equipment Inspection Schedules (Tables 6-1 to 6-5). The frequency of inspections is based upon the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, malfunction, or any operator error goes undetected between inspections. Inspection schedules and records are kept at the HSE-7 office for a minimum duration of three years.

6.3.1 TA-50 Batch Treatment System and Modular Container Storage Buildings Potential Problems

The batch treatment system and modular container storage area are routinely inspected for potential problems with safety and emergency equipment, security devices, containers, and container storage facilities. Potential problems are listed on a daily inspection checklist. Potential problems include containment failure, fire, explosion, exposure, deterioration of the batch treatment system, construction materials, and system leakage. The SOP for the batch treatment system can be found in Appendix M-2.

Frequency and Content of Inspection

The batch treatment system is inspected according to the schedule in Table 6-1. The modular container storage units are inspected weekly by visually inspecting containers for leakage and deterioration. The containment system is also inspected for spilled or leaked waste and for corrosion. The batch system is inspected before each use and monitored during operation by the

operator. This procedure is adequate to detect any cracks, leaks, corrosion, erosion, or wall thinning. In addition, the batch treatment tank shell and liner will be inspected every three years to ensure that the tank walls and liner have not experienced damage due to corrosion or erosion. For the three-year inspection, the tank KYNAR lining will be tested for pinholes, cracks, or other failures using a Holiday Detector spark test or equivalent. The Holiday Detector works by sweeping an electrically-charged brush over the liner surface. If a pinhole or crack is present, the liner no longer insulates the metal tank shell from the current, and a spark is produced thus identifying the failed surface. The tank shell and liner wall thickness will also be acoustically analyzed to determine the extent of deterioration (ASME NDT Section IX). The acoustic analysis utilizes the travel time or changes in the frequency of sound waves through the tank walls to permit calculation of wall thickness. Should the liner wall exhibit considerable (unexpected) thinning

Inspection Logs

General inspections are conducted by the operating group according to checklists associated with the operating log. Results of the inspection (Table 6-2), the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent for records to HSE-7 and kept for at least three years. In addition, process operators will fill out process data sheets associated with the operating log at least once every two hours during waste feeding operations and every four hours when not feeding wastes. These sheets are a record of operating conditions and provide evidence that the operator has checked and is aware of the operating status of the system. The time at which entries are made and the actual instrument reading for each variable will be entered into each checklist. When shutdown occurs, the log will state the nature of the shutdown, the time it occurred, and the suspected cause. Once each shift, the shift supervisor will inspect the facility for malfunctions, deterioration, operator error, and discharges. Prestarting inspection procedures, general inspection checklists and the operating log will be kept with the incinerator system during operations.

6.3.3 TA-54, Area L Waste Transfer, Packaging and Container Storage Units and Treatment Tanks

Potential Problems

Area L is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, treatment tanks, and loading and unloading facilities. Potential problems are listed on a weekly inspection checklist. The container storage areas (the metal building and roofed concrete pad) will be inspected weekly. The treatment tanks will be inspected weekly and after storms to detect any leakage, damage, overflow, or cracks. In addition, the interior of each treatment tank will be inspected yearly for thin spots or excessive corrosion. Prior to the interior inspection, the treatment tank will be emptied by pumping into drums following normal procedures as described in Section 4.4.2. After it is empty, any liner is removed and the tank must be thoroughly cleaned and checked to be sure it is free of flammable, toxic, and corrosive vapors and materials before entry. If this requires steaming, the tank must be cooled after cleaning and the rinse water checked to be sure it is essentially neutral. Any nearby operations considered hazardous to tank entry are shut down. The atmosphere

Remedial action in the case of drum or container failure, fire, explosion, or exposure is handled as described for the TA-50 batch treatment system.

Inspection Logs

Each inspection is conducted by the operating group according to the checklist in the inspection log. Results of the inspection, the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent for records to HSE-7 and kept for at least three years.

6.3.6 Open Burning/Open Detonation Sites

All activities related to the development, handling, packaging, transportation, and disposal of HE materials are outlined in a series of procedures developed by the WX and M Divisions. Procedures are reviewed at least annually, and current copies of all active procedures are maintained by each Division and at HSE-3 (Safety). In addition, all personnel in both divisions are required to read through current division procedures once each year as on-the-job training. These annual reviews are documented for each individual.

Potential Problems

Each open burning table or tray is inspected for cracks or leaks prior to each use. Above ground portions of the filtration cones are inspected prior to each use. All equipment associated with HE waste disposal is inspected on a routine schedule deemed appropriate for current operations. The group responsible for HE waste disposal, WX-3, has Standard Operating Procedures in place which prescribe the safety inspection procedures and schedules for all equipment used in collecting, loading, unloading, transporting, and firing the waste HE material. M Division is responsible for the inspection and maintenance of all equipment associated with the safe detonation of waste HE material. Potential problems include unplanned explosion, fire, equipment deterioration, and leaks from the burn containment areas.

Frequency and Content of Inspections

All fire control equipment is inspected and maintained according to the guidelines in the "Manual of Fire Protection Policies and Procedures" (Appendix O). All HE waste transportation vehicles are inspected on a schedule outlined in established procedures.

Remedial Action

Both WX and M Division procedures outline the specific actions to be taken by personnel in case of an emergency or under adverse conditions. If any defects, damage, or hazards are encountered during an inspection, all appropriate remedial actions including repairs, maintenance, and replacement will be completed as soon as possible to preclude further damage and reduce the need for emergency repairs.

If a hazard is found imminent or if a hazardous situation already exists, remedial action will be initiated immediately. Any remedial action taken in response to an inspection finding will be noted in the inspection log.

Transportation vehicles receive safety inspections prior to transport of waste HE and are inspected routinely for the proper function of lifts, cranes and other special equipment. Routine vehicle maintenance is performed outside the Technical Area by Pan Am personnel after the vehicles have been decontaminated.

Inspection Logs

Each inspection is conducted by the operating group according to the checklist in the inspection log. Results of the inspection, the inspector's name and title, and the date and time of inspection are recorded on the inspection log sheet. A copy of each inspection log is sent to HSE-7 and kept for at least three years.

6.4 PREPAREDNESS AND PREVENTION REQUIREMENTS

6.4.1 Equipment Requirements

Internal Communication/Alarm Equipment

The following internal communication/alarm equipment is available at Los Alamos to provide emergency instruction for rapid evacuation and to initiate emergency response:

- Centrex telephone system
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10 miles)
- Telephone/radio paging
- Two-way hand held radios
- Emergency central alarm system
- Mechanical central alarm system

Since this equipment is laboratory-wide, it allows all personnel to get in contact with emergency coordinators in all areas of the laboratory. All hazardous waste handling personnel have immediate access to internal alarms or emergency communication devices.

The TA-50 batch treatment system is equipped with telephones, one pull alarm, one automatic thermal alarm, and one automatic smoke alarm. There is an intercom system at each telephone. In the case of an emergency, the nearest source of communication for personnel handling wastes is the intercom/paging systems on each telephone.

The TA-50 waste incinerator and storage area is equipped with telephones throughout the facility. A radio with microphones at remote locations is available. Other communication/alarm equipment available at this facility includes:

- One portable radio
- One radio-equipped vehicle
- Telephone paging system
- Internal telephone communication line
- Two-channel work station intercoms for direct communication from process area to offices and labs
- Eleven pull alarms
- Two automatic thermal alarms.

The trailer at Area L is equipped with a telephone. A radio-equipped vehicle is available for use at Area L. In addition, Area L is equipped with an alarm system and intercom to Area G for evacuation. These are the nearest communication sources for use in the case of an emergency. Because of the proximity of the TA-50 Storage Pad and modular storage units to other TA-50 facilities and because only containerized waste is handled at these facilities, individual emergency equipment is not required.

The control buildings at the burning ground and at each detonation pad are equipped with a telephone. All HE transportation vehicles are radio-equipped.

External Communication/Alarm Equipment

The Laboratory has established external communication capabilities with the Los Alamos Police Department and the Los Alamos County Hospital (Section 7.2). The following external communication/alarm equipment is available at Los Alamos:

- Centrex telephone system
- Private telephone lines (if Centrex fails)
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10 miles)
- Two National Warning System Stations (NAWAS)
- Direct line from Emergency Operations Centers to KRSN (local radio station)

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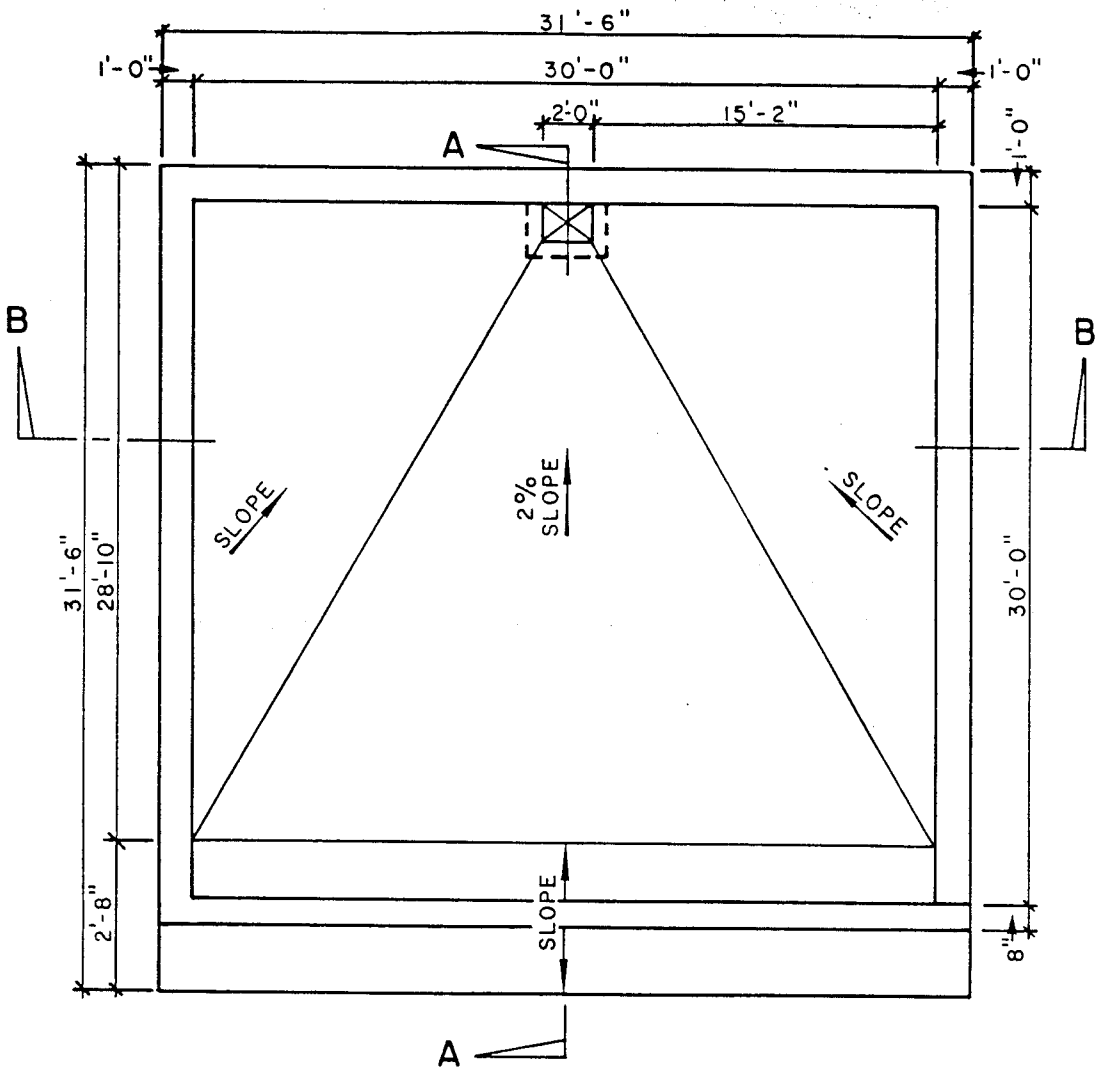
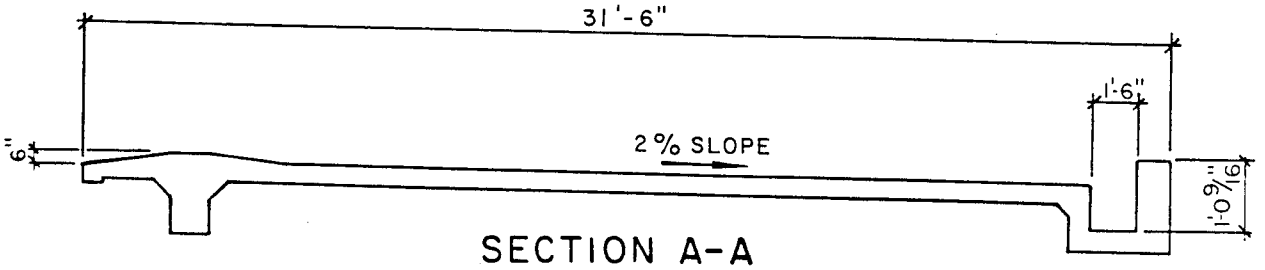
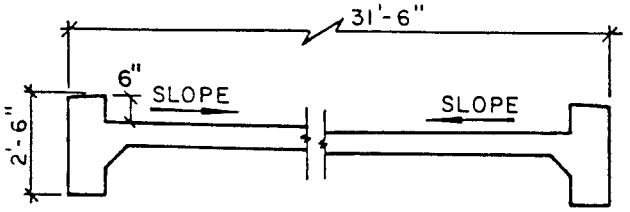




SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

FIGURE 24

TA-54, AREA L CONCEPTUAL DRAWING OF CONTAINER STORAGE PAD

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Do Not Scale This Drawing

Emergency Equipment

A list of emergency equipment available at Los Alamos, including types of equipment, locations, and contact phone numbers is shown in Table 7-4.

Run-Off/Run-On Control

The TA-50 Storage Pad is provided with run-on control by elevation above the surrounding area. In addition, the roof will protect the pad from receiving significant volumes of direct precipitation. The storage pad is also equipped with secondary containment which will collect any precipitation that falls directly on the pad. Should significant volumes of fluid accumulate in the secondary containment system, fluids will be pumped into containers for analysis and/or considered and treated as hazardous waste.

Water Supply Contamination

Water supply lines at TA-50 are under pressure and have backflow preventers. Containerized wastes are stored in curbed pads and spills are promptly cleaned up. The depth to the main aquifer is approximately 1,300 feet below the surface.

Equipment and/or Power Failures

Power failures do not significantly affect operations and containment at the TA-50 storage pad. Loading and unloading are discontinued until equipment failures are corrected. Wastes are kept in sealed containers so that equipment failure would not threaten containment.

Wind Dispersal Control

Only containerized or packaged wastes are handled at the TA-50 storage pad; therefore, wind dispersal is not a problem.

Personnel Protective Equipment

Personnel who handle containers at the TA-50 storage pad are required, at a minimum, to wear safety glasses and gloves. Protective equipment is specified by HSE-3 and HSE-5 by special work permit when necessary.

6.5.6 Open Burning/Open Detonation Pads

Unloading Operations

Division procedures describe how HE materials are to be unloaded from each type of vehicle (i.e., sump, with crane, hydraulic tailgate) and placed on the burning table, cone, or detonation platform. Procedures limit the number of personnel that can be present at any site, as well as the types and amounts of materials that can be burned or detonated.

Run-Off/Run-On Control

Sand remaining on the soil surface at the flash pad and the two burn tables is considered free from contamination, and no effort is made to prevent run-on or run-off at the units. All HE contamination is removed from the equipment burned at the flash pad. Waste HE is completely reacted at the two open burn tables. Any residue in the table is drummed after each burn event along with any potentially contaminated sand from the table. Any residue found under or around the table is also drummed with any potentially contaminated sand. Precipitation is prevented from entering the burn tables or trays by the use of sloped steel covers which are manually moved into position when the tables/ trays are not in use. The covers prevent the trays or tables from filling with water and spilling over into the sand. Any precipitation which enters the pressure filter cones is routed through the wastewater treatment system prior to discharge through a NPDES permitted discharge point.

The burn cage at TA-14 sits within a metal tray so burn residues will be contained, and can be collected and sent to HSE-7 for analysis and proper disposal. A tarp cover is placed over the cage and tray when the unit is not in use to prevent precipitation from flushing ash from the cage or tray into the soil.

The open detonation units located at TAs 14, 15, 36, and 39 do not have any run-off or run-on controls.

Water Supply Contamination

At the TA-16 burning ground waste residue is contained and removed from the burn trays or tables. Any spills are cleaned up immediately. The only liquid wastes at the site are those brought for disposal by ignition. Depth to the main aquifer is approximately 1,200 feet.

No identified residues remain at the open detonation sites.

Equipment and/or Power Failure

Detailed procedures which outline steps to be taken in response to failure of equipment at the burning or detonation site or during transport of explosive

material have been prepared for each M or WX Division which handles the material.

In the event that the TA-16 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. Use of the blasting machine requires that a temporary firing wire be laid along the ground from the control shelter to the burn table or flash pad. Established WX-3 procedures describe the steps to be taken to correctly wire and use the blasting machine.

Established M Division firing procedures describe actions to be taken at the detonation units in the case of a misfire or adverse conditions.

Wind Dispersal Control

Firing procedures of both the open burning and open detonation sites preclude shots being made during lightning storms or under windy conditions. However, no specific wind condition limits are imposed.

Personnel Protective Equipment

Levels of protective apparel or equipment required for disposing of various explosives are outlined in applicable division procedures. Eye protection, gloves, booties, and protective clothing may be required.

6.6 PREVENTION OF ACCIDENTAL IGNITION OR REACTION OF IGNITABLE REACTIVE OR INCOMPATIBLE WASTE

6.6.1 TA-50 Batch Treatment System and Modular Container Storage Area

Only compatible and nonignitable wastes are stored at one time at the TA-50 batch treatment system and in individual compartments of modular container storage buildings. Each waste volume to be treated in the batch plant is

carefully characterized to assure proper treatment. Standard operating procedures (SOP) are prepared for wastes that are routinely received and do not significantly change in character. Operating procedures for unique wastes are prepared after the waste is categorized.

The batch treatment system is designed for complete internal wash down to remove residuals which might be incompatible with future wastes treated.

6.6.2 TA-50 Waste Incinerator and Room 117 Storage Area

Only compatible wastes are handled in the same holding/blending tank and associated transfer system at one time. Liquid wastes can be fed directly into the incinerator or pumped to waste holding tanks. Residuals are flushed with a compatible solvent which is burned at the completion of each liquids burn. The tanks and transfer system are left empty. Wastes will be segregated in Room 117 such that only compatible wastes are stored together. The ventilation system will provide a minimum of eight air changes per hour thus, minimizing potential for accumulation of combustible vapors. In addition, all electrical equipment will be classified as Class I, Division I and will be approved for installation in a Class I, Division I, group environment.

6.6.3 TA-54, Area L Waste Transfer, Packaging and Storage Units and Treatment Tanks

Incompatible chemicals are segregated for storage to prevent inter-reaction of wastes in the case of a leak.

Containerized wastes are stored in the open air, inhibiting vapor accumulation. Smoking is not allowed and there is normally no ignition source in the area. The stored volatile and flammable wastes are inspected for leakage prior to loading.

Reactive wastes will be placed in the tanks for treatment only. They will not be stored in the tanks. Prior to adding new waste to a tank, the records will be checked to verify that the two waste streams are compatible. If they are not compatible, the second stream will not be placed in that tank until all contents have been removed and the liner has been replaced.

6.6.4 TA-16 Industrial Incinerator

Only potentially HE contaminated materials are disposed of at the TA-16 Industrial Incinerator. Wastes are carefully screened to minimize the amount of the HE in waste materials. Smoking is not allowed while handling waste to be incinerated.

6.6.5 TA-50 Storage Pad

Incompatible chemicals are segregated for storage at the TA-50 Storage Pad to prevent inter-reaction of wastes in the case of a leak.

6.6.6 Open Burning/Open Detonation Units

For every explosive material fabricated by M Division, the chemical composition and compatibility of the material with other explosives or chemicals with which it might be used (i.e., cleaning solvents or bonding materials), is determined. Experimental HE materials for which the composition is known but the compatibility may not have been characterized, are always handled separately from other compounds. Any waste material burned or detonated is a known material, and is never stored, transported, or ignited with chemicals with which it is not compatible.

TABLE 6-6

FIRE PROTECTION EQUIPMENT AT LOS ALAMOS HAZARDOUS WASTE UNITS

	Alarms						
	Pull Box	Automatic Thermal	Automatic Smoke	Automatic Thermal Sprinkler System	Halon Exting. System	Fire Hydrants	Fire Exting.
TA-50 Batch Treatment System	X	X	X	X		X	X
TA-50 Modular Storage Units	X			X		X	X
TA-50 Waste Incinerator, and Room 117	X	X		X	X	X	X
TA-50 Storage Pad	X					X	X
TA-54, Area L						X	X
TA-16 Open Burning Units							X
TA-14, 15, 36 and 39 Open Detonation Units							X

7.0 HAZARDOUS WASTE FACILITY CONTINGENCY PLAN

This section presents the Los Alamos National Laboratory's Hazardous Waste Facility (HWF) Contingency Plan (also referred to as the Contingency Plan) as required by 40 CFR §270.14(b)(7) (NMHWMR 302.A.4.b[1]) and specific requirements as stated in 40 CFR §264.51 through §264.56 (NMHWMR 206.B.10) as applicable. A copy of the working Contingency Plan is provided in Appendix R.

7.1 INTRODUCTION

Hazardous waste units currently in operation are summarized in Table 7-1. The locations of the units are shown as the shaded areas on Figure 2-2. Overall responsibility for Hazardous Waste Management is with the HSE-7 Waste Management Group in the Health, Safety and Environment (HSE) Division (Figure 7-1). Generators of hazardous wastes are responsible for proper identification, segregation, and documentation of their wastes. Except for HE wastes, packaging, transportation, and final disposition of hazardous wastes are the responsibility of HSE-7 Low-Level Waste/Chemical Waste Operations.

HE wastes are handled by Dynamic Testing (M) and Design Engineering (WX) Division groups whose central purpose is the design and testing of explosives.

Emergency resources available to the Laboratory include the Fire Department, the contracted services of the Mason-Hanger Protective Force (security), Pan American World Services (PAWS) Co. (maintenance), Los Alamos Medical Center, internal laboratory services including medical facilities, and minor external assistance from the Los Alamos County Police.

7.2 HAZARDOUS WASTE EMERGENCY RESPONSE RESOURCES

The Laboratory maintains its own response resources to handle emergencies. Interaction with outside agencies is limited for security reasons and because it is impractical to train these agencies to cope with the technical diversity of the Laboratory's operations such that they could safely contribute in an emergency. Response resources include personnel, emergency equipment, and communication systems.

7.2.1.8 Pan-Am World Services (PAWS)

Pan Am World Services (PAWS) provides a maintenance support force on contract to the Laboratory. This support force is under the Laboratory's direction in an emergency. PAWS conducts inspections of Laboratory equipment, maintains equipment, and participates in emergency cleanup.

7.2.1.9 Los Alamos County Police

In keeping with the principle of handling emergencies internally, the Los Alamos County Police have only minimal interaction with the Laboratory in an emergency. That interaction is limited to traffic control on DOE roads with public access. The limits of interaction are included in a signed agreement, a copy of which is included in Appendix R. There are no agreements with other agencies.

7.2.1.10 WX and M Division Personnel

Personnel in WX and M Divisions are trained to safely handle and dispose of highly reactive materials (High Explosives). Any spill or uncontrolled release of material at the burning grounds (TA's 14 and 16) or the detonation pads (TAs 14, 15, 36, and 39) will be cleaned up by personnel from these divisions. The Fire Department may be called to respond if a burn or detonation results in an uncontrolled fire.

7.2.2 Emergency Equipment

A list of emergency equipment for use at the Laboratory and the location of this equipment is provided in Table 7-3. The equipment immediately available for use is located at TA-54, Area L, the TA-50 batch treatment system and the TA-50 waste incinerator. Because of the proximity of the TA-50 modular storage units and the TA-50 storage pad to other TA-50 facilities, emergency equipment from the chemical waste incinerator and batch treatment plant is available for use at the modular units and the storage pad. HSE-8 also has an extensive equipment inventory.

In addition, PAWS, the Fire Department, and HSE-2 maintain emergency equipment. Major emergency facilities are shown in Figure 7-2.

7.2.3 Communications

Effective emergency response at Los Alamos National Laboratory requires an efficient communication system which will integrate all personnel into the emergency response procedure.

There are two central alarm systems (CAS) at the Laboratory; an emergency CAS and a mechanical CAS. The emergency CAS is activated by:

- Telephone communication (9-911)
- Automatic fire alarms

by HSE-8. Routine monitoring for radiation, radioactive materials, and chemical substances on the Laboratory site helps to fulfill the Laboratory's policy to protect the general public, employees, and the environment.

Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations are located within the five counties surrounding Los Alamos County. They are placed up to 80 kilometers (50 miles) from the Laboratory, and serve to determine background conditions. Perimeter stations are located within approximately four kilometers (2.5 miles) of the Laboratory boundary, and document conditions in residential areas surrounding the Laboratory. On-site stations are within the Laboratory boundary, and most are accessible only to employees during work hours.

The types of routine surveillance conducted at these stations includes radiation measurements and collection of air particulates, waters, soils, sediments, and foodstuffs for subsequent analysis.

Additional samples are collected to gain information about particular events such as major runoff events and nonroutine releases. Data are used for comparison with standards, background radiation levels, and dose calculations.

7.4 SUDDEN RELEASES

This section deals with incidents involving sudden release such as spills, fires, or explosions which pose a significant threat to human health or the environment and includes the release of hazardous materials and hazardous wastes. Hazardous materials are chemical substances that become a regulated waste as the result of the incident and can include hazardous raw materials that are spilled, products of combustion, and products of uncontrolled reactions.

7.4.1 Hazardous Waste Emergency Coordination

The EPODO in conjunction with HSE-7 is responsible for coordinating all emergency response measures involving sudden releases of hazardous wastes with the exception of the open burning and open detonation units at TA-14, 15, 16, 36, and 39. HE waste handling is the responsibility of M and WX divisions, who have

- A hazardous waste or hazardous material spill results in toxic fumes which threaten human health, or

- An earthquake or other natural disaster threatens containment integrity.

Explosions

- An unplanned explosion involving hazardous wastes occurred (except at TA-14, 15, 16, 36, and 39), or

- An imminent danger exists that an explosion involving hazardous wastes or hazardous material could occur.

Fires

- Any fire involving hazardous wastes or hazardous material (except planned burning of HE waste), or

- Any building, grass, forest, nonhazardous waste fire that threatens to ignite hazardous wastes.

7.4.2.2 Emergency Notification

Immediately upon discovery of an imminent or actual incident involving hazardous wastes or hazardous materials, the EPODO will be notified first. In the case of fire involving hazardous wastes or hazardous materials, this is superceded by the Laboratory fire alarm system. A fire is reported by dialing 9-911, activation of automatic alarms, or activation of a fire pull box. All fire alarms simultaneously alert the CAS Dispatcher, the Fire Department, and the Mason and Hanger Pro-Force. For fire involving hazardous wastes, hazardous materials, or hazardous waste units, the CAS Dispatcher shall contact the EPODO (Figure 7-3).

During off hours, all incidents involving hazardous wastes or hazardous materials shall be reported to the CAS Dispatcher, who will contact the on-call EPODO.

The EPODO shall proceed to the incident and assess the nature of the problem. On an as-needed basis, the EPODO shall contact response groups directly or instruct the CAS Dispatcher to contact them or contact the HSE-Duty Officer (HSE-DO) who will notify the appropriate HSE Groups. Table 7-2 shows the assistance available from each emergency response group. The EPODO will use this list as criteria to determine which groups to contact in an emergency.

6. Within 15 days of the incident, submit to the Regional Administrator and Environmental Improvement Division the report described in Section 7.10.

7.5 SPECIFIC EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS WASTE UNITS

The following section summarizes the guidelines for handling emergencies.

7.5.1 Chemical Spills

Hazardous wastes are handled and stored in small containers, lab packs, 55-gallon drums, and "tuff-tanks." The individual volumes handled are small. Handling of hazardous materials may involve truckload quantities of material such as solvents, fuels, acids, and bases.

The general steps in handling hazardous wastes are:

- Containment including spreading of absorbents or forming of temporary dikes,
- Waste pickup and packaging in sound containers, and
- Decontamination followed by testing to assure adequate clean-up.

The emergency preparedness procedures related to flammable organic solvent spills call for stabilization of the spilled material with the organic solvent spill kit. Other chemical spills are to be stabilized using the acid and caustic spill kits or by the addition of absorbents such as vermiculite. Personnel protective equipment will be worn during spill control and cleanup. The stabilized material will be treated as hazardous waste. Runoff which might occur from spills outside containment areas during precipitation must be contained and handled as a hazardous waste unless analyzed and found to be nonhazardous. Temporary dikes can be constructed to contain runoff.

7.5.1.1 Spill Control Procedures

Vermiculite or prepackaged spill kits will be used to control all chemical spills except hydrofluoric acid spills. Vermiculite is compatible with all chemicals except fluorine and hydrofluoric acid. A hydrofluoric acid spill will be neutralized by carefully adding calcium hydroxide to the spill. After an excess of calcium hydroxide has been added and the reaction has

determine the type and degree of contamination and appropriate cleanup measures will be used.

Prior to resuming operations, appropriate local authorities will be notified that cleanup procedures are completed and emergency equipment is cleaned and fit for its intended use.

Damage assessment and recovery shall be performed within the reporting and investigative requirements of DOE Order 5484.1 (Appendix R). The EPODO has general responsibility for coordinating post-emergency actions, particularly during the time period immediately after the emergency. Such actions include cleanup operations, repair of vital equipment, or interim hazard-removing operations (such as demolition of unstable walls). The services of the affected operational organizations, HSE Division, PAWS, and other on-site talent will also be utilized to estimate cleanup costs and operational impact. The EPODO declares the end of the emergency; an Incident Report is filled out, and the HSE-7 Group Leader and his staff review emergency actions.

7.8 POST-EMERGENCY ASSESSMENT

When the emergency is over, the causes of the emergency and the effectiveness of the response are investigated, in order that future emergencies may either be prevented, or that the response to them may be more effective. Following each event requiring the implementation of the HWF Contingency Plan, the EPODO shall meet with representatives of all response functions to determine the adequacy of the response.

7.9 EMERGENCY RECORDS

The details of any incident that requires implementation of the HWF Emergency Contingency Plan must be noted in that unit's log book. This record must include the time, date, and full description of the incident.

7.10 EMERGENCY REPORTS

Any emergency that requires implementation of the HWF Emergency Contingency Plan will be reported in writing within 15 days to the EPA Regional Administrator and to the New Mexico Environmental Improvement Division (EID).

TABLE 7-1

SUMMARY OF HAZARDOUS WASTE UNITS
LOS ALAMOS NATIONAL LABORATORY

Technical Area and Building or Area Designation	Wastes Handled	Activity Description
TA-14, 15, 16, 36, and 39	High explosives (HE)	Open burning/open detonation units used to react waste HE and HE-contaminated material
TA-50-01	Electrochemistry wastes Isotope separation wastes	Chemical batch treatment by neutralization, metal precipitation, and cyanide destruction
TA-50 Modular Storage Units	Shops department wastes Wastes from Basic and Applied Chemistry R&D programs Electrochemistry wastes Isotope separation wastes	Storage of wastes prior to treatment, incineration
TA-50-37	Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials	Waste incineration with flue gas treatment
TA-50-37 Room 117 Storage Area	Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials	Storage/Staging area for incinerator
TA-50 Storage Pad	Shops department wastes Wastes from Basic and Applied Chemistry R&D programs	Waste storage prior to treatment, incineration, or shipment off-site
TA-54 Area L	Shops department wastes Wastes from Basic and Applied Chemistry R&D programs	Wastes are segregated and stored prior to treatment, incineration, recycling, or shipment off-site

TABLE 7-3
(Continued)

EMERGENCY EQUIPMENT AT THE OPEN BURNING UNITS AND OPEN DETONATION UNITS, TA-14, 15, 16, 36, AND 39

Fire Control Equipment

Fire Extinguisher in each vehicle used to transport HE material
Fire Extinguisher in each control bunker

Description of General Capabilities

These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of a fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.

Communication Equipment

Telephones
Two-way radios

Description of General Capabilities

Telephones for internal communication at the Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Located in each control bunker, in the control building at the burning ground, and at the waste water treatment facility at the burning ground. Radios allow communication between each vehicle.

TABLE 7-5
HAZARDOUS WASTE EMERGENCY COORDINATORS

(To be notified in succession)

Primary Coordinators	Laboratory Telephone	Home Telephone	Home Address
1. Donald Winston, Emergency Management	7-6211	662-2453	450 Navajo Road, Los Alamos, NM
2. James F. Griffin, Emergency Management Coordinator	7-6211	662-5436	1057 Cedro Court, Los Alamos, NM
3. Z. Edward MacBain, Emergency Management Coordinator	7-6211	662-6211	1856 Cooper Place, Los Alamos, NM
4. James S. Griffiths, Emergency Management Coordinator	7-6211	662-9155	190 Manhattan Loop, Los Alamos, NM

9.0 CLOSURE AND POST-CLOSURE PLAN

9.1 GENERAL CLOSURE/POST-CLOSURE INFORMATION

Introduction

This section is submitted in accordance with the requirements of 40 CFR 264.110 through 120 (NMHWMR 206.D.2.a[1] through 206.D.2.j[2]), 264.178 (NMHWMR 206.D.4.i) and 270.14(b)(13) (NMHWMR 302.A.4.b[1]). The plan identifies all steps that will be necessary to close the facility at the end of its operating life or to partially close the facility at any point during its intended operating life.

Units for the treatment and storage of hazardous waste at Los Alamos National Laboratory include container storage, chemical treatment, controlled-air incineration, industrial incineration and open burning/open detonation. The functions of the individual hazardous waste units are outlined in Table 9-1.

9.1.1 Closure Performance Standard

Closure plans are designed to meet the following performance standards:

- Protect human health and the environment
- Prevent the escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or atmosphere
- Minimize future maintenance

9.1.2 Partial and Final Closure

The Laboratory's hazardous waste units will be closed in the year 2100. All hazardous wastes will be recycled, treated, and/or disposed of off-site at a permitted facility before closure.

TA-54 Area L includes land disposal shafts that were operated and closed under interim status. Individual shafts were closed as they were filled constituting partial closure of the landfill. The Area L landfill was closed under interim status in 1986.

9.1.3 Closure and Post-Closure Cost Estimates

Federal facilities are exempt under 40 CFR 264.140(c) (NMHWMR 206.D.3.a[3]) from the requirements for closure and post-closure cost estimates and financial assurance. These data are therefore not included.

9.1.4 Personnel Protection

Good industrial hygiene practices shall be followed during all phases of closure and post-closure to protect employees from exposure to hazardous waste constituents. Normal Los Alamos National Laboratory operating procedures require that the Laboratory's Industrial Hygiene Group (HSE-5) survey a site before personnel arrive in order to specify protective clothing and respiratory protection equipment. Contaminated protective clothing and protection equipment shall be treated as hazardous and either decontaminated or treated on-site or disposed of off-site by a permitted commercial disposal firm, in compliance with appropriate regulations (40 CFR 260 et seq. and NMHWMR-2).

9.1.5 Certification of Closure

When a unit undergoes final closure, a certificate, attested to by a registered professional engineer and signed by the appropriate Department of Energy official, in accordance with 40 CFR 264.115 (NMHWMR 206.D.2.f), shall be submitted to the Regional Administrator or the Director of the New Mexico Environmental Improvement Division, as appropriate stating that the unit has been closed in accordance with an approved closure plan.

9.1.6 Post-Closure Care Office

None of the units closed under this section require post-closure care. The office to contact concerning closure activities is:

Area Manager
Los Alamos Area Office
U.S. Department of Energy
Los Alamos, New Mexico 87544
(505) 667-5105

A copy of the closure plan will be maintained at this office until the time of closure. The facility copy of the closure plan will be updated by the Area Manager or his designee. This office will also ensure that other copies of the closure plan are updated, as needed, by maintaining a list of holders of the plan and by issuing plan modifications to all holders of the plan.

9.1.7 Security

Because low-level radioactive wastes have been handled and buried at TA-54, this site will be under the permanent care of the Department of Energy (DOE) or other authorized federal agency. Fences and site security (as described in Section 4.0) will be maintained in perpetuity to prohibit public access and to meet DOE requirements for radiation protection.

9.1.8 Notation of Deed

Notice to local land authority as per 40 CFR §264.119 (NMHWMR 206.D.2.i) and notation of deed as per §264.120 (NMHWMR 206.D.2.j[1]) is not required for units closed under this section. Land plats for Los Alamos landfill units closed under interim authority are provided to the local land authority as described in the closure plan for each landfill unit. The past use of the TA-54 site precludes any circumstances under which the deed for this area will be transferred to the public domain. The land will remain federally owned in the care of the DOE or other authorized federal agency.

9.1.9 Individual Closure Plans

Details of the closure plans for individual Los Alamos hazardous wastes units are included in the following sections.

9.2 CLOSURE PLAN FOR OPEN DETONATION/OPEN BURNING UNITS AND THE INDUSTRIAL INCINERATOR

9.2.1 Technical Areas 14, 15, 36, and 39 Open Detonation Units

High explosives (HE) open detonation sites are located at Los Alamos National Laboratory in Technical Areas 14, 15, 36, and 39. These sites are used routinely to detonate scrap high explosives (HE), failed experimental detonations, unneeded classified explosives shapes, other HE and reactive wastes determined to be excess. A site at TA-36 has also been used to detonate reactive wastes and other assorted regulated wastes. These sites consist of firing pads often located within a small canyon. Associated facilities at these sites include bunkers, which are occupied by technical personnel during detonations.

9.2.1.1 TA-14 Firing Site Description

The waste firing site at TA-14 is located just south of Control Building TA-14-23 (Figure 9-1). Four additional firing points are located south of the waste detonation site, but these have not been used for waste detonations. The waste detonation firing site consists of a three-sided blast shield that directs the impact of detonations away from the control building. At the base, the shield is a two-foot thick by six-foot square concrete pad overlaid with a neoprene shock pad, a 4.5-inch steel plate, and several inches of sand. Wastes are placed on the pad and detonated from the Control Building. Detonations at this firing site are limited to small pieces.

Just southeast of the firing pad is a small wire cage used to burn paper, tape, cotton swabs, and other trash items that have contacted HE and are suspected of being contaminated. The cage is a small metal cylinder approximately two feet tall and two feet in diameter. The cage is covered by a wire mesh screen and is situated within a steel tray. The tray itself is underlain by soil, and both the cage and tray are covered when not in use.

Both sites are located on a mesa top and the surrounding topography is generally flat, sloping gently to the south.

9.2.1.2 TA-15 Firing Site Description

The firing site at TA-15 is occasionally used to detonate regulated wastes and is located at the end of Building TA-15-184, the Phermex Chamber (Figure 9-2). The site is normally used for test detonations, but unneeded classified shapes and scrap HE have also been detonated. The firing site is underlain with two massive steel plates 0.5-foot thick by 5 feet wide by 20 feet long. The steel plates are laid lengthwise end-to-end with one end against the Phermex Building. There are various small housings for cameras and instrumentation around the firing pad. The Phermex Chamber and small housings are protected from detonations with sand bags.

The firing site is located on a mesa top and the topography of the area is generally flat with a gentle slope to the southwest.

9.2.1.3 TA-36 Firing Site Description

The firing site at TA-36 used for waste detonation is designated as Minie Site and is located west-southwest of Control Building 8 in a small canyon (Figure 9-3). The site is a flat area covered with sand. To the south of the detonation site is an instrument chamber.

In addition to the HE wastes associated with explosives studies, reactive wastes and other regulated wastes have been detonated or included in HE detonations.

9.2.1.4 TA-39 Firing Site Description

Two sites normally used for test detonations have been used for HE waste detonations at TA-39. These detonation sites are those located at Firing Point 6 and 57 (Figures 9-4 and 9-5). The sites are all similar and consist of a sand pad located at the bottom of a narrow canyon. The canyon walls rise steeply 220 to 270 feet near the detonation sites and contain debris thrown by the detonations. The drainage channel is approximately in the center of the canyon floor and drains to the southwest.

9.2.1.5 Estimate of Maximum Waste in Treatment

Wastes are not stored at the detonation site, but are held in short-term storage (satellite) at the generation point and moved to the site just before detonation. The maximum HE waste in treatment at any one time at TA-14 is 10 pounds; at TA-15, 100 pounds; at TA-36, 200 pounds; at TA-39-57, 250 pounds; at TA-39-6, 100 pounds.

9.2.1.6 Description of Waste Handled

All the detonation sites have been used to detonate waste HE and some of the sites have been used to burn paper, tape, and other trash items assumed to be contaminated with HE. HE wastes burned or detonated include HMX (cyclotetramethylenetetramine), RDX (cyclonite), TNT (2,4,6-trinitrotoluene), PETN (pentaerythritol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine, and various plastic binders. HE wastes detonated at TA-14 and 15 have included small amounts of lead, assumed to be aerosolized by the detonations.

Laboratory sites. Two background sediment samples will be taken from the drainage channel upstream of the detonation site. If there is no sediment channel site outside the grid, background samples may be taken from similar nearby drainage channels. Care will be taken in selecting these background sample sites to preclude influences of other operating sites.

Field relocation of grid points may be required by topographic features. In such a case, the sample will be taken as closely as possible to the grid point and the new location will be documented.

Each grid point will be represented by a composite sample made up of four core samples taken ten feet along each grid line from the grid intersection. Background soil samples will be a composite of four cores with the same orientation as grid samples.

Sediment samples will be a composite of four sediment samples taken from the channel and evenly spaced over a ten-foot line following the channel. The burn pit center composite sample will be made up of four core samples taken from the center of each quarter of the pit.

Vertical soil sampling will be done at the topsoil, then at one-foot intervals to bedrock or to a maximum depth of three feet for the initial survey. Core samples shall include soil depth segments from 0.5 foot to one foot, 1.5 feet to two feet, and 2.5 feet to three feet.

Soil and sediment samples will be analyzed for the constituents listed in Table 9-2. Barium is a possible contaminant because it is used in several HE mixtures. The other toxic metals are included to ensure that these materials were not included in past detonations. A scan for volatile and semivolatile organics is conducted to ensure that residual from solvents used in HE preparation is not present.

Analysis is not conducted for HE constituents because these are a regulated waste based on reactivity and detonation or burning renders them nonreactive. Furthermore, none of the HE materials used at this site are 40 CFR 261, Appendix VIII constituents. Analysis and Quality Assurance/Quality Control

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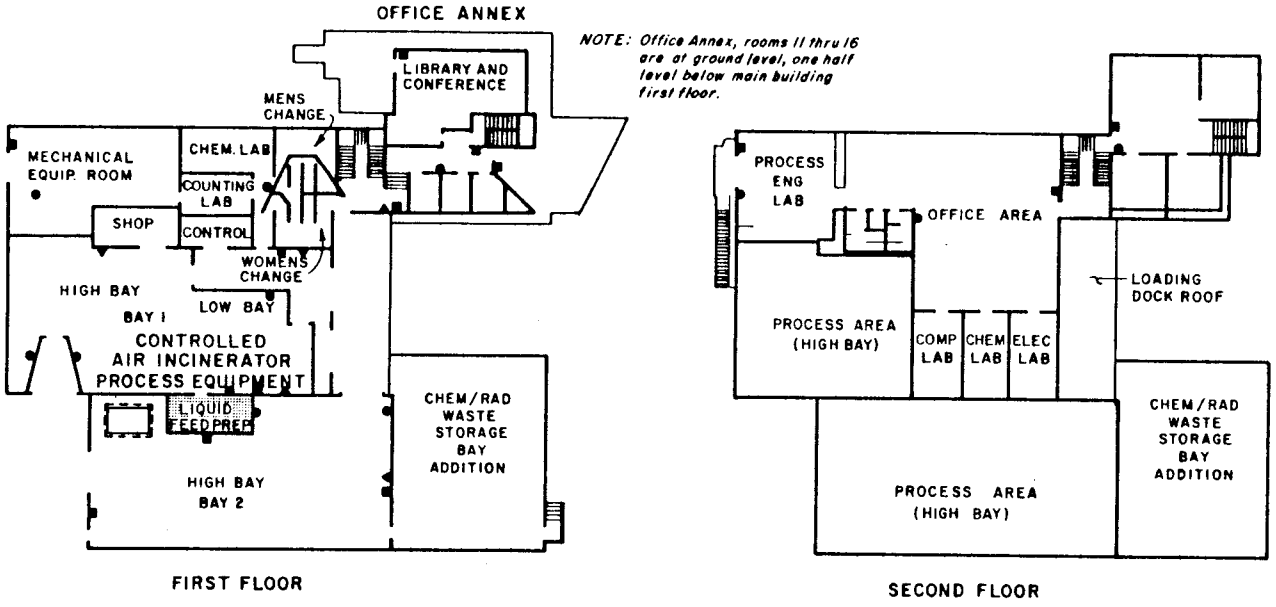

TREATMENT DEVELOPMENT FACILITY
TA-50, BUILDING 37

NOTE. All rooms are covered by automatic sprinkler heads
Fire water flow activates automatic alarm pull.

▲ EVACUATION ALARM
■ ALARM PULL (FIRE)
● FIRE EXTINGUISHER
HALON SYSTEM

FIGURE 11

TREATMENT DEVELOPMENT FACILITY
SHOWING LOCATIONS OF
CHEMICAL WASTE INCINERATOR
AND SUPPORT FACILITIES

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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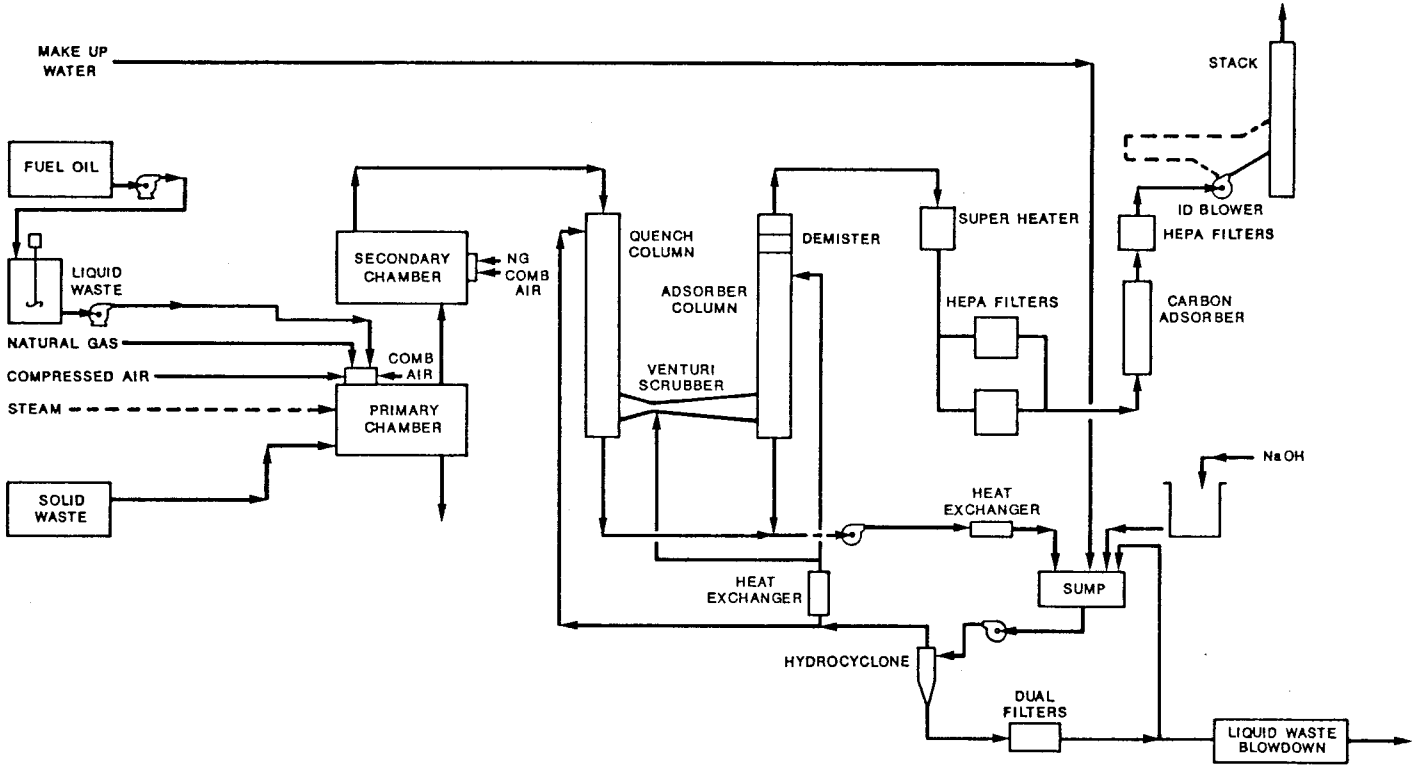

FIGURE 12

INCINERATOR PROCESS DIAGRAM

PREPARED FOR

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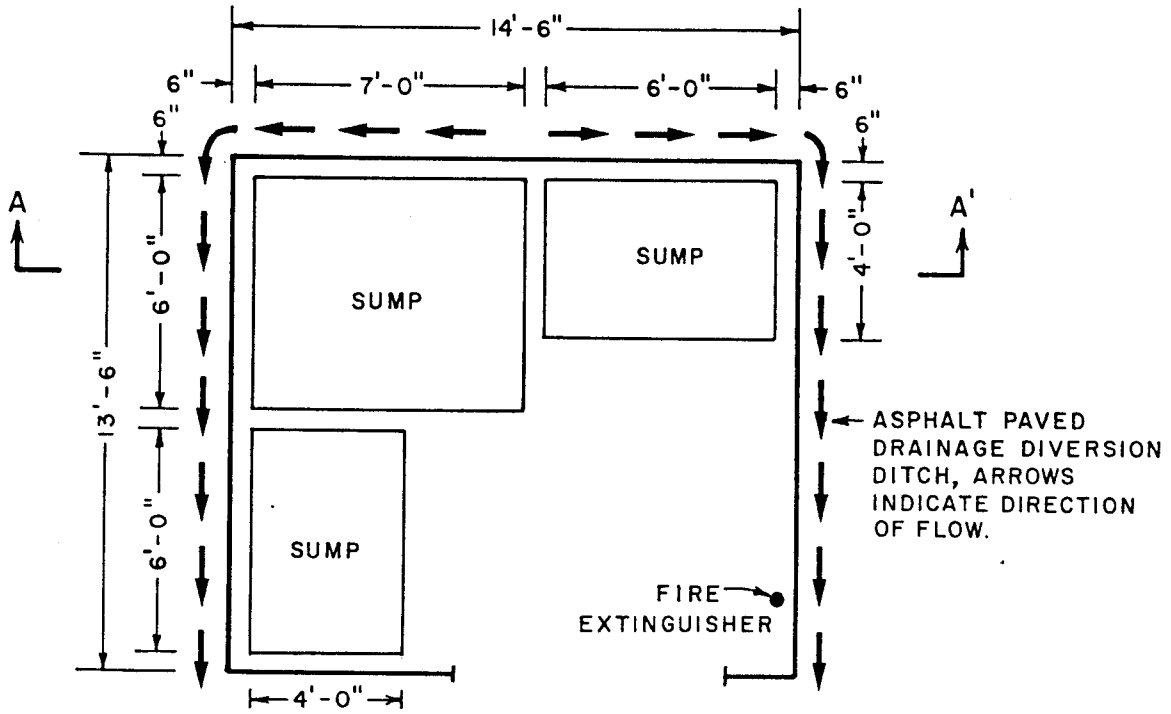
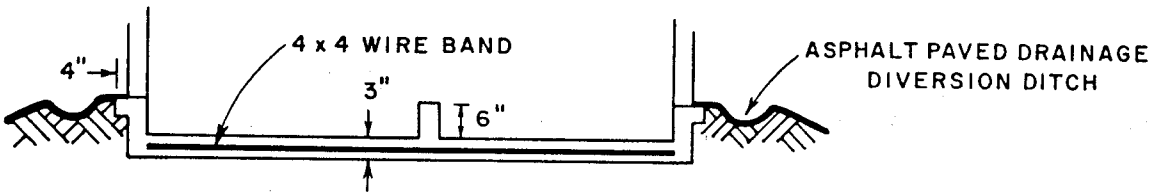
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION



FLOOR PLAN



FOUNDATION AND SUMP

(Section A-A')

FIGURE 6

TA 54, AREA L WASTE TRANSFER, PACKAGING, AND STORAGE BUILDING

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY

LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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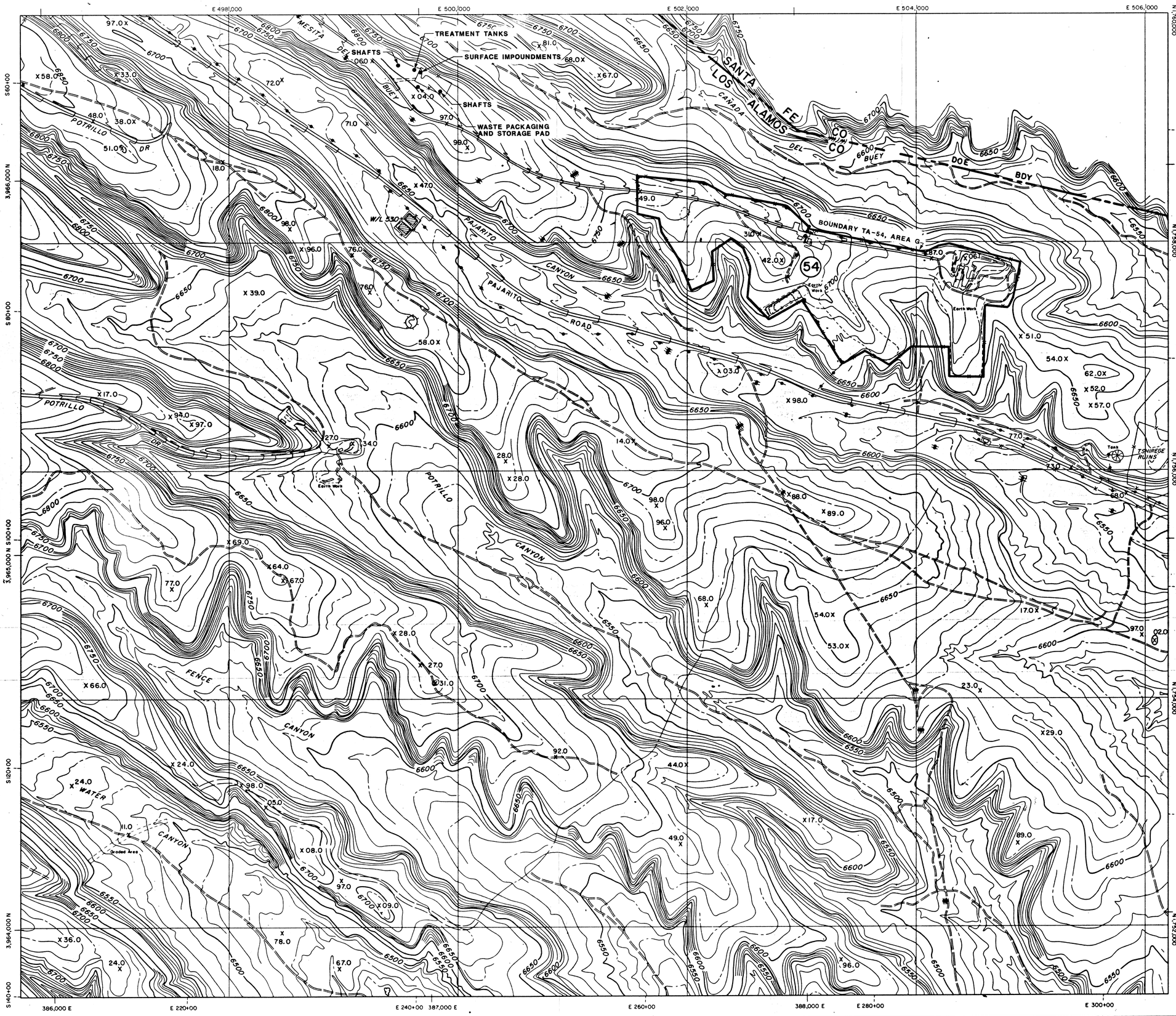
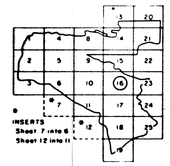


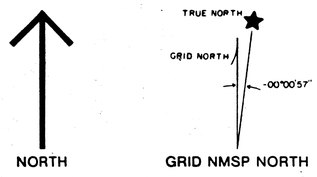
LEGEND

x 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT		RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET

100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

54 MD-SITE

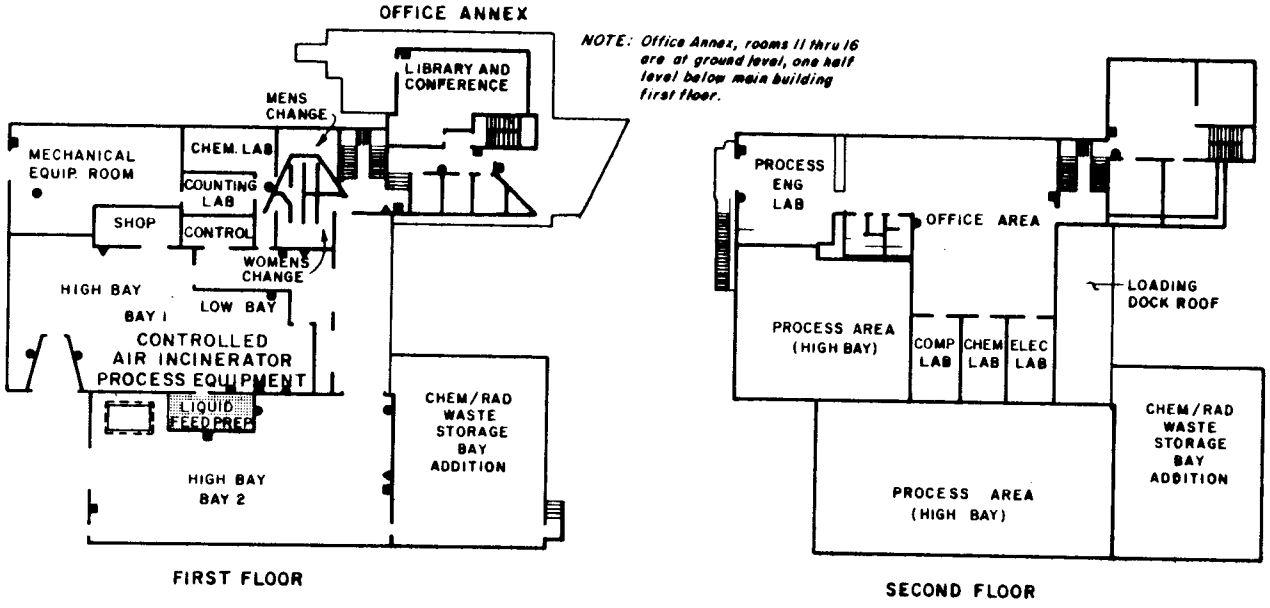
LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 2
CONTOUR MAP SHOWING THE LOCATION OF THE TA-54, AREA L TREATMENT TANKS, SURFACE IMPOUNDMENTS, WASTE PACKAGING AND STORAGE PAD, SHAFTS, AND TA-54, AREA G

LAB JOB NO. 5682
1" = 400' SCALE
PLAN / TOPO
SHEET 16 OF 25

14988-M

DRAWN BY	LLF 10/21/88	CHECKED BY	10/21/88	DRAWING NUMBER	30 .5 02 09 A2
		APPROVED BY	10/24/88		



TREATMENT DEVELOPMENT FACILITY
TA-50, BUILDING 37

NOTE. All rooms are covered by automatic sprinkler heads
Fire water flow activates automatic alarm pull.

▲ EVACUATION ALARM
■ ALARM PULL (FIRE)
● FIRE EXTINGUISHER
HALON SYSTEM

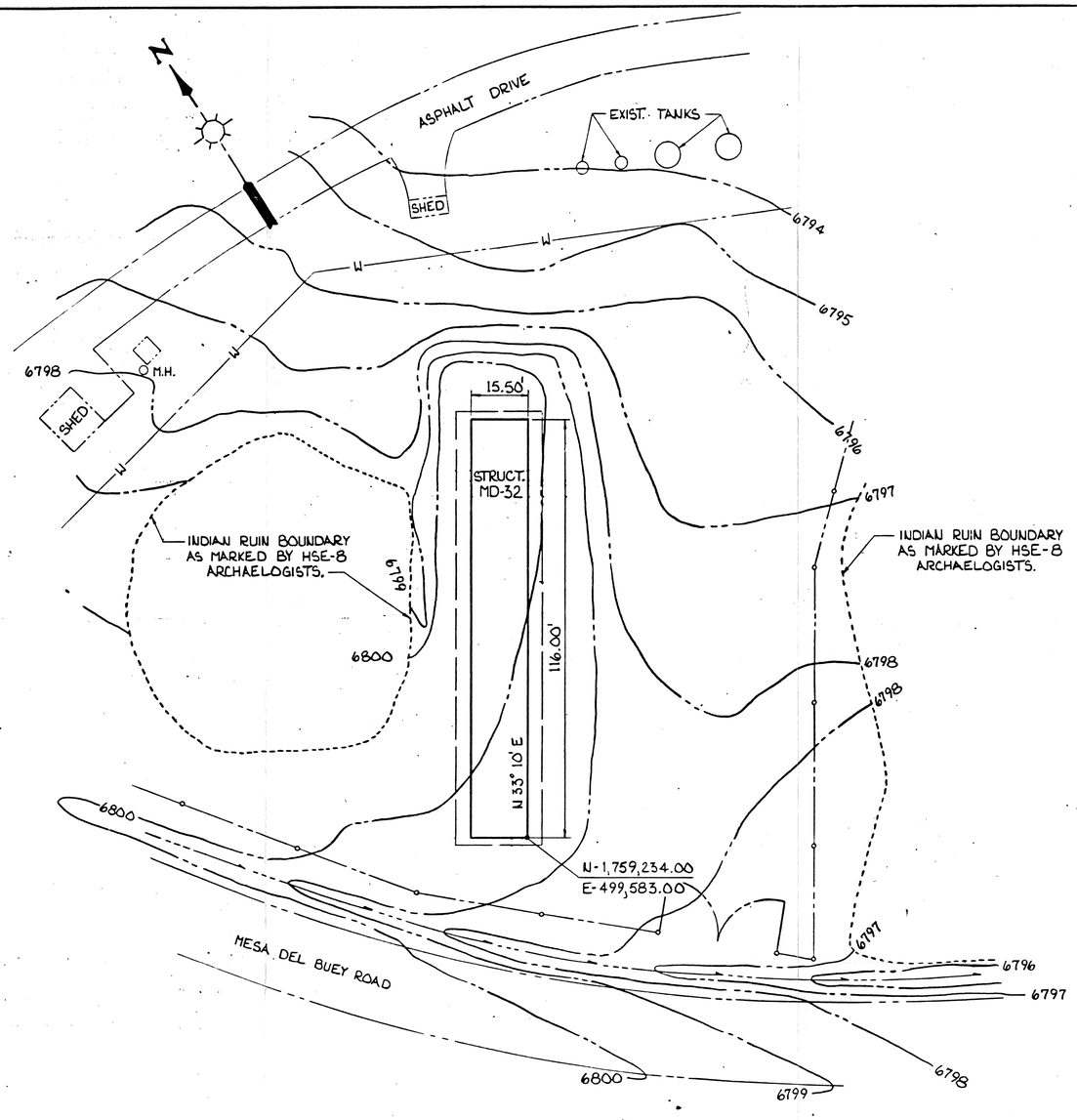
FIGURE 11

TREATMENT DEVELOPMENT FACILITY
SHOWING LOCATIONS OF
CHEMICAL WASTE INCINERATOR
AND SUPPORT FACILITIES

PREPARED FOR

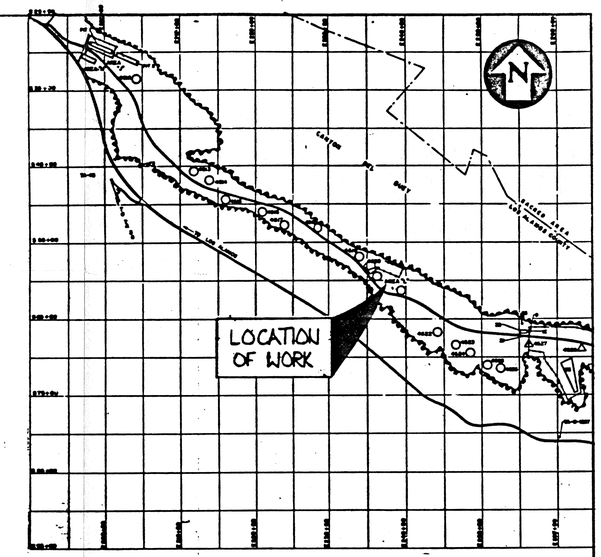
LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION



PLOT PLAN

SCALE: 1" = 20'-0"



STRUCTURE MD-32 TA-54

LOCATION PLAN

GENERAL NOTES

1. DO NOT SCALE DRAWINGS FOR CONSTRUCTION DIMENSIONS.
2. FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION.
3. REPAIR ALL AREAS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING ADJACENT AREAS.
4. KEEP WORK SITE IN AN ORDERLY CONDITION AND AT PROJECT COMPLETION REMOVE ALL WASTE. LEAVE WORK SITE IN A CONDITION ACCEPTABLE TO THE ENG-1 INSPECTOR. DISPOSE OF REMOVED MATERIALS AS DIRECTED BY ENG-1, UNLESS NOTED.
5. ~~PAINTING - PAINT CONC. CELL SURFACES WITH 1 COAT PRIMER: ANTI-CORROSIVE, "PLASITE", FOR 7100 COLD SET COATING SERIES, ZIA STOCK NO. 2605 76 0024; 2 FINISH COATS: COLD SET COATING MATERIAL "PLASITE", LT. GRAY, ZIA STOCK NO. 2605 72 0033.~~

   PAINT UNGALVANIZED BARRIER FENCE METAL WITH 1 COAT PRIMER PPG, WHITE 6-712; 2 FINISH COATS OF SPEEDHIDE WATER BASE ALKYD GLOSS ENAMEL, GRAY, MWF, 3-6 MILS.
6. COMPACT FILL MATERIAL IN 8" MAXIMUM LIFTS TO 95% DENSITY LABORATORY TEST MAX. DENSITY PER ASTM D1557 METHOD D & FIELD DENSITY PER ASTM D2922 OF ALL FILL MATERIAL.

LEGEND

- NEW CONSTRUCTION
- FUTURE CONSTRUCTION
- RUIN BOUNDARY
- EXISTING
- W — EXISTING WATER LINE

NOTE:

SURVEY-TOPOGRAPHIC INFORMATION WAS OBTAINED FROM SURVEY DRAWING NO. ENG. 54-42.

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY PAUL VIDRINE
ENG-1 PHONE 7-4656

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	REQ GRP	REQ D.O.	ENG GRP	ENG D.O.
1	3/8/86		AS BUILT NO CHANGE	BS	DL					

MF

AUTHORIZED BY D.R.R. FOR: MF
HSE-3
ENG-1
ENG-4
ENG-4

FACILITIES ENGINEERING DIVISION

FIGURE 4
TA-54, AREA L
CHEMICAL STORAGE FACILITY
LOCATION MAP

STRUCTURE MD-32 TA-54

DRAWN	B. SANCHEZ
DESIGN	B. Sanchez
CHECKED	C. SANCHEZ
RELEASED	
DATE	8-9-85

SUBMITTED C. Lumsden RECOMMENDED Bruce Ferson APPROVED

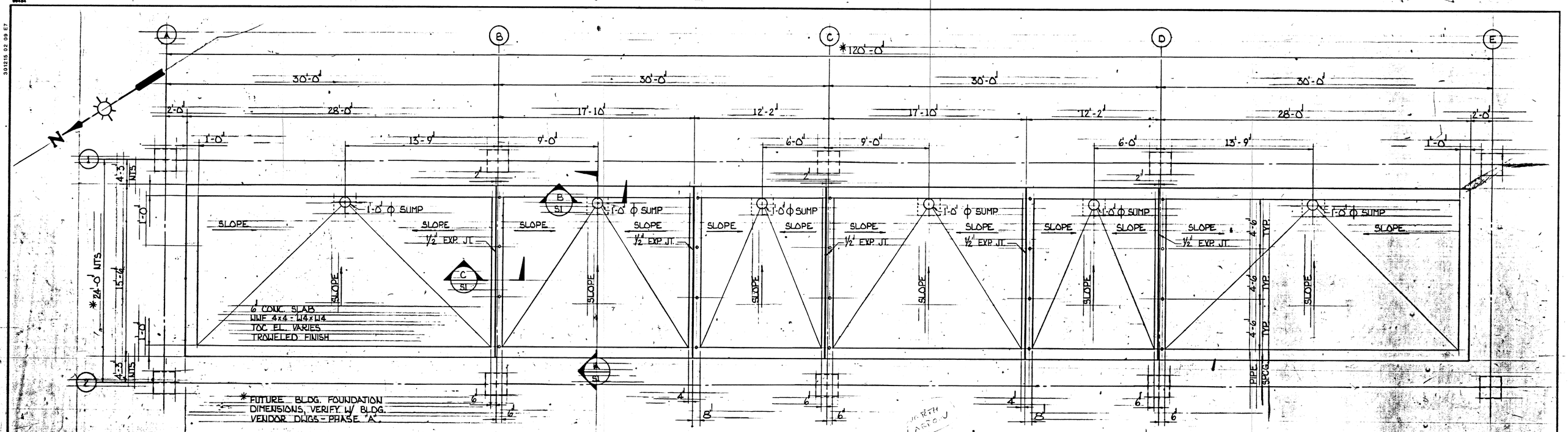
Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET C1 1 OF 2

CLASSIFICATION U REVIEWER Bruce Ferson DATE 8-8-85

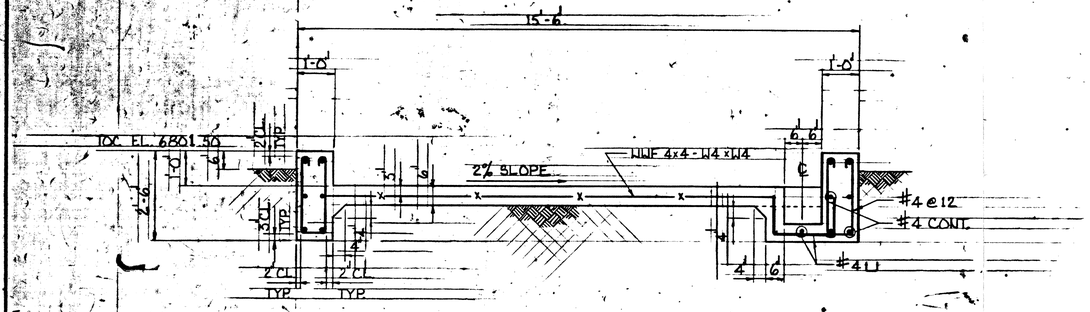
REQUESTING DIVISION HSE-DO
REQUESTING GROUP HSE-7
LAB JOB NO. 8204-54 PHASE "C"
DRAWING NO. ENG-C 44856
REV.

14988-L



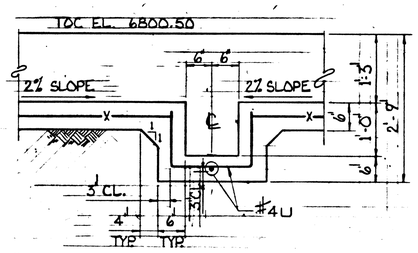
FOUNDATION PLAN

SCALE: 1/4" = 1'-0"



SECTION A

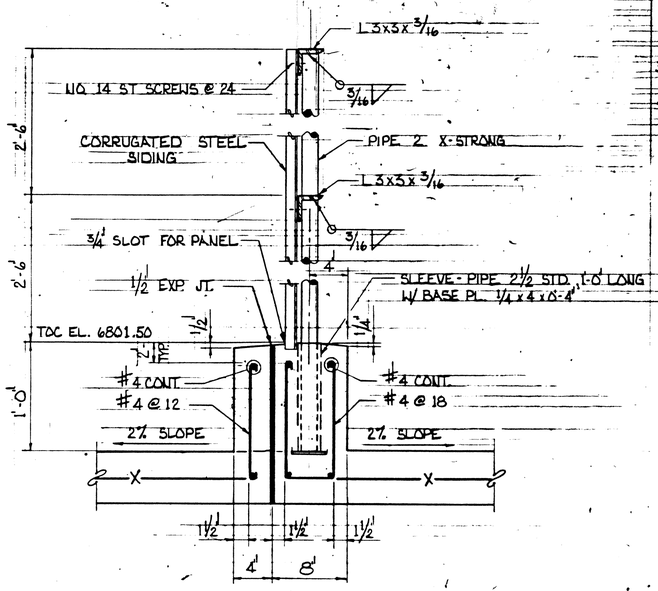
SCALE: 1/2" = 1'-0" (A / S1)



SECTION B

TYP. 6 PLCS.

SCALE: 3/4" = 1'-0" (B / S1)



SECTION C

SCALE: 1 1/2" = 1'-0" (C / S1)

STRUCTURAL NOTES:

1. STRUCTURE EXCAVATION - EXCAVATE FOR WALLS & SLABS IN ACCORDANCE WITH ELEVATIONS & DIMENSIONS SHOWN ON THIS DRAWING. EXCAVATION SHALL EXTEND A SUFFICIENT DISTANCE FROM WALLS TO ALLOW FOR PLACING & REMOVAL OF FORMS. OVEREXCAVATION BELOW ELEVATIONS SHOWN SHALL BE RESTORED TO PROPER ELEVATION BY BACKFILLING WITH CONCRETE. THE EXCAVATION SHALL BE INSPECTED BY ENG-1 INSPECTOR PRIOR TO PLACING REINFORCING STEEL.

2. CONCRETE CONSTRUCTION SHALL BE IN CONFORMANCE WITH FACILITIES ENGINEERING DIVISION STANDARD SPECIFICATIONS:
   - SECTION 03100 - CONCRETE FORMWORK, 3/4" CHAMFER
   - SECTION 03200 - REINFORCING STEEL, GRADE 60
   - SECTION 03300 - CAST-IN-PLACE CONCRETE, f'_c = 4000 PSI

   FINISH WALLS & SLABS WITH A PREMIXED, SINGLE APPLICATION, SEALER & HARDENER FLOOR FINISH. THE FINISH SHALL BE DELIVERED TO THE JOB SITE IN UNBROKEN CONTAINERS & APPLIED IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS.

3. MISCELLANEOUS STEEL - MATERIAL, FABRICATION, ERECTION & PAINTING OF STEEL SHALL CONFORM TO SITE ENGINEERING STANDARD SPECIFICATION SECTION 05120 - STRUCTURAL STEEL.

   BARRIER PANELS SHALL BE 26 GAUGE, 2 1/2" x 1/2" CORRUGATED GALVANIZED STEEL CONFORMING TO ASTM A446 GR-90. FASTEN WITH NO. 14 SELF-TAPPING SCREWS.

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	REQ GRP	REQ D.O.	ENG GRP	ENG D.O.
1	8-8-86		"AS BUILT"	RS						

FACILITIES ENGINEERING DIVISION

FIGURE 5
TA-54, AREA L
CHEMICAL STORAGE FACILITY
STRUCTURE MD-32 TA-54

DRAWN B. SANCHEZ
DESIGN B. Sanchez
CHECKED C. SANCHEZ
RELEASED A. Jones
DATE 8-9-85

SUBMITTED C. Sanchez RECOMMENDED Bruce Jernon APPROVED J. Martz

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET S1 2 OF 2

CLASSIFICATION U REVIEWER Bruce Jernon DATE 7-25-85

REQUESTING DIVISION HSE-DO REQUESTING GROUP HSE-7 | LAB JOB NO. 8204-54 PHASE "C" | DRAWING NO. ENG-C 4485 | REV.

14988-K

DRAWN BY	LLF	CHECKED BY	KK	10/24/88	DRAWING NUMBER 301215 02 09A1
	10/21/88	APPROVED BY	CLJ		

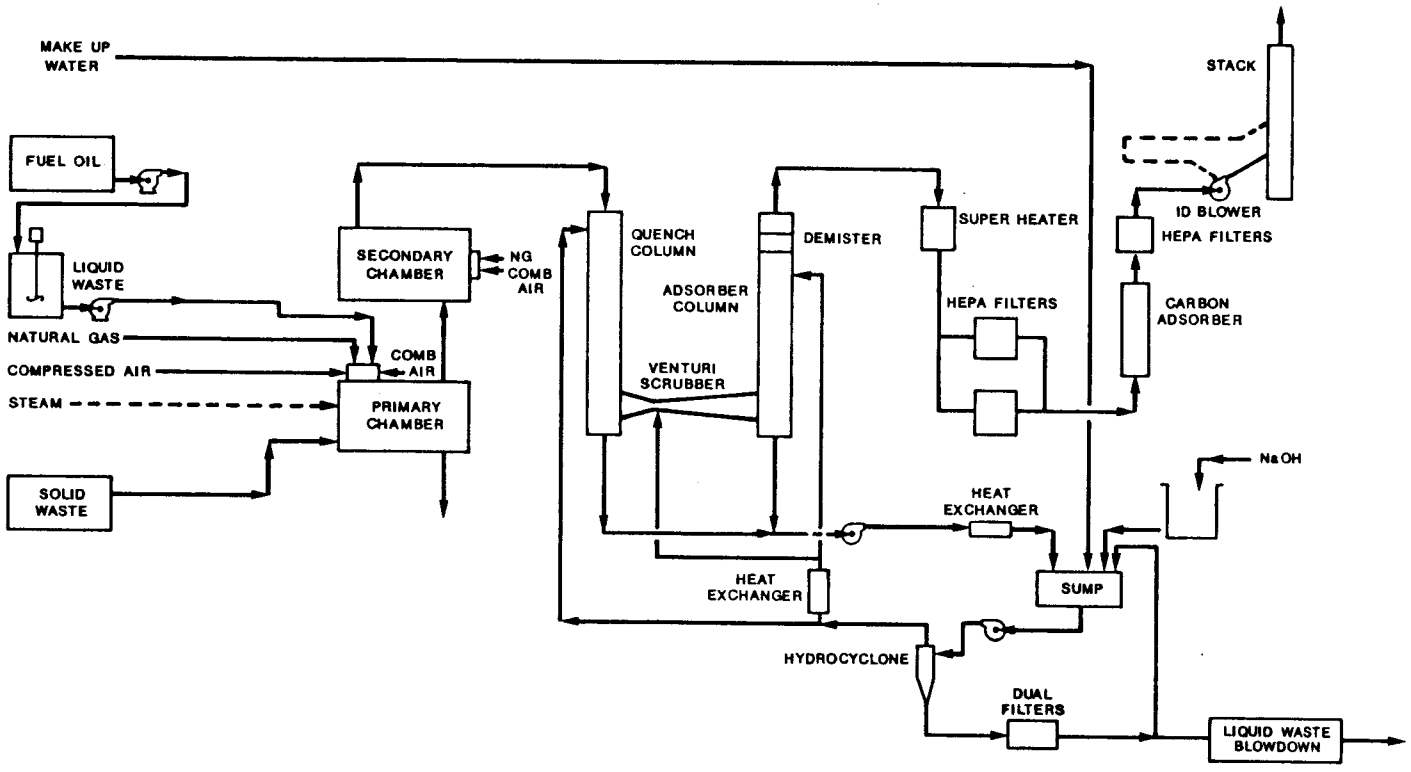


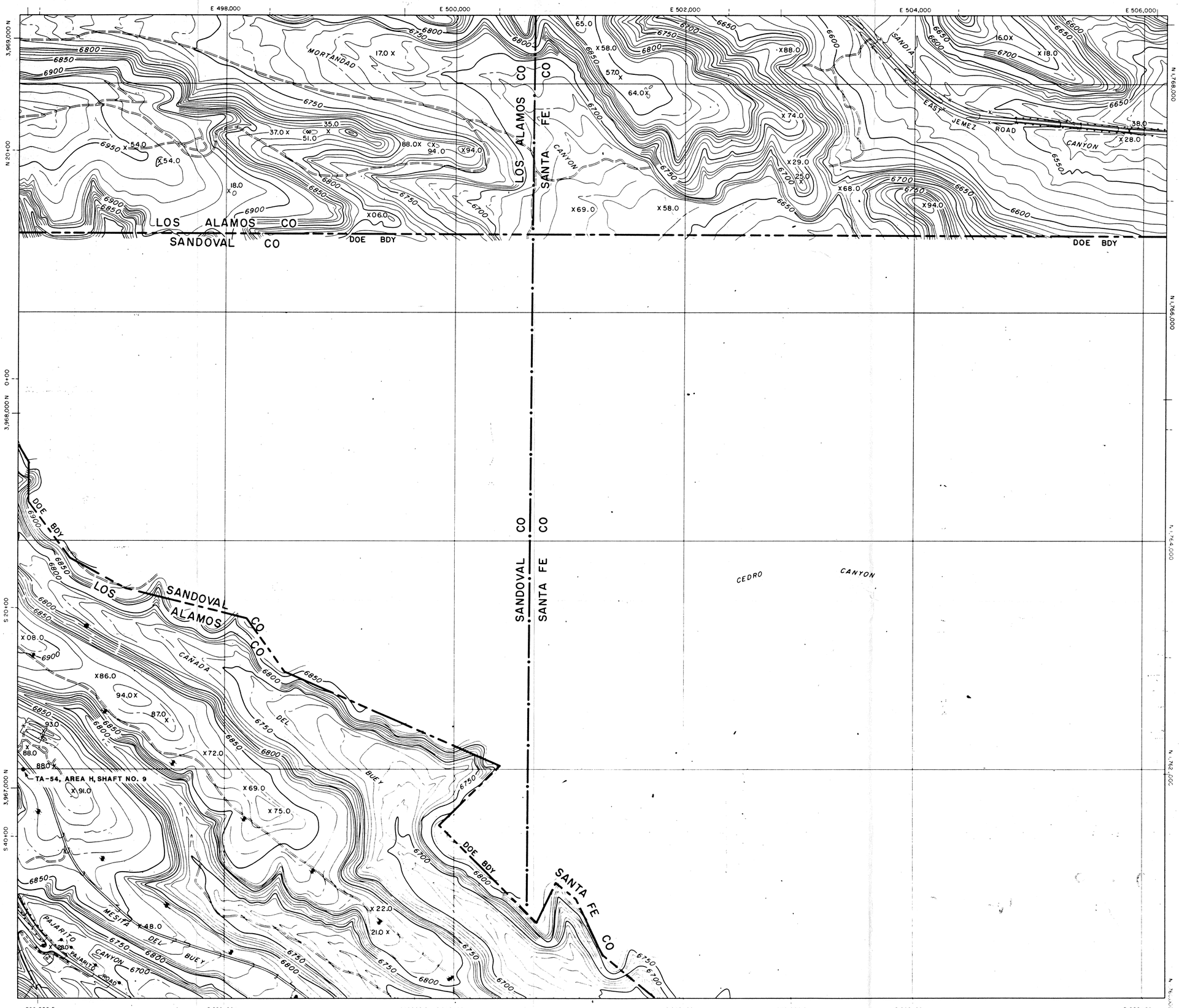
FIGURE 12

INCINERATOR PROCESS DIAGRAM

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

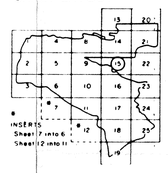


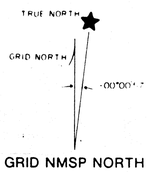
LEGEND

x 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

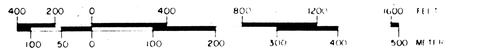
35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tons	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.



GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft

TECHNICAL AREAS

LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 7

CONTOUR MAP SHOWING THE LOCATION OF TA-54, AREA H, SHAFT NO. 9

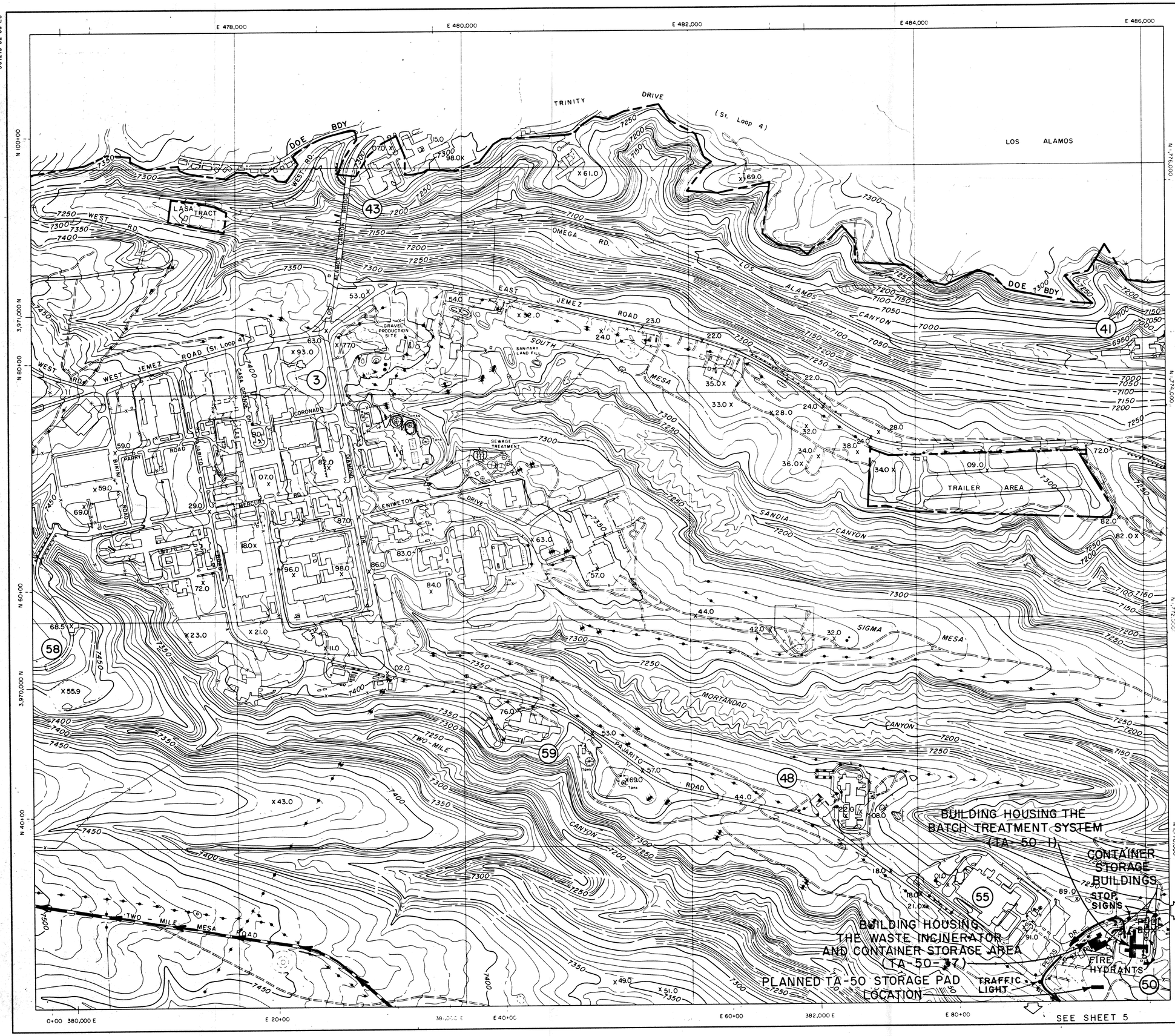
LAB JOB NO. 5682

1" =400' SCALE

PLAN / TOPO

SHEET 15 OF 25

14988 L

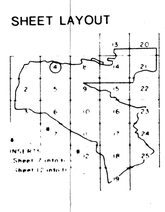


LEGEND

x 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
—6900—	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT		RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		EVACUATION ROUTE

SHEET LAYOUT



NORTH

GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

3 SM–SITE	41 W–SITE	58 WM–SITE
43 HRL–SITE	48 RC–SITE	
58 TWO MILE NORTH–SITE	55 PLUTONIUM FACILITY SITE	
59 OH–SITE		

LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 8

CONTOUR MAP SHOWING THE LOCATIONS OF THE BATCH TREATMENT SYSTEM AND CONTAINER STORAGE AREA AND THE WASTE INCINERATOR

LAB JOB NO. 5682

1"=400' SCALE

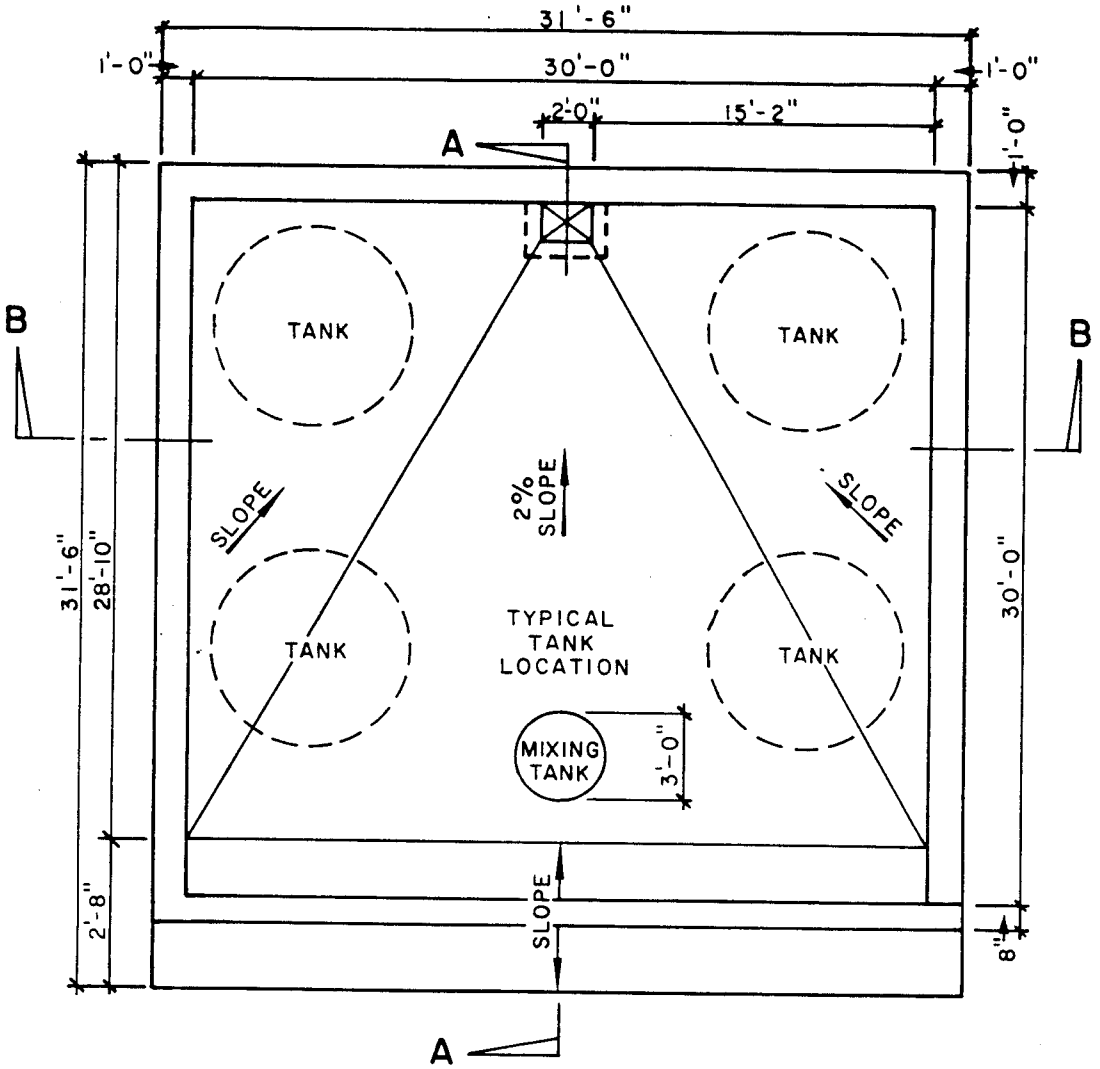
PLAN / TOPO

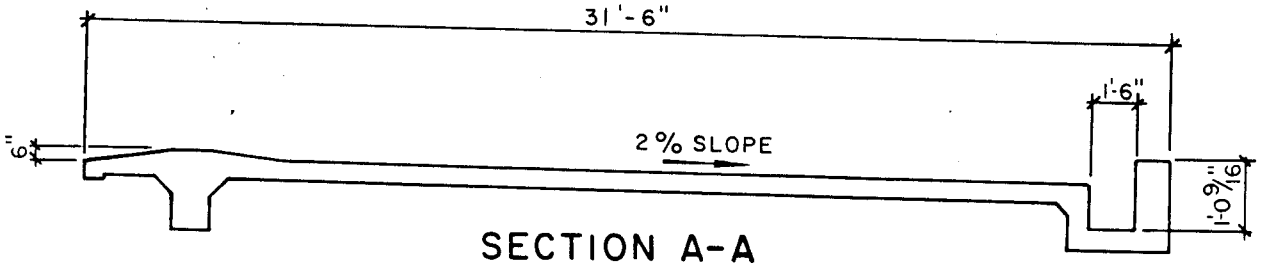
SHEET 4 OF 25

IT Corporation
General Revisions Nov. 1987

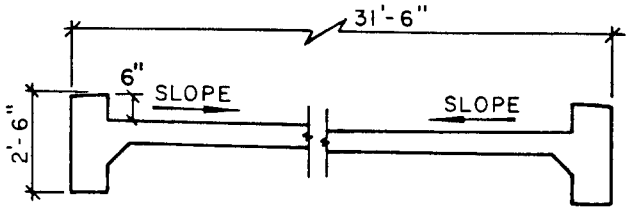
Checked by SWS 11/16/87
Approved by DES 11/16/87

14988-I





SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

FIGURE 19

TA 54, AREA L
TREATMENT TANKS
PLAN

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

DRAWN BY	LLF 11/16/87	CHECKED BY / APPROVED BY		DRAWING NUMBER 301215 02 09 A17

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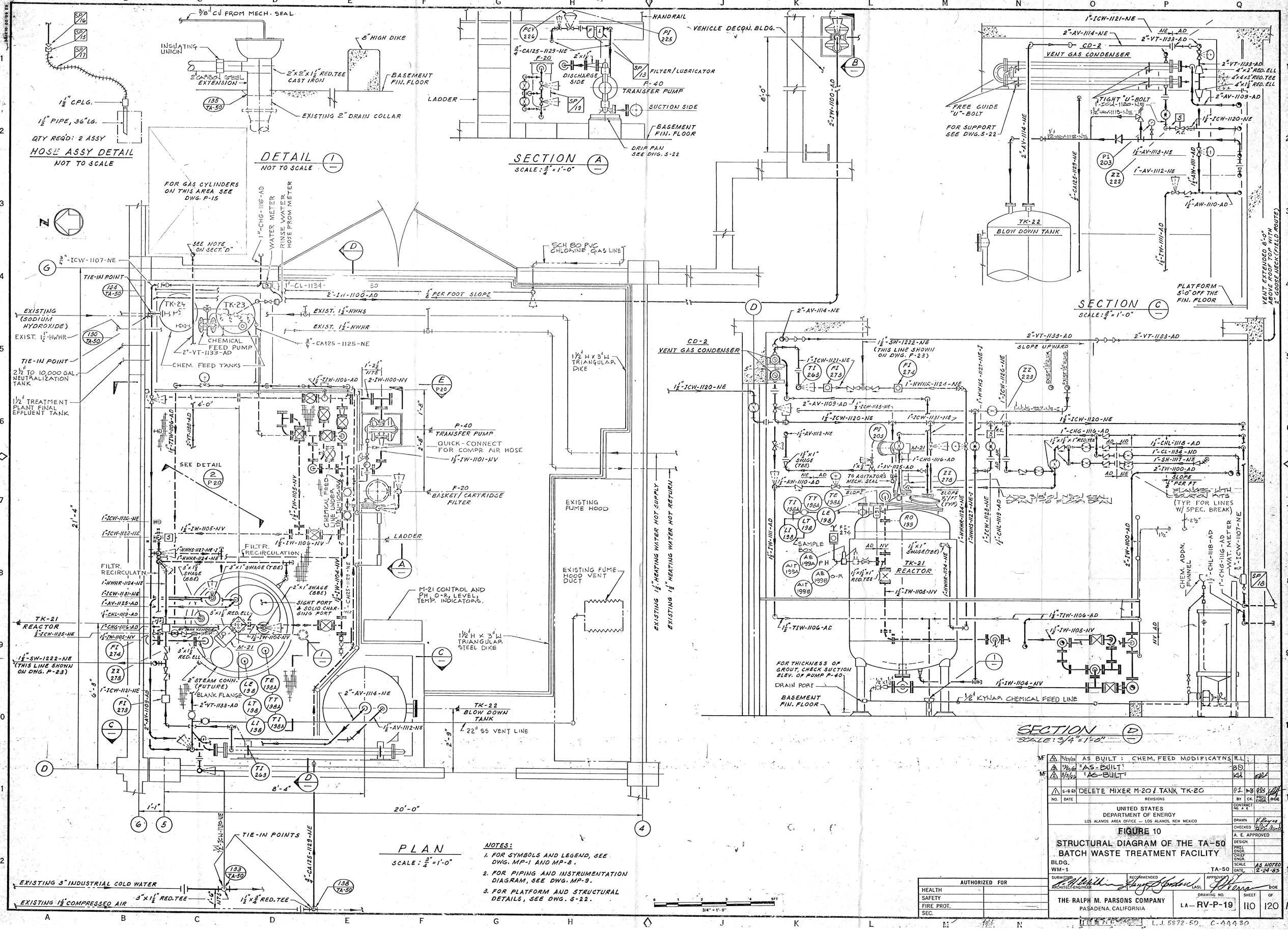
"Do Not Scale This Drawing"

65360

IT ... Creating a Safer Tomorrow


HOSE ASSY DETAIL
NOT TO SCALE
QTY REQ'D: 2 ASSY
1½" CPLG.
1½" PIPE, 36" LG.
DETAIL 1
NOT TO SCALE
3/8" CU FROM MECH. SEAL
INSULATING UNION
2" CARBON STEEL EXTENSION
2"x2"x1½" RED. TEE CAST IRON
8" HIGH DIKE
BASEMENT FIN. FLOOR
EXISTING 2" DRAIN COLLAR
SECTION A
SCALE: 3/4" = 1'-0"
HANDRAIL
VEHICLE DECON. BLDG.
FILTER/LUBRICATOR
P-40 TRANSFER PUMP
DISCHARGE SIDE
SUCTION SIDE
LADDER
DRIP PAN SEE DWG. S-22
SECTION C
SCALE: 3/4" = 1'-0"
TK-22 BLOW DOWN TANK
FREE GUIDE "U"-BOLT
FOR SUPPORT SEE DWG. S-22
TIGHT "U"-BOLT
PLATFORM 5'-0" OFF THE FIN. FLOOR
VENT EXTENDED 8'-0" ABOVE ROOF TOP WITH 2" GOOSE NECK (FIELD ROUTE)
FOR GAS CYLINDERS ON THIS AREA SEE DWG. P-15
WATER METER
RINSE WATER HOSE FROM METER
SCH 80 PVC CHLORINE GAS LINE
TIE-IN POINT
EXISTING (SODIUM HYDROXIDE)
EXIST. 1½"-HWHR
TIE-IN POINT
2½ TO 10,000 GAL. NEUTRALIZATION TANK
1½" TREATMENT PLANT FINAL EFFLUENT TANK
TK-24
TK-23
CHEMICAL FEED PUMP
CHEM. FEED TANKS
EXIST. 1½"-HWHS
EXIST. 1½"-HWHR
1½" H x 3" W TRIANGULAR DIKE
P-40 TRANSFER PUMP
QUICK-CONNECT FOR COMPR. AIR HOSE
F-20 BASKET/CARTRIDGE FILTER
SEE DETAIL 2 P20
LADDER
EXISTING FUME HOOD
EXISTING FUME HOOD VENT DUCT
FILTR. RECIRCULATION
M-21 CONTROL AND PH, O-R, LEVEL, TEMP. INDICATORS.
SIGHT PORT & SOLID CHARGING PORT
TK-21 REACTOR
2" STEAM CONN. (FUTURE)
BLANK FLANGE
TK-22 BLOW DOWN TANK
22" SS VENT LINE
EXISTING 1½" HEATING WATER HOT SUPPLY
EXISTING 1½" HEATING WATER HOT RETURN
PLAN
SCALE: 3/4" = 1'-0"
TIE-IN POINTS
EXISTING 3" INDUSTRIAL COLD WATER
EXISTING 1½" COMPRESSED AIR
CD-2 VENT GAS CONDENSER
1½" SW-1222-NE (THIS LINE SHOWN ON DWG. P-23)
SLOPE UPWARD
ADD 3/8" CU NEW SEAL DRAIN TO FLOOR DRAIN
FLANGE WITH SEARCH PITS (TYP. FOR LINES W/ SPEC. BREAK)
CHEM. ADDN. FUNNEL
SAMPLE BOX
TO AGITATOR'S MECH. SEAL
FOR THICKNESS OF GROUT, CHECK SUCTION ELEV. OF PUMP P-40
DRAIN PORT
BASEMENT FIN. FLOOR
½" KYNAR CHEMICAL FEED LINE
SECTION D
SCALE: 3/4" = 1'-0"
NOTES:
1. FOR SYMBOLS AND LEGEND, SEE DWG. MP-1 AND MP-8.
2. FOR PIPING AND INSTRUMENTATION DIAGRAM, SEE DWG. MP-9.
3. FOR PLATFORM AND STRUCTURAL DETAILS, SEE DWG. S-22.
AS BUILT: CHEM. FEED MODIFICATNS
"AS-BUILT"
DELETE MIXER M-20 & TANK TK-20
REVISIONS
UNITED STATES DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE — LOS ALAMOS, NEW MEXICO
FIGURE 10
STRUCTURAL DIAGRAM OF THE TA-50 BATCH WASTE TREATMENT FACILITY
BLDG. WM-1
TA-50
AS NOTED
2-24-83
AUTHORIZED FOR
HEALTH
SAFETY
FIRE PROT.
SEC.
THE RALPH M. PARSONS COMPANY
PASADENA, CALIFORNIA
LA-RV-P-19
110
120
14988-H
L.J. 5872-50 C-44430

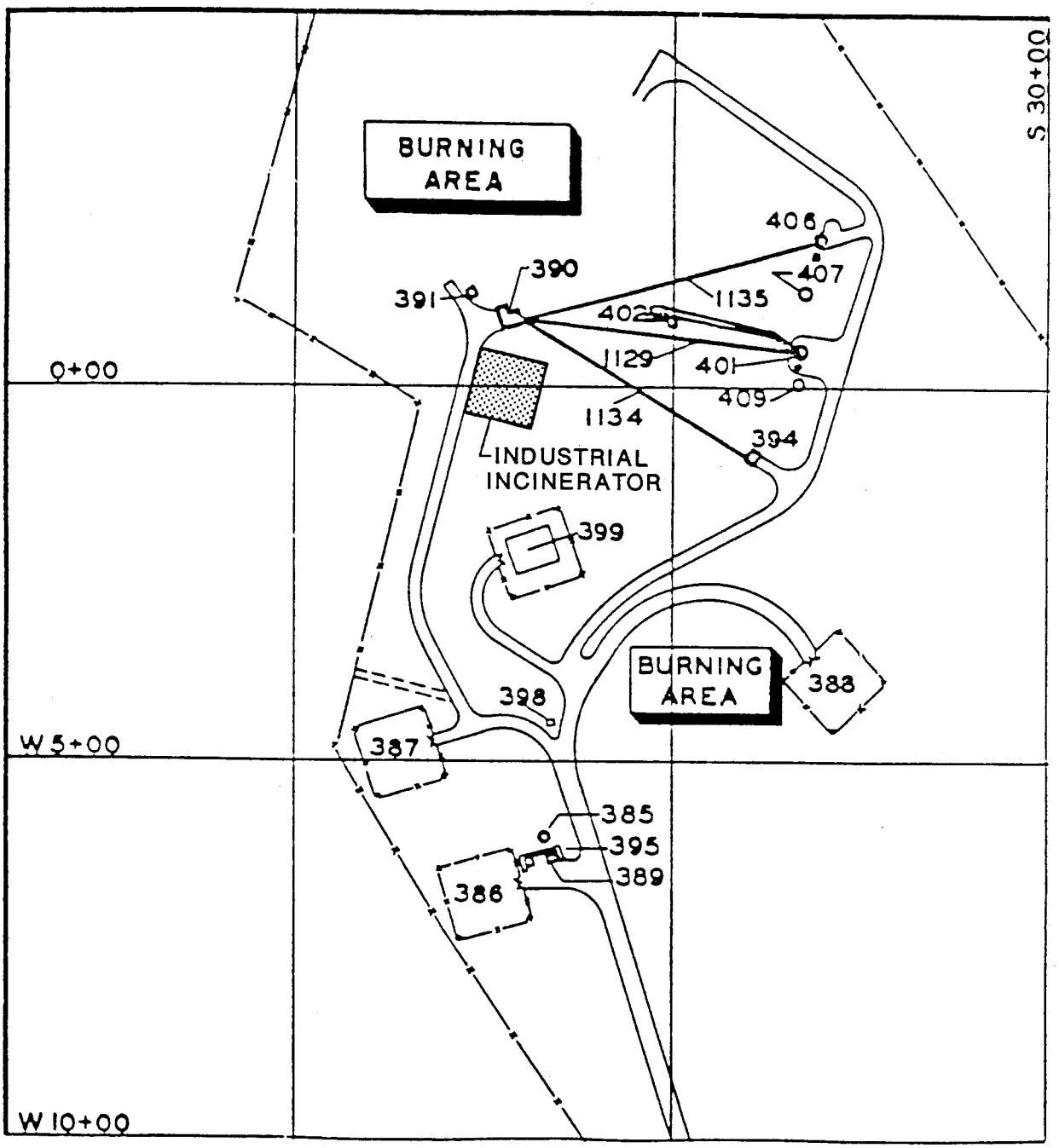


FIGURE 16

TA-16 INDUSTRIAL INCINERATOR

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY

LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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"Do Not Scale This Drawing"

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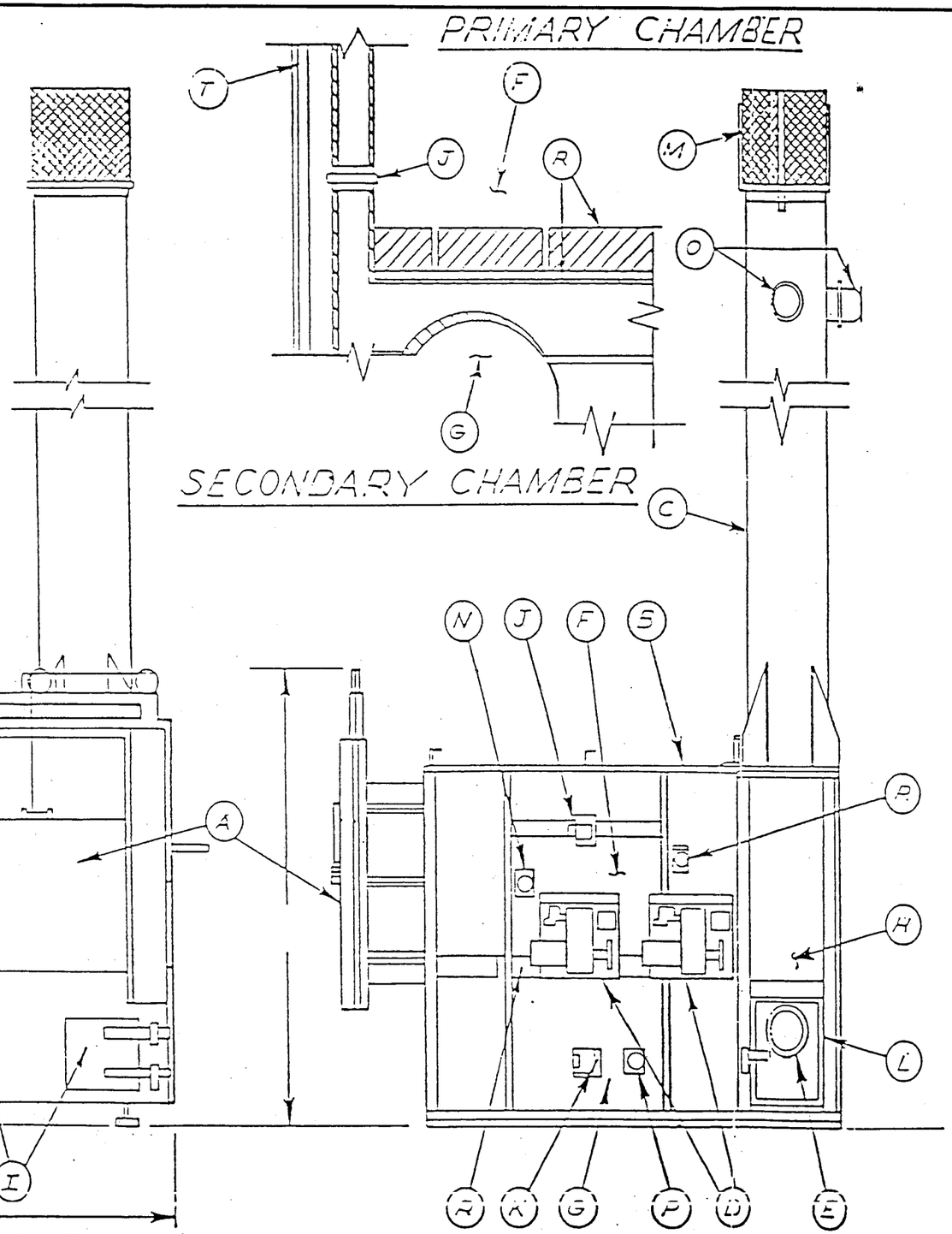
DIETZGEN

DRAWN BY	SR 10/11/88	CHECKED BY		DRAWING NUMBER	301215 02 09 B2
		APPROVED BY			



SPECIFICATIONS:

A. GUILLOTINE CHARGING DOOR 42" x 30"
B. STEEL JACKET
C. SELF SUPPORTING STACK 22" I.D. 26" O.D.
D. BURNERS & WEATHERHOODS
E. BAROMETRIC DAMPER
F. PRIMARY CHAMBER
G. SECONDARY CHAMBER
H. SEDIMENT CHAMBER
I. ASH REMOVAL DOORS
J. AIR BLOWER/PRIMARY CHAMBER
K. AIR BLOWER/SECONDARY CHAMBER
L. CLEANOUT DOOR UNDER STACK
M. SPARK ARRESTOR
N. SIGHT GLASS
O. STACK TEST PORTS
P. THERMOCOUPLES
R. HEARTH W/FIREBRICK LINING
S. INCINERATOR DIMENSIONS: 165" L x 84" W x 78" H
T. 1" BLANKET INSULATION
U. BURNING CAPACITY 380 LBS/HR. 0-4 WASTE
V. ELEC. REQ. 115/120 VOLTS AC, 60 Hz, SINGLE PHASE

"V JOINT" refractory lining

The SPRONZ exclusive "V Joint refractory lining assures longer incinerator life. High heat duty refractory is cast into V joint blocks which allow for expansion and contraction of the refractory as the temperature of the incinerator raises and lowers. This prevents cracking and spaling assuring far longer lining life than monolithic cast walls or fire brick walls. This exclusive design also permits faster erection thus cutting on-the-job time.

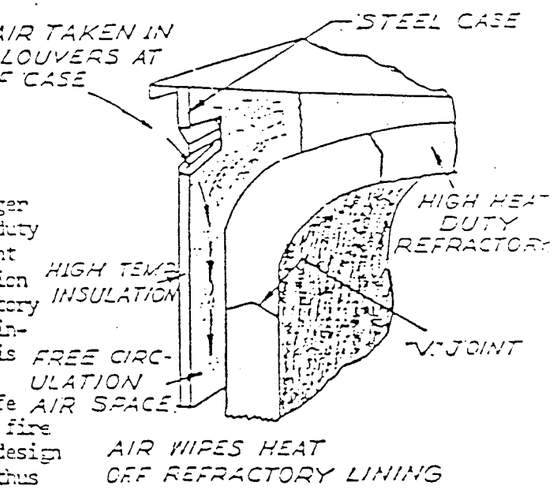


FIGURE 17

TA-16 INDUSTRIAL INCINERATOR STRUCTURAL DRAWING

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY LOS ALAMOS, NEW MEXICO

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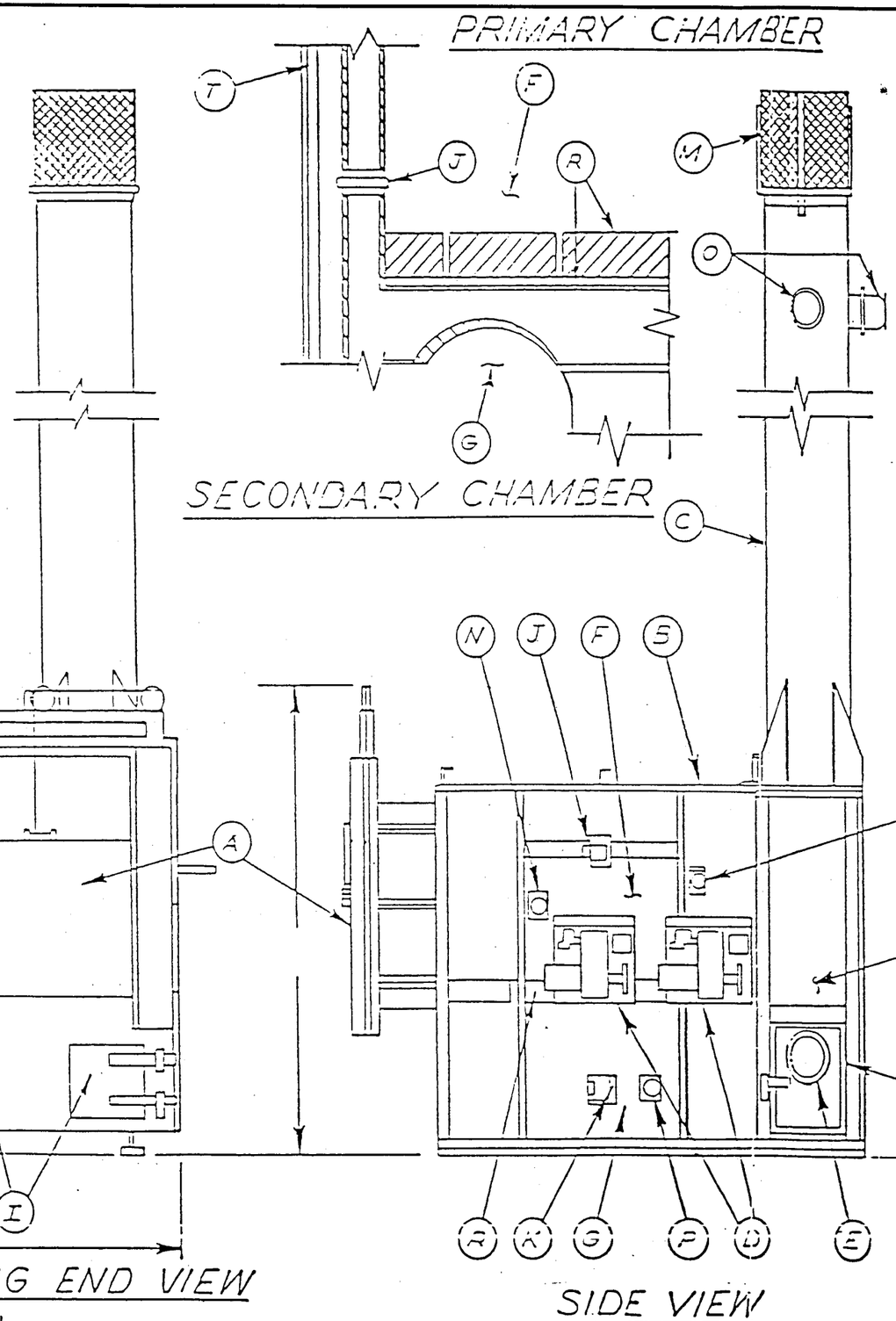
65360

IT ... Creating a Safer Tomorrow

DRAWN BY	SR 10/11/88	CHECKED BY		DRAWING NUMBER	301215 02 09 B2
		APPROVED BY			



SPECIFICATIONS:

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B. STEEL JACKET
C. SELF SUPPORTING STACK 22" I.D. 26" O.D.
D. BURNERS & WEATHERHOODS
E. BAROMETRIC DAMPER
F. PRIMARY CHAMBER
G. SECONDARY CHAMBER
H. SEDIMENT CHAMBER
I. ASH REMOVAL DOORS
J. AIR BLOWER/PRIMARY CHAMBER
K. AIR BLOWER/SECONDARY CHAMBER
L. CLEANOUT DOOR UNDER STACK
M. SPARK ARRESTOR
N. SIGHT GLASS
O. STACK TEST PORTS
P. THERMOCOUPLES
R. HEARTH W/ FIREBRICK LINING
S. INCINERATOR DIMENSIONS: 166" L x 8ft W x 73" H
T. 1" BLANKET INSULATION
U. BURNING CAPACITY 380 LBS/HR. 0-4 WASTE
V. ELEC. REQ. 115/120 VOLTS AC, 60 Hz, SINGLE PHASE

"V JOINT" refractory lining

The SPRONZ exclusive "V Joint refractory lining assures longer incinerator life. High heat duty refractory is cast into V joint blocks which allow for expansion and contraction of the refractory as the temperature of the incinerator raises and lowers. This prevents cracking and spaling assuring far longer lining life than monolithic cast walls or fire brick walls. This exclusive design also permits faster erection thus cutting on-the-job time.

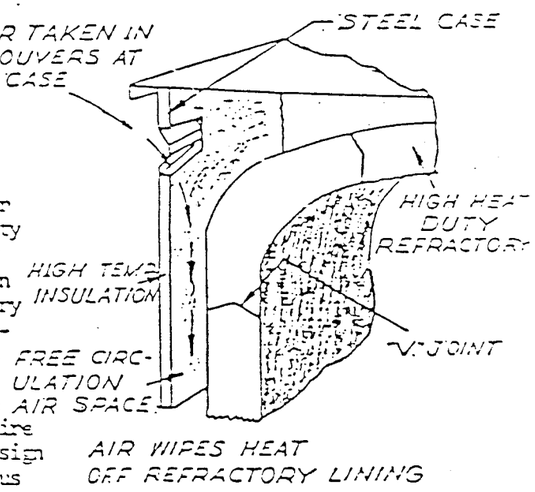

FIGURE 17

TA-16 INDUSTRIAL INCINERATOR STRUCTURAL DRAWING

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

IT ... Creating a Safer Tomorrow

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"Do Not Scale This Drawing"

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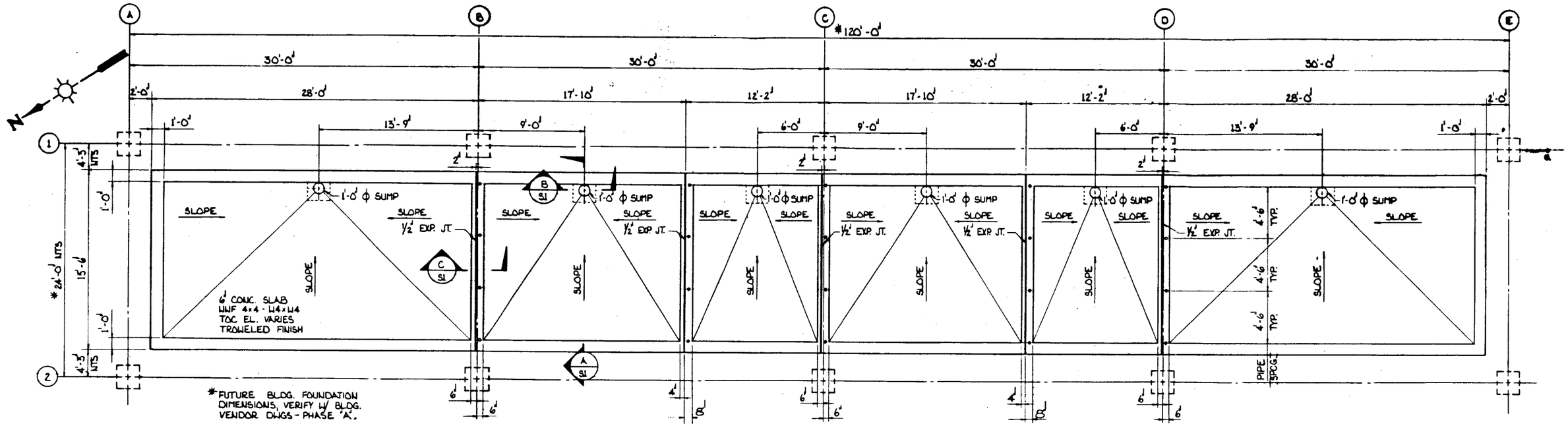
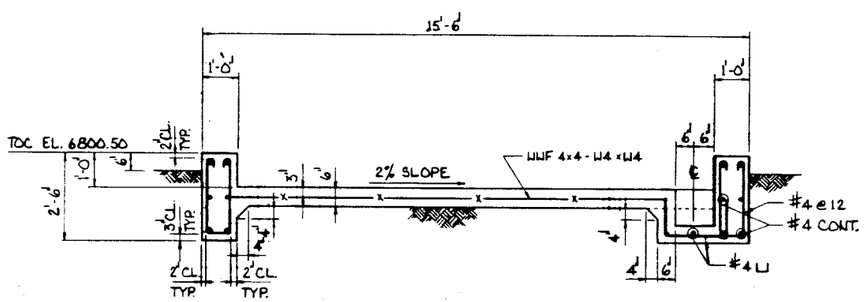


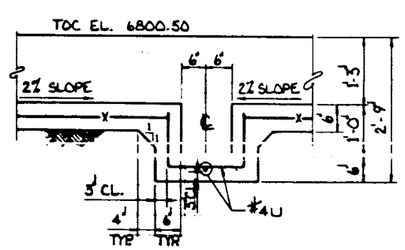
FOUNDATION PLAN

SCALE: 1/4" = 1'-0"



SECTION A / S1

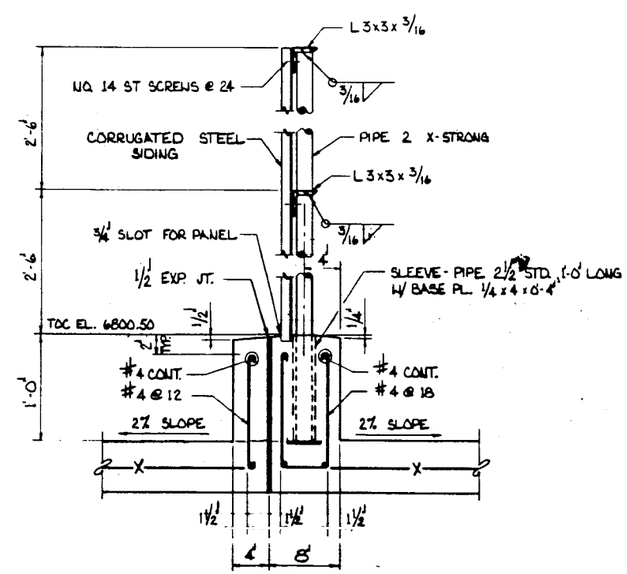
SCALE: 1/2" = 1'-0"



SECTION B / S1

TYP. 6 PLCS.

SCALE: 3/4" = 1'-0"



SECTION C / S1

SCALE: 1 1/2" = 1'-0"

STRUCTURAL NOTES

1. STRUCTURE EXCAVATION - EXCAVATE FOR WALLS & SLABS IN ACCORDANCE WITH ELEVATIONS & DIMENSIONS SHOWN ON THIS DRAWING. EXCAVATION SHALL EXTEND A SUFFICIENT DISTANCE FROM WALLS TO ALLOW FOR PLACING & REMOVAL OF FORMS. OVEREXCAVATION BELOW ELEVATIONS SHOWN SHALL BE RESTORED TO PROPER ELEVATION BY BACKFILLING WITH CONCRETE. THE EXCAVATION SHALL BE INSPECTED BY ENG-1 INSPECTOR PRIOR TO PLACING REINFORCING STEEL.

2. CONCRETE CONSTRUCTION SHALL BE IN CONFORMANCE WITH FACILITIES ENGINEERING DIVISION STANDARD SPECIFICATIONS:
   SECTION 03100 - CONCRETE FORMWORK, 3/4" CHAMFER
   SECTION 03200 - REINFORCING STEEL, GRADE 60
   SECTION 03300 - CAST-IN-PLACE CONCRETE, f'_c = 4000 PSI

   FINISH WALLS & SLABS WITH A PREMIXED, SINGLE APPLICATION, SEALER & HARDENER FLOOR FINISH. THE FINISH SHALL BE DELIVERED TO THE JOB SITE IN UNBROKEN CONTAINERS & APPLIED IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS.

3. MISCELLANEOUS STEEL - MATERIAL, FABRICATION, ERECTION, & PAINTING OF STEEL SHALL CONFORM TO SITE ENGINEERING STANDARD SPECIFICATION SECTION 05120 - STRUCTURAL STEEL.

   BARRIER PANELS SHALL BE 26 GAUGE, 2 1/2" x 1/2" CORRUGATED GALVANIZED STEEL CONFORMING TO ASTM A446 G-90. FASTEN WITH NO. 14 SELF-TAPPING SCREWS.

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	REQ ORIP	REQ D.O.	ENG ORIP	ENG D.O.

FACILITIES ENGINEERING DIVISION

FIGURE 13
CHEMICAL STORAGE TA-50

DRAWN: B. SANCHEZ
DESIGN: B. Sanchez
CHECKED: C. SANCHEZ
RELEASED: D. Frasier
DATE: 6-9-95

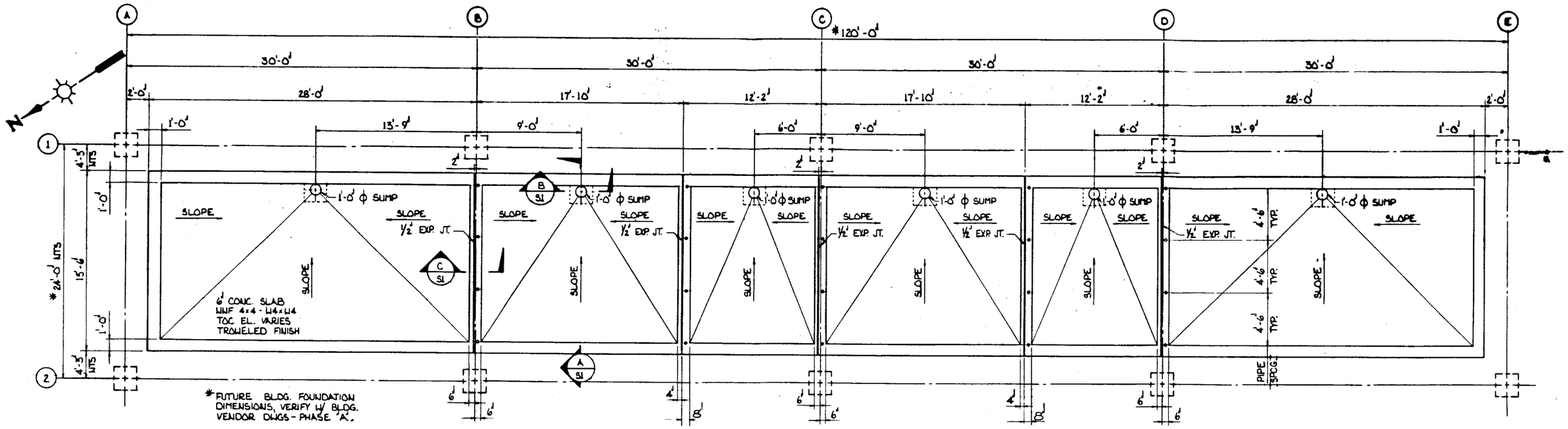
SUBMITTED: C. Armbury
RECOMMENDED: Dave Frasier
APPROVED: J. Chitty

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET S1 — 2 OF 2

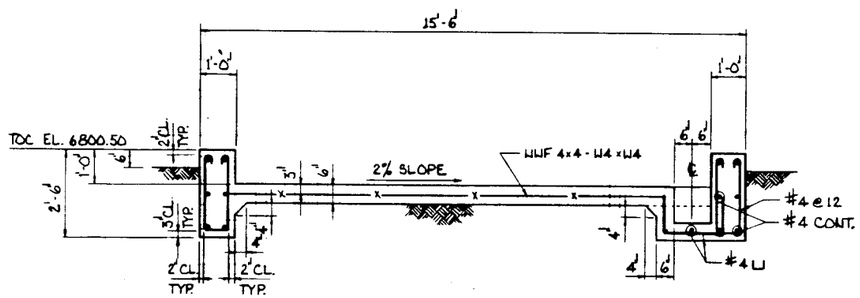
CLASSIFICATION: U
REVIEWER: Dave Frasier
DATE: 7-28-95

REQUESTING DIVISION: HSE-DO
REQUESTING GROUP: HSE-7
LAB JOB NO.: 8204-54 PHASE "C"
DRAWING NO.: ENG-C 44856
REV.:



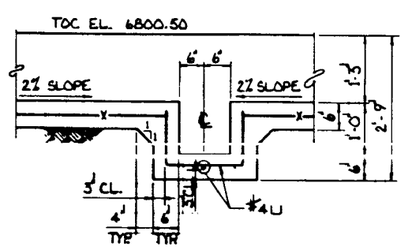
FOUNDATION PLAN

SCALE: 1/4" = 1'-0"



SECTION A / S1

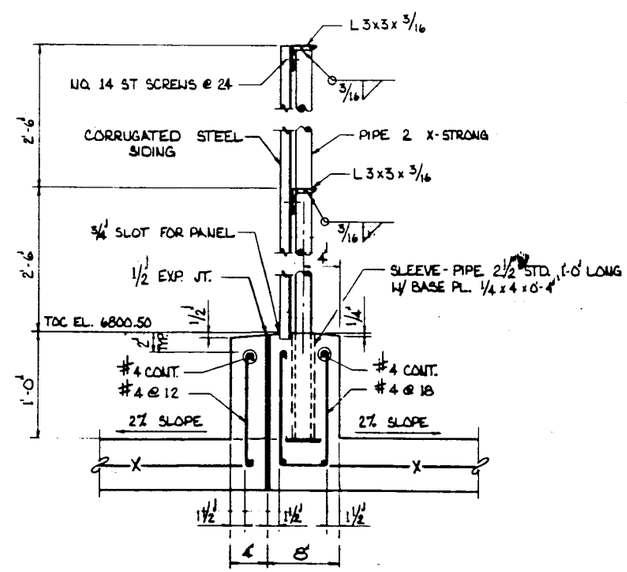
SCALE: 1/2" = 1'-0"



SECTION B / S1

TYP. 6 PLCS.

SCALE: 3/4" = 1'-0"



SECTION C / S1

SCALE: 1 1/2" = 1'-0"

STRUCTURAL NOTES

1. STRUCTURE EXCAVATION - EXCAVATE FOR WALLS & SLABS IN ACCORDANCE WITH ELEVATIONS & DIMENSIONS SHOWN ON THIS DRAWING. EXCAVATION SHALL EXTEND A SUFFICIENT DISTANCE FROM WALLS TO ALLOW FOR PLACING & REMOVAL OF FORMS. OVEREXCAVATION BELOW ELEVATIONS SHOWN SHALL BE RESTORED TO PROPER ELEVATION BY BACKFILLING WITH CONCRETE. THE EXCAVATION SHALL BE INSPECTED BY ENG-1 INSPECTOR PRIOR TO PLACING REINFORCING STEEL.

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NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	REQ GRP	REQ D.O.	ENG GRP	ENG D.O.

FACILITIES ENGINEERING DIVISION

FIGURE 13
CHEMICAL STORAGE TA-50

DRAWN: B. SANCHEZ
DESIGN: B. Sanchez
CHECKED: C. SANCHEZ
RELEASED: D. Fraser

SUBMITTED: C. Lumbreras
RECOMMENDED: Dave Fraser
APPROVED: J. Clatz

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET S1 2 OF 2

CLASSIFICATION: U
REVIEWER: Dave Fraser
DATE: 7-25-95

REQUESTING DIVISION: HSE-DO
REQUESTING GROUP: HSE-7
LAB JOB NO.: 8204-54 PHASE "C"
DRAWING NO.: ENG-C 44856
REV.:

13145/SAF
BuyLine 5195

Safety Storage Containers

for packaged chemicals and hazardous materials

- Designed to comply with regulatory standards for storing hazardous materials
- Factory-built to user requirements
- Four model sizes
- Readily available
- Relocatable

SAFETY STORAGE, INC.
18900 Stevens Creek Blvd.
Cupertino, CA 95014
408/252-2750
1-800/621-0854 Ext. 926

CARL HIME & ASSOCIATES
8220 La Mirada Road NE Suite 300
ALBUQUERQUE, NEW MEXICO 87109
(505) 292-3007

MODEL 10 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 10 SAFETY STORAGE BUILDING	$5,700

- Outside Dimensions (LxWxH): 10'6" x 6'6" x 8'4"
- Inside Dimensions (LxWxH): 10'4" x 5'9" x 6'9"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 150 Gallons
- Double-Door with Safety Lock
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- One Interior Grounding/Bonding Lug
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS

1. Shelving (per linear foot)	25
2. General-Purpose Fiberglass Grating	1,150
3. Corrosive-Resistant Fiberglass Grating	1,440
4. Polypropylene Sump Liner	600
5. Hold-down Assembly	200
6. Gas Cylinder Wall Mount (each)	55

C. MISCELLANEOUS OPTIONS

1. Emergency Eye/Face Wash (Permanent)	300
2. Emergency Eye/Face Wash (Portable)	720
3. Loading Ramp	850
4. Special Order Exterior Paint	300
5. Exterior Chemical-Resistant Finish	600

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 11

Safety Storage

Spill Containment, Fire Protection, Security

Safety Storage chemical and hazardous material containers are readily available for delivery throughout the United States. Four different size models can be used immediately upon delivery. They are turnkey units which require a minimum of site preparation. These high-quality units meet government standards and regulations for hazardous-materials storage. You can gain in many ways when you order:

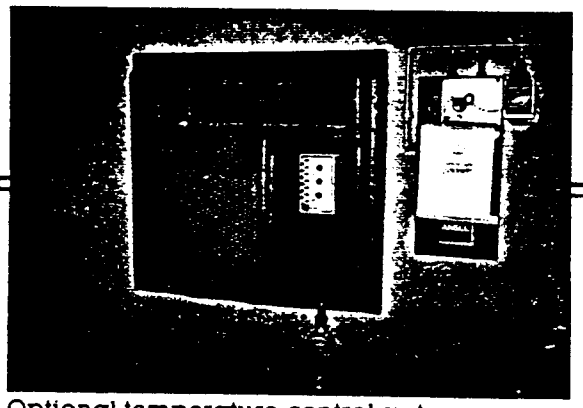
- More economical than comparable block or concrete structures.
- Can be tailored to fit your requirements.
- Avoid costly delays characteristic of on-site construction.
- Combine spill containment, security, fire protection and worker safety.
- Can be relocated on- or off-site.
- You pay only for the features you need.

Safety Storage container construction

Safety Storage containers are made of welded 10- and 12-gauge steel with supporting structural steel sections. Four models are available, the largest of which is the Model 22 with outside dimensions of 22'8" x 9' x 8'7". Three doors, each with three-point locking systems, provide access and security. The 500-gallon secondary spill-containment reservoir, the walls and the ceiling, all are covered with two coats of chemical-resistant epoxy. Maximum storage capacity is 10 tons of chemicals and hazardous materials (drums, boxes and cans). For example, thirty 55-gallon drums can be by conveniently accommodated. Loading can be by forklift or by hand. Standard floors are 1⅛" thick, epoxy-coated, fire-resistant plywood.

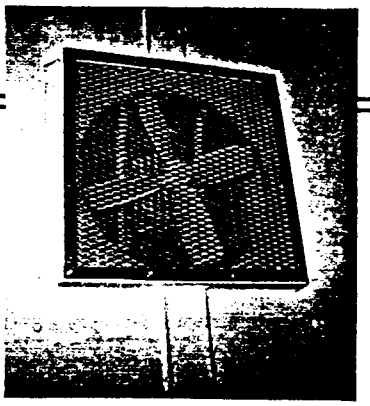
Safety features in this carefully engineered unit include a spill-containment sub-floor to prevent escape of hazardous liquids or solids. It is constructed of continuously welded 10-gauge steel which is epoxy coated to resist chemical attack. Blow-out panels are provided for pressure relief under explosive conditions. A static grounding connection helps to protect flammable materials from ignition by electrical discharge. And fire protection is supplied by three water sprinkler heads with a 2" NPT fitting located outside the container for sprinkler system hookup.

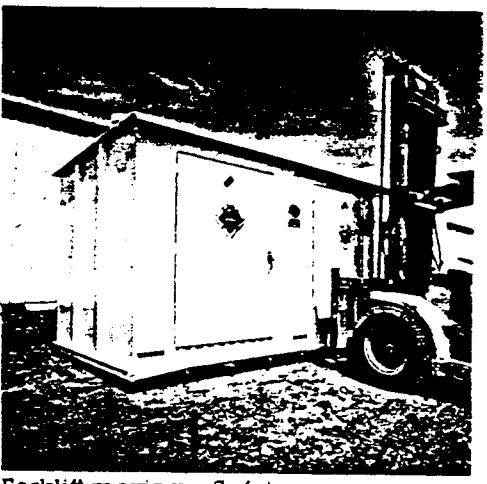
Permanent placards and NFC 704M rating signs are provided for flammable materials, corrosives, oxidizers, poisons and other hazardous materials stored within.



Optional temperature-control system for temperature-sensitive chemicals.

Non-sparking exhaust fan and protective aluminum shield (shown without louvered cover).





Forklift moving a Safety Storage chemical container to a new location.

FIGURE 14

Equipped to meet your needs

Optional features are determined by your specific storage requirements. For example: If you are going to store flammable liquids, we offer a dry chemical system to supplement or replace the standard sprinkler system. If you plan to store incompatible materials, we can install suitable separation walls. And, if you require shelf space for small containers, we can provide sturdy, epoxy-coated shelves of 15¼" depth.

Corrosives?...We offer a polypropylene spill-containment reservoir liner and fiberglass floor grating for additional protection. Do you want to monitor liquid spills continuously? Another option is a liquid-level detector that can either tie into your plant security system or an exterior audible alarm.

Worker safety?...We have selected only UL-approved equipment for lighting and explosion-proof electrical wiring systems—which also meet NEC, NFPA and NEMA requirements. The forced ventilation system is designed to provide one air change per minute and is powered by a Class I, Division I, totally enclosed explosion-proof motor. The fan has non-static aluminum blades, and the ductwork is epoxy-coated steel.

Safety Storage containers can be equipped with heating/cooling units to provide a moderated environment for stored chemicals. Double-wall insulated construction is also available.

Emergency eye/face wash units are still other worker-safety options.

How you can benefit from installing Safety Storage containers

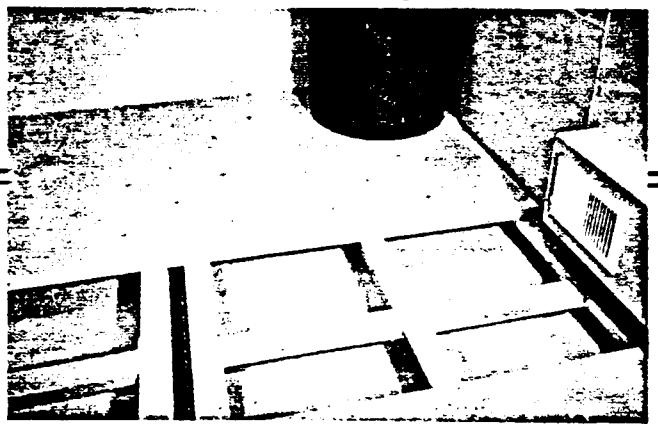
Regardless of how you equip your new Safety Storage chemical containers, you benefit in many ways:

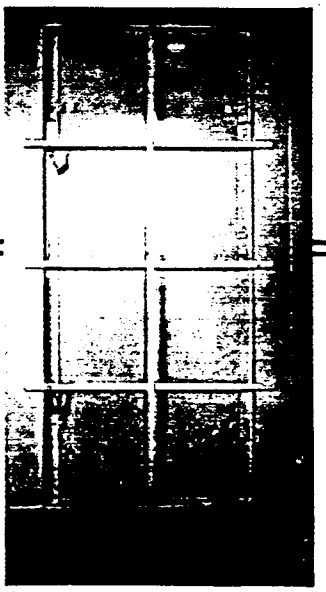
Spill containment. Soil and ground-water pollution from chemical leaks is of major concern throughout industry. Your company's possibility of liability can be reduced by using easily monitored Safety Storage containers with secondary containment for leaks and spills. We believe you will find them to be a safe, efficient solution to this potential environmental problem.

Fire protection. The risk of fire and/or explosion is always present when storing hazardous and flammable materials. Safety Storage design engineers have incorporated suggestions and recommendations from fire-protection specialists across the country to meet or exceed design and regulatory standards.

Security. Accountability and security are closely linked. It is essential in today's business climate to be

Spill-containment reservoir shown below standard plywood flooring.





Standard explosion vent panel is designed to relieve interior pressure.

A typical Model 22 plant-site installation.

Patent Pending. Copyright 1986. Safety Storage, Inc. All rights reserved.

FIGURE 14

Safety Storage

Spill Containment, Fire Protection, Security

Safety Storage chemical and hazardous material containers are readily available for delivery throughout the United States. Four different size models can be used immediately upon delivery. They are turnkey units which require a minimum of site preparation. These high-quality units meet government standards and regulations for hazardous-materials storage. You can gain in many ways when you order:

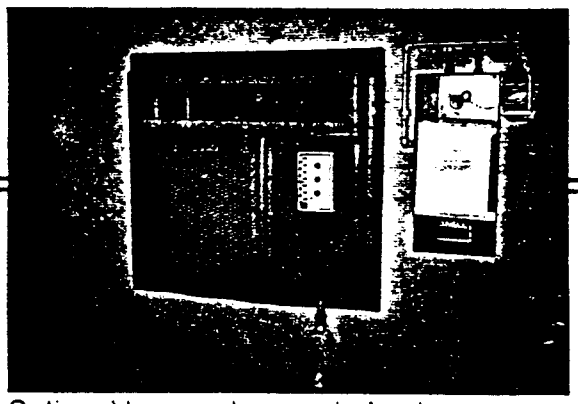
- More economical than comparable block or concrete structures.
- Can be tailored to fit your requirements.
- Avoid costly delays characteristic of on-site construction.
- Combine spill containment, security, fire protection and worker safety.
- Can be relocated on- or off-site.
- You pay only for the features you need.

Safety Storage container construction

Safety Storage containers are made of welded 10- and 12-gauge steel with supporting structural steel sections. Four models are available, the largest of which is the Model 22 with outside dimensions of 22'8" x 9' x 8'7". Three doors, each with three-point locking systems, provide access and security. The 500-gallon secondary spill-containment reservoir, the walls and the ceiling, all are covered with two coats of chemical-resistant epoxy. Maximum storage capacity is 10 tons of chemicals and hazardous materials (drums, boxes and cans). For example, thirty 55-gallon drums can be by conveniently accommodated. Loading can be by forklift or by hand. Standard floors are 1⅛" thick, epoxy-coated, fire-resistant plywood.

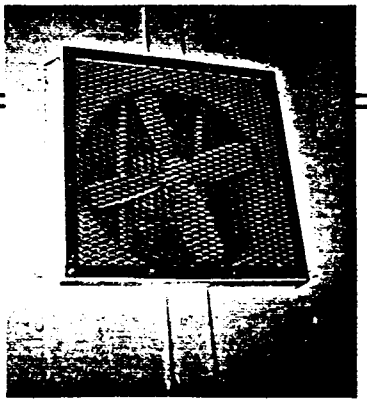
Safety features in this carefully engineered unit include a spill-containment sub-floor to prevent escape of hazardous liquids or solids. It is constructed of continuously welded 10-gauge steel which is epoxy coated to resist chemical attack. Blow-out panels are provided for pressure relief under explosive conditions. A static grounding connection helps to protect flammable materials from ignition by electrical discharge. And fire protection is supplied by three water sprinkler heads with a 2" NPT fitting located outside the container for sprinkler system hookup.

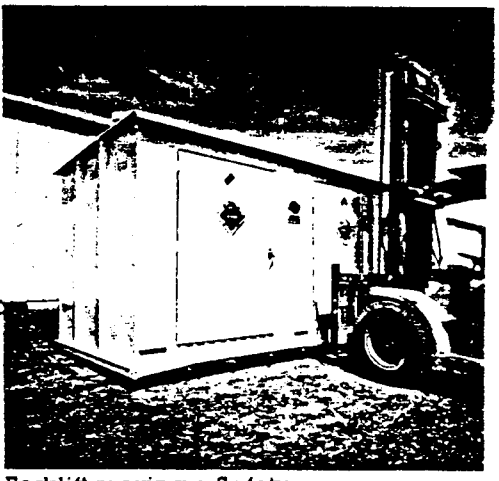
Permanent placards and NFC 704M rating signs are provided for flammable materials, corrosives, oxidizers, poisons and other hazardous materials stored within.



Optional temperature-control system for temperature-sensitive chemicals.

Non-sparking exhaust fan and protective aluminum shield (shown without louvered cover).





Forklift moving a Safety Storage chemical container to a new location.

FIGURE 14

able to document and account for the receipt, storage, handling, use and disposal of chemicals and hazardous materials. This includes tight control over access to Safety Storage containers with their three-point locking doors. Security is another Safety Storage cornerstone.

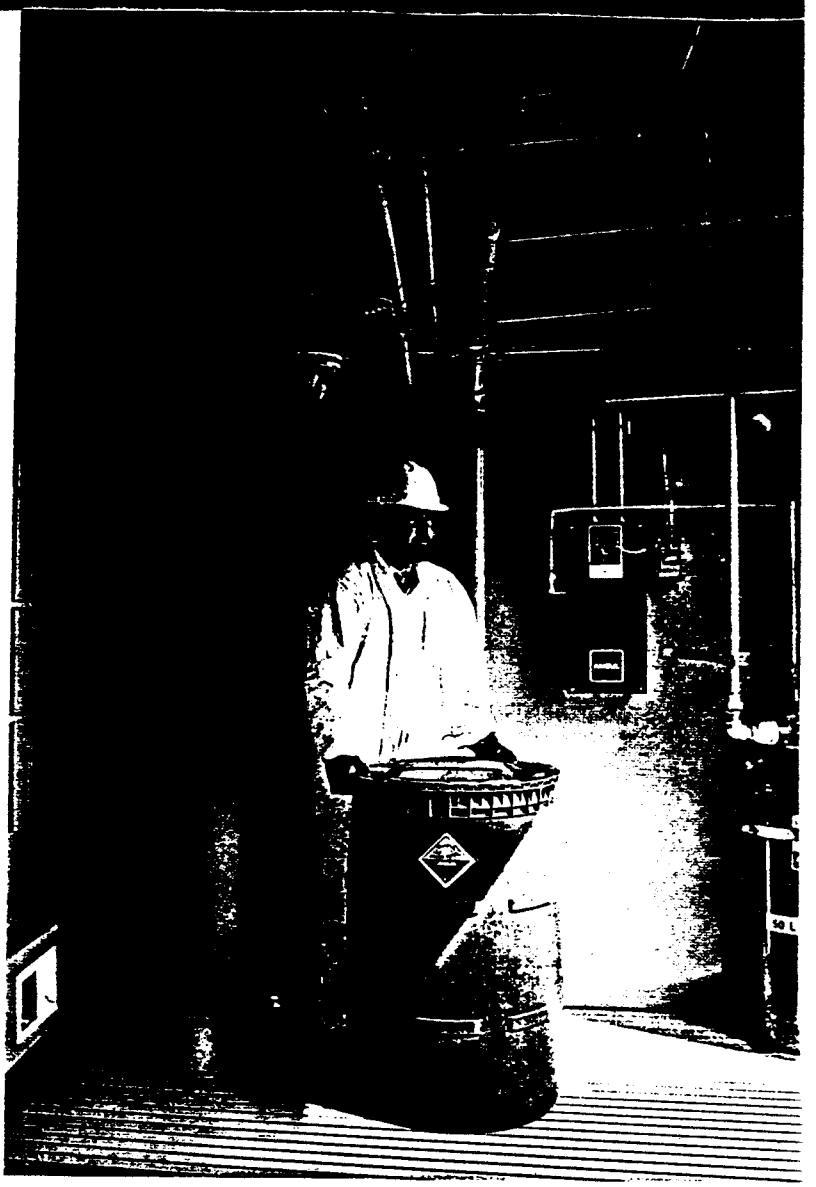
Worker safety. You can be assured that every effort has been made in the design and manufacture of these chemical storage containers to protect the safety of personnel. Safety features include warning placards, static grounding, alarms, security locks, fire and explosion protection, emergency washing facilities, ventilation, temperature control, exterior switches and sprinkler system hook-ups.

Ordering information

Features for containers manufactured by Safety Storage, Inc., can vary widely for each individual application. Therefore, design specifications are custom written to fit each model and usage. In addition, a leasing option is available to help serve your chemical-storage needs now, while conserving your capital.

Safety Storage Sales Representatives

Safety Storage sales representatives, located in most U.S. industrial communities, are trained to help you attain your safe chemical storage objectives. They will assess your chemical storage needs, prepare detailed storage-unit sketches and specifications, and provide written price quotations. Our manufacturing plants are strategically located to reduce delivery costs and shorten delivery times.



Models and basic statistics

Model	Outside Dimensions			Inside Dimensions			Weight (Lbs.)	Door Openings		Designed Storage Capacity			Sump Capacity (Gallons)
	Length	Width	Height	Length	Width	Height		Height	Width	Weight (Lbs.)	Sq. Ft.	Drums	
22	22'8"	9'0"	8'7½"	21'11¾"	8'0⅜"	7'0½"	8,600	6'9¾"	4'6"	20,000	176	24–40	570
15	15'3¾"	9'0"	8'7½"	14'7½"	8'0⅜"	7'0½"	6,000	6'9¾"	4'6"	14,000	117	16–28	380
7	8'0¼"	9'0"	8'7½"	7'3½"	8'0⅜"	7'0½"	3,400	6'9¾"	4'6"	7,000	58	8–12	190
4	6'0"	6'4½"	6'4½"	5'8½"	5'9"	4'11"	1,500	4'10"	4'7"	4,000	32½	4	85

SAFETY STORAGE, INC.
18900 Stevens Creek Blvd.
Cupertino, CA 95014
408/252-2750
1-800/621-0854 Ext. 926

The contents of this brochure outline the general capabilities of Safety Storage, Inc., containers, and should be used only as guidelines for capabilities and applicability. No warranty is implied or intended by the contents of this brochure. Individual warranties are written for each customer's specifications.

SS-101 Printed in U.S.A.

FIGURE 14

CARL HIME AND ASSOCIATES
Professional Management Services

8220 LA MIRADA RD., NE • ALBUQUERQUE, NEW MEXICO 87109 • (505) 292-3007

April 13, 1987

Ms. Karen A. Balo
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop J592
Los Alamos, New Mexico, 87545

Dear Ms. Balo:

Since my last correspondence to you, several very exciting things have happened with Safety Storage, Inc.

1. Safety Storage, Inc. has designed and brought out several new down-sized units as described on the attached price sheets and brochure. The new units are more economical to purchase and provide more flexibility for low volume users.

2. New Mexico now has four (4) of the units in use on three (3) federal agency projects or programs.

3. Safety Storage, Inc. has reengineered the Model 22 and other previously available units to reflect direct customer feedback.

4. Safety Storage Inc.'s customer list continues to grow and now looks like the who's who of high-tech manufacturing and users/generators of hazardous chemicals and wastes.

Please do not be insulted by my not having called you personally reference Safety Storage, Inc.'s products. I have followed-up on many of the inquiries, but find myself trapped between spending time with tire-kickers and real potential buyers who understand the need and cost-effectiveness of the Safety Storage Containers. This letter is an effort to let you know to let me know that you are more than a tire-kicker.

I do wish to hear from you. A note or a telephone call is all it will take to get me to call and set up an appointment with you. Please, if you have a need for the hazardous materials storage containers, let me know.

Sincerely,

, President

Carl Hime
Carl Hime and Associates

Enclosures: Price Sheets
Brochure

CH/kh

cc: Chrono

FIGURE 14

SAFETY STORAGE BUILDINGS
TEMPERATURE CONTROL OPTIONS

	Price
A. EXPLOSION-PROOF HEATING SYSTEMS (Class I, Division I, Group D)	
1. One 12,000 BTU/Hr. Heater and One Thermostat	$ 3,330
2. One 26,000 BTU/Hr. Heater and One Thermostat	4,000
3. Two 12,000 BTU/Hr. Heater and One Thermostat	4,650
4. Two 26,000 BTU/Hr. Heater and One Thermostat	6,250
5. Two 12,000 BTU/Hr. Heater and Two Thermostats	4,900
6. Three 12,000 BTU/Hr. Heater and Three Thermostats	6,700
7. Two 26,000 BTU/Hr. Heater and Two Thermostats	6,500
8. Three 26,000 BYU/Hr. Heater and Three Thermostats	9,050
B. INSULATION (R-11, with Double Wall Construction)	
1. Model 22 Safety Storage Building	
a. Ceiling, Walls, and Doors	3,700
b. Sub-Floor	1,200
2. Model 15 Safety Storage Building	
a Ceiling, Walls, and Doors	2,750
b. Sub-Floor	920
3. Model 7 Safety Storage Building	
a. Ceiling, Walls, and Doors	1,730
b. Sub-Floor	525
C. AIR CONDITIONING SYSTEMS (Explosion-Proof)	
1. Class I, Division II, Group D	
a. 10,700 BTU/Hr.	5,400
b. 16,300 BTU/Hr.	5,650
c. 24,200 BTU/Hr.	6,100
d. 35,000 BTU/Hr.	6,450
2. Class I, Division I, Group D	
a. 10,700 BTU/Hr.	6,500
b. 16,300 BTU/Hr.	6,750
c. 24,200 BTU/Hr.	7,300
d. 35,000 BTU/Hr.	7,750
D. AIR CONDITIONING/HEATING COMBINATIONS (Explosion-Proof)	
1. Class I, Division II, Group D	
a. 19,000 BTU/Hr. Cooling and 17,000 BTU/Hr. Heating	7,300
b. 34,500 BTU/Hr. Cooling and 22,000 BTU/Hr. Heating	8,250

NOTES:

1. To insulate one or two compartments of a Model 22, add a Firewall and use the Model 7 or Model 15 insulation prices for 1/3 or 2/3 building, respectively.
2. For buildings with Temperature Control and also having Ventilation Systems, add $400 to the price of the Ventilation System for Air Inlet Vents.
3. Air Conditioners require installation by end user.

FIGURE 14

MODEL 22 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 22 SAFETY STORAGE BUILDING	$14,200

- Outside Dimensions (LxWxH): 22'8" x 9' x 8'7 1/2"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 570 Gallons
- Three Doors, each with a 3-point Locking Mechanism
- Fire Sprinkler System with Three Fire Sprinklers
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- Three Interior Grounding/Bonding Lugs
- One Grounding Rod
- Three Permanent D.O.T. Placards
- Three Pressure Sensitive NFPA 704M Rating Signs

B. STRUCTURAL OPTIONS	
1. Explosion Relief Construction	2,400
2. Chemical Separation Wall, Metal	650
3. Chemical Separation Wall, 2-Hour Fire Rated	1,100
4. General-Purpose Fiberglass Grating (Building)	2,775
5. General-Purpose Fiberglass Grating (Room)	925
6. Corrosive-Resistant Fiberglass Grating (Building)	3,450
7. Corrosive-Resistant Fiberglass Grating (Room)	1,150
8. Polypropylene Sump Liner (Building)	1,440
9. Polypropylene Sump Liner (Room)	480
10. Shelving (per linear foot)	25
11. Hold-down Assembly	200
12. Gas Cylinder Wall Mount (each)	55
C. EXPLOSION-PROOF ELECTRICAL OPTIONS	
1. Ventilation System. 16" Fan. (Approx. 1,200 CFM)	1,875
2. Ventilation System. 12" Fan. (Approx. 450 CFM)	1,025
3. One Interior Light	750
4. Two Interior Lights	1,250
5. Three Interior Lights	1,650
6. One Exterior Light	800
7. Liquid Level Detector with Alarm (Per Room)	970
D. FIRE PROTECTION OPTIONS	
1. Dry Chemical Fire Suppression System (Building)	2,775
2. Dry Chemical Fire Suppression System (Room)	2,100
3. Fire Department Hookup (21/2" NHT Fitting)	75
E. MISCELLANEOUS OPTIONS	
1. Automatic Alarm-Dialing System	3,200
2. Emergency Eye/Face Wash (Permanent)	300
3. Emergency Eye/Face Wash (Portable)	720
4. Loading Ramp	850
5. Special Order Exterior Paint	400
6. Exterior Chemical-Resistant Finish	800

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

MODEL 15 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 15 SAFETY STORAGE BUILDING	$10,400

- Outside Dimensions (LxWxH): 15'4" x 9' x 8'1/2"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 380 Gallons
- Two Doors, each with a 3-point Locking Mechanism
- Fire Sprinkler System with Two Fire Sprinklers
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- Two Interior Grounding/Bonding Lugs
- One Grounding Rod
- Two Permanent D.O.T. Placards
- Two Pressure Sensitive NFPA 704M Rating Signs

B. STRUCTURAL OPTIONS	
1. Explosion Relief Construction	1,700
2. Chemical Separation Wall, Metal	650
3. Chemical Separation Wall, 2-Hour Fire Rated	1,100
4. General-Purpose Fiberglass Grating (Building)	1,850
5. General-Purpose Fiberglass Grating (Room)	925
6. Corrosive-Resistant Fiberglass Grating (Building)	2,300
7. Corrosive-Resistant Fiberglass Grating (Room)	1,150
8. Polypropylene Sump Liner (Building)	960
9. Polypropylene Sump Liner (Room)	480
10. Shelving (per linear foot)	25
11. Ho'd-down Assembly	200
12. Gas Cylinder Wall Mount (each)	55
C. EXPLOSION-PROOF ELECTRICAL OPTIONS	
1. Ventilation System. 16" Fan. (Approx. 1,200 CFM)	1,875
2. Ventilation System. 12" Fan. (Approx. 450 CFM)	1,025
3. One Interior Light	750
4. Two Interior Lights	1,250
5. One Exterior Light	800
6. Liquid Level Detector with Alarm (Per Room)	970
D. FIRE PROTECTION OPTIONS	
1. Dry Chemical Fire Suppression System (Building)	2,700
2. Dry Chemical Fire Suppression System (Room)	2,100
3. Fire Department Hookup (21/2" NHT Fitting)	75
E. MISCELLANEOUS OPTIONS	
1. Automatic Alarm-Dialing System	3,200
2. Emergency Eye/Face Wash (Permanent)	300
3. Emergency Eye/Face Wash (Portable)	720
4. Loading Ramp	850
5. Special Order Exterior Paint	350
6. Exterior Chemical-Resistant Finish	700

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

MODEL 7 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 7 SAFETY STORAGE BUILDING	$ 6,500

- Outside Dimensions (LxWxH): 8'1/4" x 9' x 8'7 1/2"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 570 Gallons
- One Door with a 3-point Locking Mechanism
- Fire Sprinkler System with One Fire Sprinkler
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- Three Interior Grounding/Bonding Lugs
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS	
1. Explosion Relief Construction	900
2. General Purpose Fiberglass Grating	925
3. Corrosive Resistant Fiberglass Grating	1,150
4. Polypropylene Sump Liner	480
5. Shelving (per linear foot)	25
6. Hold-down Assembly	200
7. Gas Cylinder Wall Mount (each)	55
C. EXPLOSION-PROOF ELECTRICAL OPTIONS	
1. Ventilation System. 12" Fan. (Approx. 450 CFM)	1,025
2. One Interior Light	750
3. One Exterior Light	800
4. Liquid Level Detector with Alarm (Per Room)	970
D. FIRE PROTECTION OPTIONS	
1. Dry Chemical Fire Suppression System	2,100
2. Fire Department Hookup (21/2" NHT Fitting)	75
E. MISCELLANEOUS OPTIONS	
1. Automatic Alarm-Dialing System	3,200
2. Emergency Eye/face Wash (Permanent)	300
3. Emergency Eye/face Wash (Portable)	720
4. Loading Ramp	850
5. Special Order Exterior Paint	300
6. Exterior Chemical-Resistant Finish	600

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

FIGURE 14

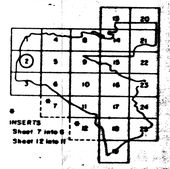
LEGEND

- X 93.0 — SPOT ELEVATION
- 6900 — INDEX CONTOUR
- INTERMEDIATE CONTOUR 10ft.
- SUPPLEMENTARY CONTOUR 5ft.
- CONTOURS THROUGH HEAVY VEGETATION
- COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
- DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
- DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
- DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.

N 1,768,000 — NMSP GRID
3,969,000 N — UTM GRID
N 240+00 — LASL GRID

- (35) TECHNICAL AREA NO.
- BUILDING
- FENCE
- PAVED ROAD
- DIRT ROAD
- JEEP TRAIL
- CULVERT
- GUARD RAIL
- TUNNEL
- EARTHEN BUNKERS
- POWER POLE
- TOWER
- PIPE LINE
- CUT LINE OR POWER LINE CLEARANCE SCAR
- WATER TOWER
- TANK
- POND
- RETAINING WALL
- EARTH DIKES OR BLASTING SHIELDS
- EARTH WORK OR GRADED AREAS
- GATE

SHEET LAYOUT



NORTH

TRUE NORTH
GRID NORTH
-00°00'57"
GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

(8) ANCHOR WEST SITE
(9) ANCHOR EAST SITE
(16) S-SITE
(22) TD-SITE

LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 15
CONTOUR MAP SHOWING
LOCATION OF TA-16
OPEN BURNING UNIT
AND TA-16-1150 INCINERATOR

14988-F

MF. ENG-R 5277

LAB JOB NO. 5682
1"=400' SCALE
PLAN / TOPO
SHEET 2 OF 2

MODEL 4 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 4 SAFETY STORAGE BUILDING	$2,900

- Outside Dimensions (LxWxH): 6' x 6'4" x 6'4"
- Inside Dimensions (LxWxH): 5'8" x5'9" x 4'11"
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 85 Gallons
- One Door with Safety Lock
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- One Interior Grounding/Bonding Lug
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS	
1. Shelving (per linear foot)	25
2. General Purpose Fiberglass Grating	700
3. Corrosive Resistant Fiberglass Grating	860
4. Polypropylene Sump Liner	375
5. Hold-down Assembly	200
C. MISCELLANEOUS OPTIONS	
1. Emergency Eye/Face Wash (Permanent)	300
2. Emergency Eye/Face Wash (Portable)	720
3. Loading Ramp	850
4. Special Order Exterior Paint	200
5. Exterior Chemical-Resistant Finish	450

DELIVERY TERMS: F.O.B. our California orPennsylvania factory.
PAYMENT TERMS: 10% Down payment with order, balance due on delivery.

FIGURE 14

MODEL 6 SAFETY STORAGE BUILDING PRICE LIST
(Effective May 1, 1987)

	Price
A. MODEL 6 SAFETY STORAGE BUILDING	$ 3,500

- Outside Dimensions (LxWxH): 6' x 6'4" x 8'4"
- Inside Dimensions (LxWxH:) 5'8" x5'9" x 6'9""
- Interior Chemical-Resistant Epoxy Coating
- Internal Spill Containment Capacity: 85 Gallons
- One Door with Safety Lock
- Epoxy-Coated Plywood Flooring
- One Exterior Grounding Connection
- One Interior Grounding/Bonding Lug
- One Grounding Rod
- One Permanent D.O.T. Placard
- One Pressure Sensitive NFPA 704M Rating Sign

B. STRUCTURAL OPTIONS

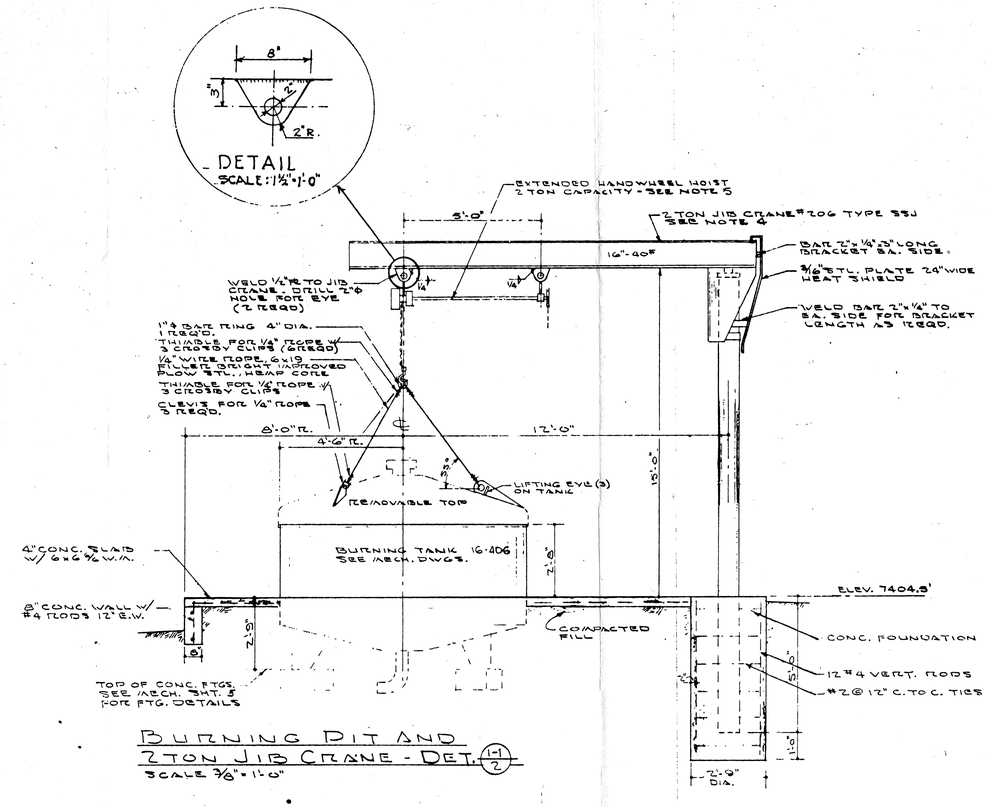
1. Shelving (per linear foot)	25
2. General Purpose Fiberglass Grating	700
3. Corrosive Resistant Fiberglass Grating	860
4. Polypropylene Sump Liner	375
5. Hold-down Assembly	200
6. Gas Cylinder Wall Mount (each)	55

C. MISCELLANEOUS OPTIONS

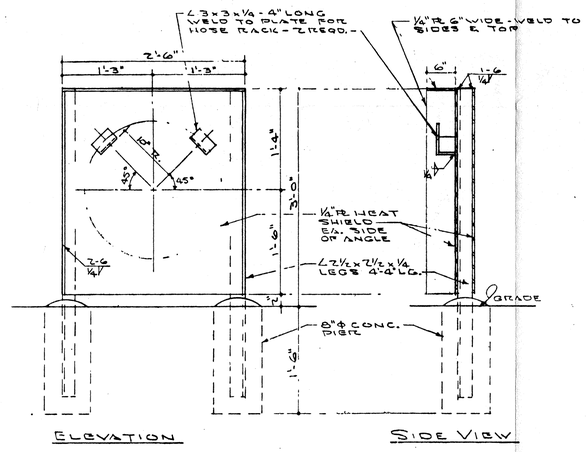
1. Emergency Eye/face Wash (Permanent)	300
2. Emergency Eye/face Wash (Portable)	720
3. Loading Ramp	850
4. Special Order Exterior Paint	250
5. Exterior Chemical-Resistant Finish	500

DELIVERY TERMS: F.O.B. our California or Pennsylvania factory.
PAYMENT TERMS: 10% down payment with order, balance due on delivery.

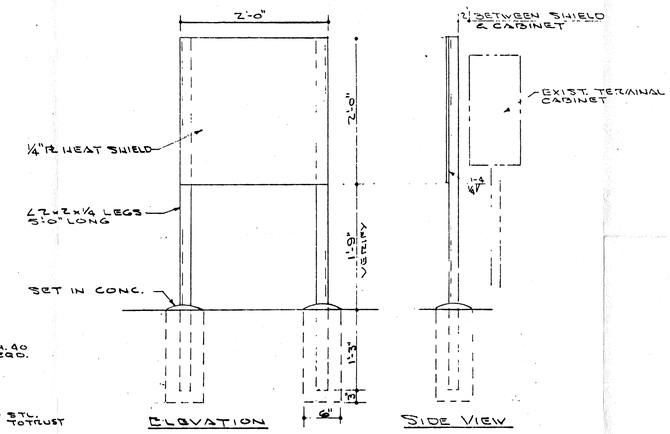
FIGURE 14



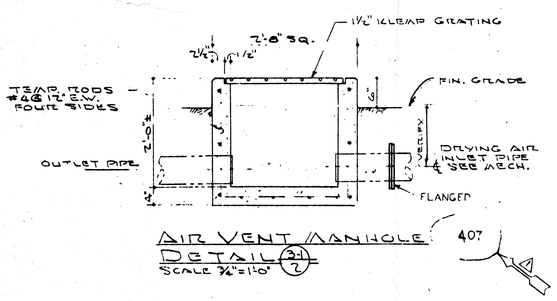
BURNING PIT AND 2 TON JIB CRANE - DET. (1-1/2)
SCALE ⅜"=1'-0"



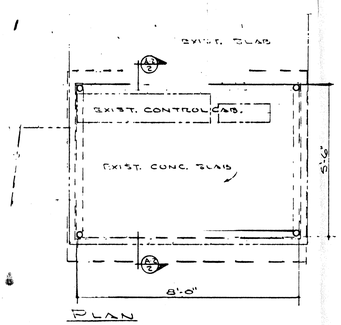
HOSE RACK & HYDRANT HEAT SHIELD - DETAIL (2-1/2)
SCALE 1"=1'-0"



CABLE TERMINAL CABINET HEAT SHIELD - DETAIL (4-1/2)
SCALE 1"=1'-0"

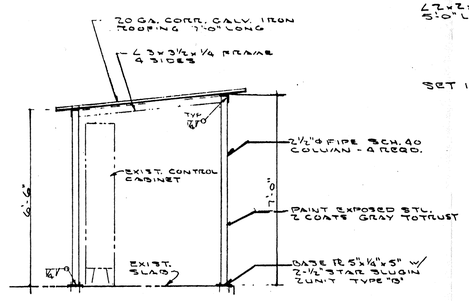


AIR VENT MANHOLE DETAIL (3-1/2)
SCALE ¾"=1'-0"



PLAN

CONTROL CABINET ROOF - DET. (3-1/2) 16-402
SCALE ⅜"=1'-0"



SECTION (A-2/2)

THIS JOB MUST BE INSPECTED, AND ANY CHANGES APPROVED BY ENGR. STALLINGS PHONE 7-4664

NO.	DATE	REVISIONS	BY	CHKD	GRP.	D. O.	GRP. LDR.	ENG. D. O.
1	11/6/64	STRUCTURE NUMBERS CHANGED	HKR					

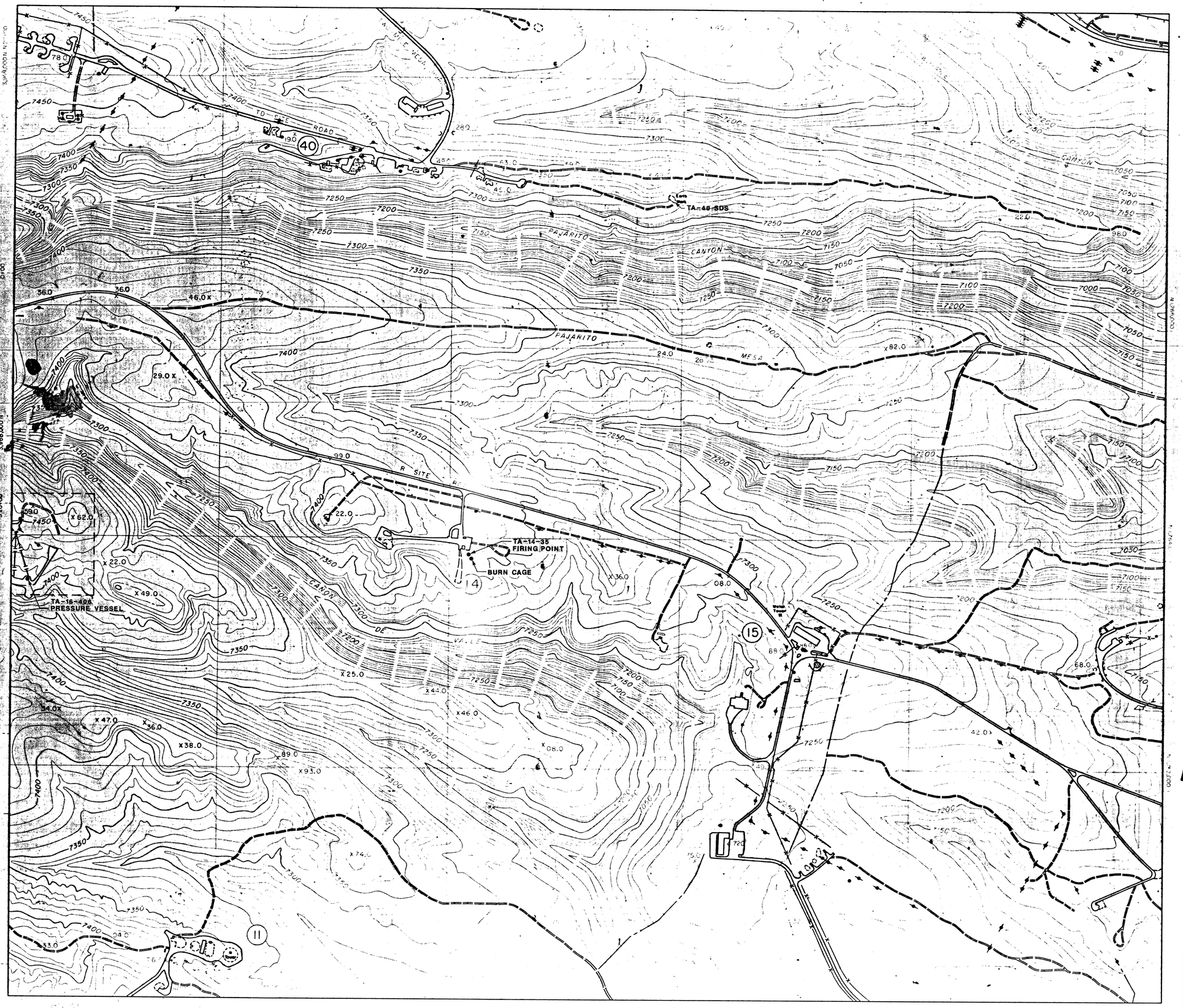
AUTHORIZED FOR
HEALTH N/A
SAFETY GAX-50
FIRE PROT. GAX-3
SEC.

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA—LOS ALAMOS, NEW MEXICO

FIGURE 18
TA-16 PRESSURE VESSEL
STRUCTURAL DRAWING

CHECKED JFZ	RECOMMENDED GROUP LEADER	APPROVED
PROJ. ENG.		ENG. DEPT. OFFICE
DESIGNER R. LENNING	DATE 21 OCT 1964	DRAWING NO.
DRAWN TEICHARDSON	SHEET 2 OF 8	ENG-C-27630
SCALE AS SHOWN		
C.A. NO.	B. A. NO.	L. J. NO. 2443D-16

14988-E

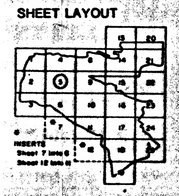


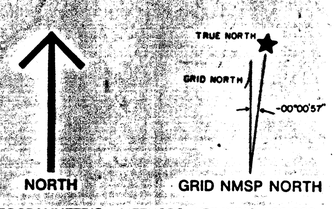
LEGEND

X 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD		TANK
	JEEP TRAIL		POND
	CULVERT		RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL		EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET

100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

11 K–SITE
14 Q–SITE
18 R–SITE
40 DF–SITE

LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 20
CONTOUR MAP SHOWING THE LOCATION OF THE TA-14 FIRING POINT AND BURN CAGE AND THE TA-40 SCRAP DETONATION SITE

ENG-R 5277

LAB JOB NO. 5682

1"=400' SCALE

PLAN / TOPO

SHEET 5 OF 25

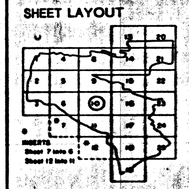
14988-D

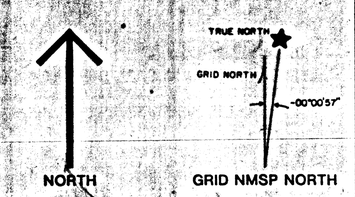
LEGEND

x 93.0	SPOT ELEVATION	N 1,758,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION.		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD		TANK
	JEEP TRAIL		POND
	CULVERT		RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL		EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

36 KAPPA SITE

15 R-SITE

LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 21
CONTOUR MAP
SHOWING THE LOCATION OF THE
TA-15 AND TA-36 FIRING POINTS

14988-C

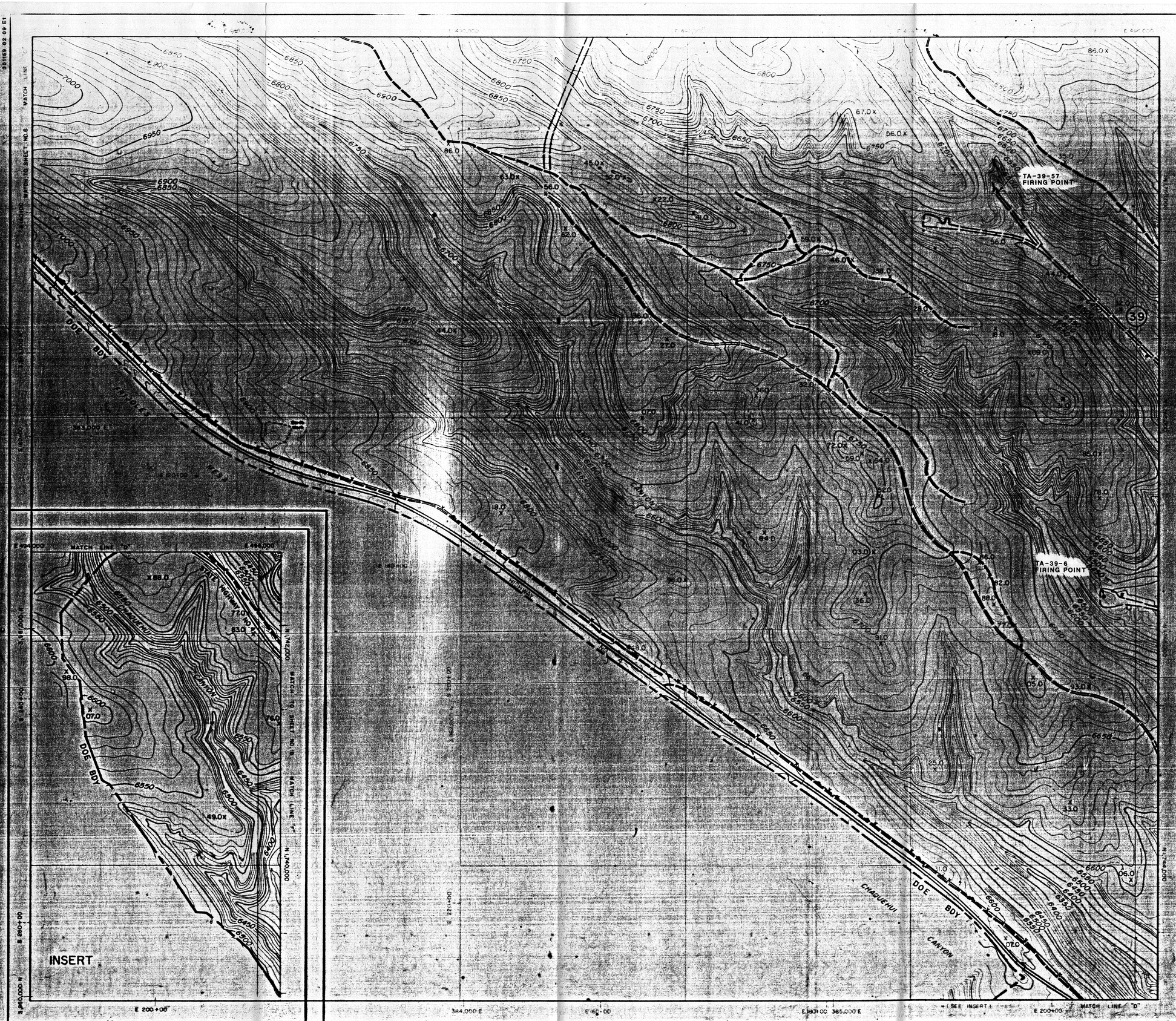
ENG-R 5277

LAB JOB NO. 5682

1"=400' SCALE

PLAN / TOPO

SHEET 10 OF 25



LEGEND

- X 93.0 — SPOT ELEVATION
- 6900 — INDEX CONTOUR
- INTERMEDIATE CONTOUR 10ft.
- SUPPLEMENTARY CONTOUR 5ft.
- CONTOURS THROUGH HEAVY VEGETATION
- COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
- DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
- DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
- DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.
- N 1,768,000 — NMSP GRID
- 3,989,000 N — UTM GRID
- N 240+00 — LASL GRID
- TECHNICAL AREA NO.
- BUILDING
- FENCE
- PAVED ROAD
- DIRT ROAD
- JEEP TRAIL
- CULVERT
- GUARD RAIL
- TUNNEL
- EARTHEN BUNKERS
- POWER POLE
- TOWER
- PIPE LINE
- CUT LINE OR POWER LINE CLEARANCE SCAR
- WATER TOWER
- TANK
- POND
- RETAINING WALL
- EARTH INDEX OR BLASTING AREA
- EARTH WORK OR GRADED AREAS
- GATE

SHEET LAYOUT

NORTH

GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:20,000, 1:12,000 & 1:9,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

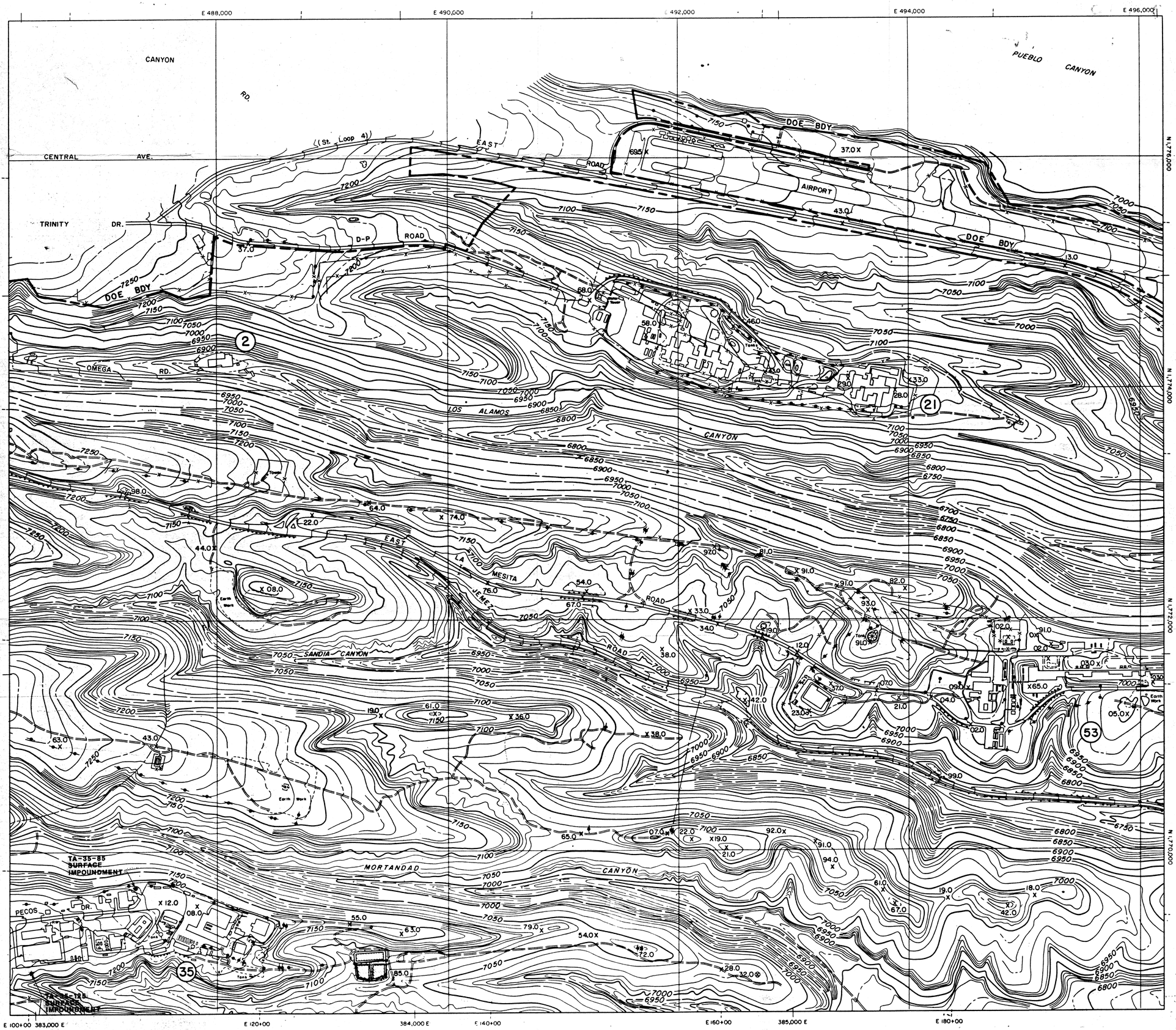
LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 22
CONTOUR MAP
SHOWING THE LOCATION OF THE
TA-39 FIRING POINTS

LAB JOB NO. 5682
1"=400' SCALE
PLAN / TOPO
SHEET 11 OF 25

ENG-R 5277

14988-B

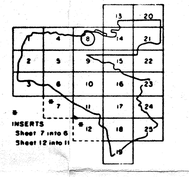


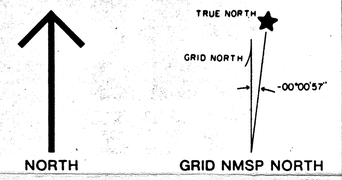
LEGEND

X 93.0	SPOT ELEVATION	N.M. 768,000	NMSP GRID
—6900—	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

(35)	TECHNICAL AREA NO.	⊠	TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

(2) OMEGA SITE (21) DP-SITE (39) TEN SITE
(53) MPF-SITE

LOS ALAMOS SCIENTIFIC LABORATORY

FIGURE 23
CONTOUR MAP SHOWING THE LOCATIONS OF THE TA-35-125 AND TA-35-85 SURFACE IMPOUNDMENTS

LAB JOB NO. 5682
1"=400' SCALE
PLAN / TOPO
SHEET 8 OF 25