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Barbara
Cory

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

MAY 16 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Benito Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
525 Camino de los Marquez
P. O. Box 26110
Santa Fe, NM 87502

Dear Mr. Garcia:

Enclosed for your review is the second quarterly progress report on the Transuranic Waste Storage Pad Remediation Project (renamed the Transuranic Waste Inspectable Storage Project [TWISP]) at the Los Alamos National Laboratory. This report is required by Section IX.C of the December 10, 1993 three-party Consent Agreement pursuant to compliance orders 93-01, 93-02, 93-03, and 93-04, and is being submitted by the Department of Energy, Los Alamos Area Office (LAAO), and the University of California.

The enclosed report includes activities related to the TWISP during the reporting period of February 1, 1994 through April 30, 1994. In order to provide the most up-to-date information regarding this project, subsequent quarterly reports will be submitted to the New Mexico Environment Department 15 days after each reporting period.

The following elements, as required by the Consent Agreement, are addressed in the enclosed report:

- I. A brief description of activities completed during the reporting period to implement the requirements of this Consent Agreement.
- II. A brief description of activities scheduled for the following reporting period.
- III. A description of any change in key project personnel which occurred during the reporting period.
- IV. A description of problems encountered during the reporting period and mechanisms used or proposed for resolving the problems.
- V. Tables and figures summarizing all data, sampling and test results for the period.



16572

MAY 16 1994

Benito Garcia

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Supporting documentation will be retained at LAAO, and will be made available to your staff upon request. If you have any questions regarding this matter, please call Jon Mack of my staff at (505) 665-5026.

Sincerely,



Joseph C. Vozella, Chief
Environment, Safety and Health
Branch

LESH:1JM-045

Enclosure

cc w/enclosure:

J. Corpion, ESH-8, LANL,
MS-K498
M. Baker, CST-7, LANL,
MS-J595
P. Schumann, CST-7, LANL,
MS-E539

cc w/o enclosure:

D. Erickson, ESH-DO, LANL,
MS-K491
K. Hargis, ESH-8, LANL,
MS-K490
A. Gancarz, CST-DO, LANL,
MS-J515
A. Drypolcher, CST-7, LANL,
MS-E517
R. Nevarez, WMD, AL

**TRANSURANIC WASTE INSPECTABLE STORAGE PROJECT
SECOND QUARTERLY PROGRESS REPORT
FEBRUARY 1, 1994 THROUGH APRIL 30, 1994**

The Transuranic (TRU) Waste Inspectable Storage Project (TWISP) was initiated in February 1993 in response to the New Mexico Environment Department's (NMED) Compliance Orders NMHWA 93-02 and 93-03. The TWISP involves the recovery of 16,865 TRU and TRU mixed waste containers currently under earthen cover on Pads 1, 2, and 4 at Technical Area (TA) 54, Area G, and placement of that waste into inspectable storage. All waste will be moved into inspectable storage by September 30, 2003. Waste recovery and storage operations will emphasize protection of worker safety, public health, and the environment.

I. Activities Performed during the Period of February 1, 1994 through April 30, 1994.

1. Construction Pending Receipt of Resource Conservation and Recovery Act (RCRA) Permit Modification Approval

On March 15, 1994, the Department of Energy (DOE) received a letter from NMED responding to a Notice of Deficiency resulting from the technical accuracy review of the permit application for new storage units associated with this project. On April 21, 1994, Los Alamos National Laboratory (LANL) staff contacted Mr. Steve Zappe of NMED to determine whether the March 15 response was, in fact, an approved permit modification. Mr. Zappe said that the letter represented an approval to begin construction but not an approved permit modification. Mr. Zappe further explained that a mixed waste permit was being prepared addressing new storage units associated with this project.

Without an approved permit modification, LANL cannot legally commence construction of any new unit designed to store mixed waste. Upon further review, NMED indicated it intended to approve a permit modification in the March 15 letter. Subsequent to the April 21 communication, NMED agreed that the March 15 letter did not clearly convey to DOE that a permit modification had been approved. NMED has thus agreed to issue another letter clearly stating that a permit modification has been approved. Approval of the permit modification is, however, contingent upon submission of a revision to the Waste Analysis Plan (WAP) to NMED by March 31, 1995. At the time of this writing, DOE had not received the written approval from NMED.

2. WAP Development

Efforts to develop a revised WAP with a specific waste analysis schedule have been initiated. For some time, a contractor has been tasked with developing a Waste Characterization Plan. The scope of that task has been revised to consolidate the previous requirements and the WAP.

3. Final Design Comment Resolution

Final resolution of all DOE design issues is anticipated as part of the approval process for the Preliminary Safety Analysis Report (PSAR). No comments have been received from NMED on the final design.

4. Preconstruction Approval for Radionuclide Emissions from the Environmental Protection Agency (EPA).

On March 2, 1994, EPA Region 6 approved a preconstruction application pursuant to the National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 CFR §61 for modifications to DOE's existing facilities. These modifications are necessary to implement the TWISP. The application outlines the anticipated off-site dose consequences associated with the TWISP.

5. Sampling in Support of Eventual Closure

In mid-April, soil samples were collected from various locations disturbed by the TWISP. Analysis of these samples will provide a baseline of information for comparison when the planned storage facilities are eventually closed.

An enhanced surveillance program around the TRU Pads has been ongoing since June 1993. Because of growing demand from environmental restoration activities and limited analytical laboratory capacity, turnaround has been slowed. In response, several commercial analytical laboratory contracts have been let to enhance analytical capabilities.

A preliminary assessment of data received to date have not identified organic or metal concentrations exceeding site-wide background (remnant laboratory-added contaminants used for extractions have been found, however). LANL is currently performing a thorough review of the data. Because it is anticipated that there will be a large volume of data

generated during the ten-year life of the TWISP, LANL proposes that data be maintained on site and available for state review, upon request.

6. Draft Health and Safety Plan, Quality Assurance Plan, and Project Management Plan

Draft versions of a Health and Safety Plan, Quality Assurance Plan, and Project Management Plan have been prepared for the TWISP. Revisions are ongoing.

7. Equipment Purchasing in Process

Equipment purchases necessary for safe waste recovery and storage are continuing. Purchase of two forklifts and a vacuum truck are nearing completion. The cost of these three items will be approximately \$500,000. The University of California (UC) anticipates that this equipment will be on site by September 1994. Arrangements for one additional on-site support trailer are currently underway.

8. Drum Vent System (DVS) Design is Nearly Complete

The final design for the DVS is nearly complete. Final design review will occur on May 17, 1994.

9. Update on Waste Verification Facilities

Plans for developing new facilities for verifying the validity of existing process knowledge are ongoing. A brief description of planned facilities is provided below:

- Waste Characterization Glovebox Phases I (sorting), II (coring), and III (head space analysis): Phase I final design review and detailed design have been completed and procurement has been initiated.
- Waste Characterization, Reduction, and Repackaging Facility (WCRRF) (formerly the Size Reduction Facility) upgrades for verification of hazardous constituents: health and safety concerns for the WCRRF are currently in review.
- Real-Time Radiography (RTR) for nonintrusive inspection of drum contents: procurement is underway; the RTR should be on-site by early 1995.

- Segmented Gamma Scanner (SGS) to quantify isotopic content of drums: a SGS is being developed within LANL and should be available by March 1995; the SGS will be augmented with additional software to give it tomographic gamma scanning capabilities.

10. Stormwater Pollution Prevention Plan (SP3) Prepared

The SP3 has been prepared and is currently in review. The SP3 will be incorporated as part of the Special Provisions during construction/contractor procurement.

11. Miscellaneous Site Tours

Several site tours have been provided to interested stakeholders. Tours were provided for the NMED's new permitting staff as well as an educational group from the University of New Mexico.

12. Training

Training requirements for construction and retrieval workers have been finalized.

II. Activities Scheduled for the Period of May 1, 1994 through July 31, 1994

1. UC will finalize the retrieval and storage facility designs in coordination with the publication of the Safety Evaluation Report and approval of the PSAR by DOE.
2. Construction will be initiated for retrieval and storage facilities as soon as all approvals are obtained including approval of the RCRA permit modification.
3. The enhanced environmental surveillance of the TRU pad area will continue. Analytical data will be provided to NMED upon request.
4. Draft documentation such as the Project Management Plan, Container Recovery Safe Operating Procedures (SOPs), the Quality Assurance Plan, and the Health and Safety Plan should be finalized. Additional draft SOPs will be developed as necessary.
5. Major equipment procurements should be completed.
6. Work will continue on planned waste verification facilities.

7. Final design review for the DVS will be completed and DVS procurement initiated.

8. Modifications to the Drum Preparation Facility will be initiated.

III. Change in key project personnel: None for this period.

IV. Problems encountered during the reporting period: None for this period.

V. Tables and figures summarizing all data, sampling and test results for the period: None for this period.

GENERATOR REQUIREMENTS FOR TEMPORARY ON-SITE STORAGE OF HAZARDOUS AND MIXED WASTE

I. Introduction

- A. Brief description of applicable regulations. Resource Conservation and Recovery Act (RCRA).
- B. Who must comply. (Who is responsible)
- 1) Anyone generating, storing, or treating a hazardous waste must comply. Virtually any technical operation at the laboratory can generate hazardous waste or mixed waste. Compliance with RCRA is mandatory for all laboratory operations where hazardous waste is generated.
 - 2) At LANL, ultimate responsibility falls to the Group Leader.¹ The Group leader is responsible for insuring that personnel receive proper training in hazardous waste procedures. The site owners/generator should be responsible for day to day operations. It is the responsibility of EM-8 to insure regulatory compliance by assisting and advising the generators.
- C. Consequences of failure to comply.
- 1) Owners/operators may be subject to civil and criminal prosecution, possibly resulting in imprisonment and fines. Liability extends to the individual. Federal facilities are subject to RCRA regulation.
 - 2) The use of a temporary storage area can be a great convenience to a program. The loss of a storage site can add further strain to a usually tight budget by siphoning funds and man-hours. Cleanup of spills or disposal areas can easily run into the millions of dollars.

¹ LANL Health and Safety Manual, Administrative Requirement 10-3

hazardous waste. Likewise, do not mix hazardous waste with radioactive or suspect radioactive waste. Sound laboratory practices must be followed when storing hazardous waste.

- 6) All containers must be kept closed. Containers must be sealed to prevent release of organic vapors, fumes, etc. This includes containers for solid material such as Kimwipes and rags contaminated with solvents.
- 7) Containers must be labeled with the words "HAZARDOUS WASTE" and the major hazardous constituents must be listed. If the container holds mixed waste it must also be labeled as RADIOACTIVE.
- 8) Generators may accumulate a total of 55 gals. of hazardous waste or 1 qt. of acutely hazardous waste. This is the maximum allowable volume for a satellite storage area. If in doubt, contact the Solid Waste Section of EM-8.
- 9) Wastes in excess of the above stated amounts may not be held more than 3 calendar days from the time the amount is exceeded. Dispose of all waste prior to this time. For disposal, submit a Chemical Waste Disposal Request (CWDR) form to EM-7 at MS J593. For new generators, a Waste Profile Sheet must be submitted.
- 10) Containers holding the excess accumulation must be labeled as in (7) and marked with the date the excess amount began accumulating.
- 11) Signs must be readable and prominently posted. Signs should read "SATELLITE HAZARDOUS WASTE STORAGE AREA." (EM-8 will provide these) There may also be sign requirements for radiological protection if mixed waste is stored. Contact HS-1 for assistance.
- 12) Hazardous waste leaks or spills must be cleaned up immediately and the resulting material handled as hazardous waste also.

III. Safety considerations

A. Training. ⁷

- 1) Operators and inspectors should be knowledgeable in the proper handling of hazardous waste. Contact EM-8 for further guidance.
- 2) Operators must be knowledgeable in emergency and spill control procedures appropriate for the type and volume of waste generated.

⁷ Training requirements are changing rapidly. Contact HS-3 for the latest requirements
Attachment 2

B. Equipment.

- 1) Spill control kits.
 - a) Absorbents
 - b) Shovels
 - c) Safety glasses
 - d) Gloves, boots
 - e) Empty drums or "overpacks" where larger quantities are stored.
- 2) Respirators, etc. if required.
- 3) Emergency eye wash and showers should be in close proximity and well marked.
- 4) Communication network operating. (phones, etc.)

IV. Contacts**A. Regulations and Inspections, Questions**

- 1) Currently, inspection forms should be sent to Tony Grieggs, EM-8, MS K490, 665-0451
- 2) Questions concerning regulations and hazardous waste storage should be directed to Tony Grieggs, EM-8, MS K490, 665-0451 or Jim White, 665-0677.
- 3) Questions on completion of the Waste Profile Request Forms should be directed to Juan Corpion, EM-8, MS K490, 665-0455.

B. Disposal and spills.

- 1) For disposal of waste Submit a Chemical Waste Disposal Request (CWDR) to EM-7, MS J593 (New waste streams will also require a Waste Profile Request). EM-7 cannot pickup or transport waste without the proper paperwork.
 - a) For Satellite storage areas disposal should be arranged when your site has reached 75% of capacity.
 - b) For less than 90 day storage areas disposal should be arranged at least 2 weeks before the 90 day limit is reached.
- 2) Spills should be reported immediately to your site "Spill Coordinator."

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Use ↑ ↓ + - PgUp PgDn Home End = keys or simply type to change Part range

CODE OF FEDERAL REGULATIONS

40 CFR Protection of Environment
PARTS 1 - 1517
GPO base date July 1, 1992
Updated as of August 31, 1994

Restrict inquiry to Parts: 262 - 1517 (use → keys)

⇒PART 262-STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE
PART 1517-PUBLIC MEETING PROCEDURES OF THE COUNCIL ON

Use the SPACEBAR to highlight the function on the top line that
you want and then press `Enter' to execute that function.
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«outline » « search » «back» «help» «quit»
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CODE OF FEDERAL REGULATIONS

40 CFR Protection of Environment
PARTS 1 - 1517

§ 262.34 Accumulation time.

(a) Except as provided in paragraphs (d), (e), and (f) of this section, a generator may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status, provided that:

(1) The waste is placed:

(i) In containers and the generator complies with subpart I of 40 CFR part 265; and/or

(ii) In tanks and the generator complies with subpart J of 40 CFR part 265, except § 265.197(c) and § 265.200; and/or

(iii) On drip pads and the generator complies with subpart W of 40 CFR part 265 and maintains the following records at the facility:

(A) A description of procedures that will be followed to ensure that all wastes are removed from the drip pad and associated collection system at least once every 90 days; and

(B) Documentation of each waste removal, including the quantity of waste removed from the drip pad and the sump or collection system and the date and time of removal; and/or

(iv) The waste is placed in containment buildings and the generator complies with subpart DD of 40 CFR part 265, has placed its professional engineer certification that the building complies with the design standards specified in 40 CFR 265.1101 in the facility's operating record no later than 60 days after the date of initial operation of the unit. After February 18, 1993, PE certification will be required prior to operation of the unit. The owner or operator shall maintain the following records at the facility:

(A) A written description of procedures to ensure that each waste volume remains in the unit for no more than 90 days, a written description of the waste generation and management practices for the facility showing that they are consistent with respecting the 90 day limit, and documentation that the procedures are complied with; or

(B) Documentation that the unit is emptied at least once every 90 days.

In addition, such a generator is exempt from all the requirements in subparts G and H of 40 CFR part 265, except for §§265.111 and 265.114.

(i) A description of procedures that will be followed to ensure that all wastes are removed from the drip pad and associated collection system at least once every 90 days; and

(2) The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container;

Editorial Note: At 56 FR 30195, July 1, 1991, in § 262.34, paragraphs (a)(3) through (5) were redesignated as (a)(2) through (4). However, a new paragraph (a)(2) was previously added to § 262.34 at 55 FR 50484, December 6, 1990. The Environmental Protection Agency will publish a document in the Federal Register to redesignate one of the two paragraphs (a)(2) at some future date.

(3) While being accumulated on-site, each container and tank is labeled or marked clearly with the words, "Hazardous Waste"; and

(4) The generator complies with the requirements for owners or operators in subparts C and D in 40 CFR part 265, with § 265.16, and with 40 CFR 268.7(a)(4).

Subpart C-Preparedness and Prevention

§ 265.30 Applicability.

The regulations in this subpart apply to owners and operators of all hazardous waste facilities, except as § 265.1 provides otherwise.

§ 265.31 Maintenance and operation of facility.

Facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

§ 265.32 Required equipment.

All facilities must be equipped with the following, unless none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

(b) A device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;

(c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

§ 265.33 Testing and maintenance of equipment.

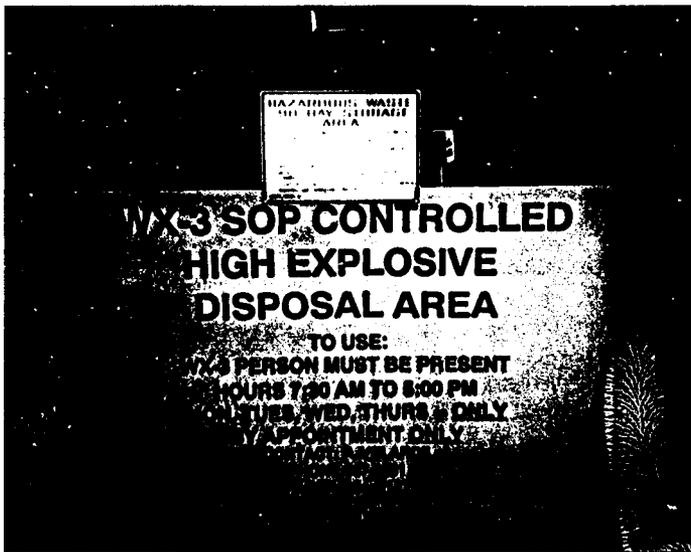
All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

§ 265.34 Access to communications or alarm system.

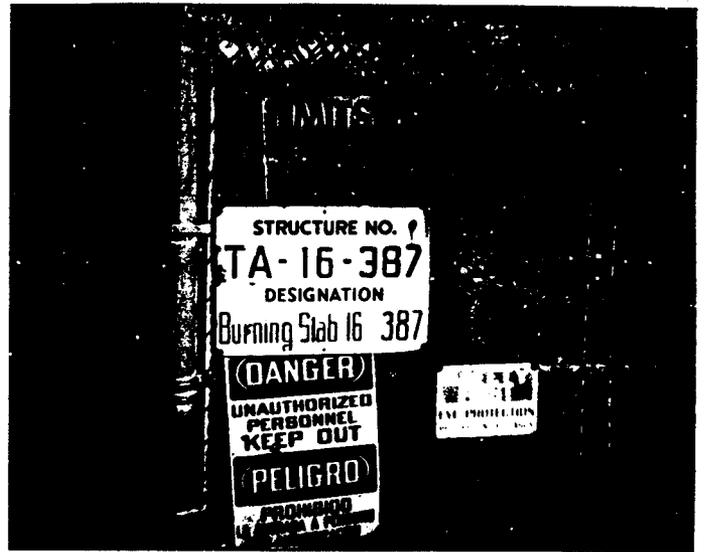
(a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required under § 265.32.

(b) If there is ever just one employee on the premises while the facility is operating, he must have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance, unless such a device is not required under § 265.32.

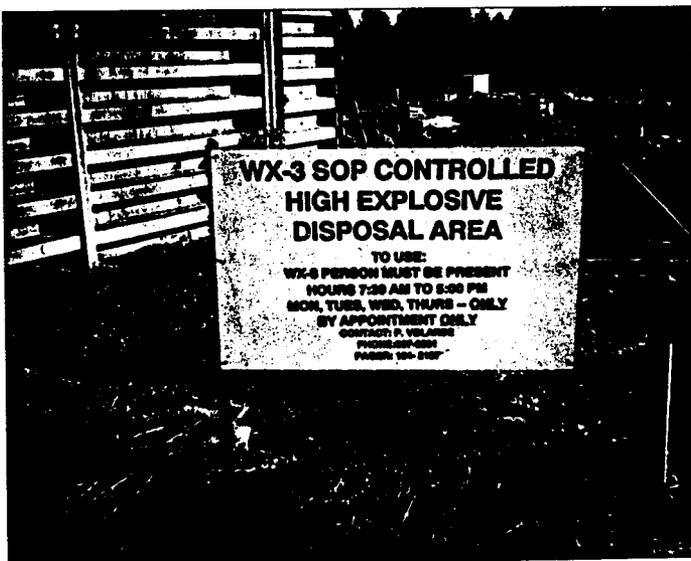
§ 265.35 Required aisle space.



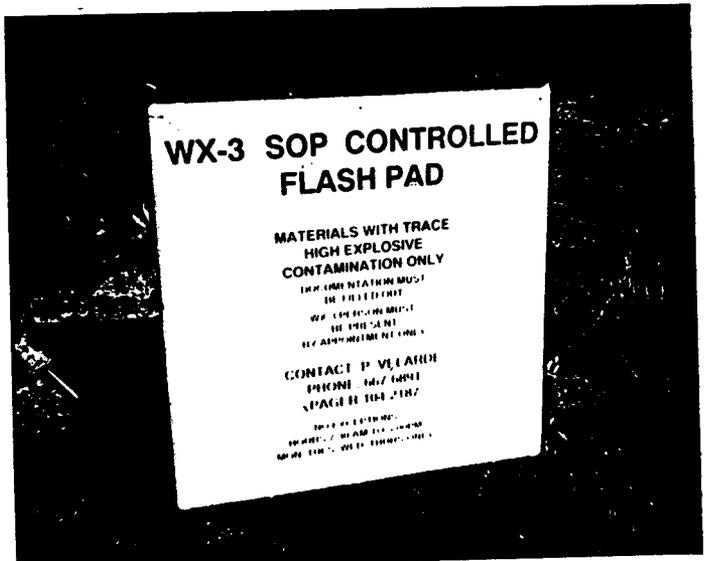
Main gate to Burn Ground



*TA-16-387
OB Pad*



At access gate control shelter TA-16-389



*TA-16-387
OB. Pad*

Complete both sides of this form using a black or blue pen. Incomplete forms will be rejected. Send form to ATTN: WPF, MS K490.

Division/Group WX-3 (ESA2)	Telephone 7-8393	Mail Stop 0930	Technical Area TA-16	Building Flash pad 387	Room
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Method of Characterization	<input checked="" type="checkbox"/> Knowledge of Process (KOP)	- OR -	<input type="checkbox"/> Chemical/Physical Analysis (specify below)
	<input type="checkbox"/> MSDS attached (optional)		<input type="checkbox"/> Request for analysis <input type="checkbox"/> Analysis attached

Waste Categories (Choose one or more of the categories below that most accurately describes your waste.)

<input checked="" type="checkbox"/> Flammable	<input type="checkbox"/> Pesticide	<input type="checkbox"/> Photographic	<input type="checkbox"/> Spent coolant	<input checked="" type="checkbox"/> Plastics
<input checked="" type="checkbox"/> Combustible	<input type="checkbox"/> Beryllium	<input type="checkbox"/> Sanitary	<input checked="" type="checkbox"/> Aerosol cans	<input type="checkbox"/> Filter media
<input checked="" type="checkbox"/> High explosive (trace)	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Radiochemistry	<input type="checkbox"/> Motor oil	<input type="checkbox"/> Vacuum filter media
<input type="checkbox"/> DOT oxidizer	<input checked="" type="checkbox"/> Solvent (trace)	<input type="checkbox"/> Paint waste	<input type="checkbox"/> Pump oil	<input type="checkbox"/> Cement paste
<input type="checkbox"/> Pyrophoric	<input checked="" type="checkbox"/> Waste rags	<input checked="" type="checkbox"/> Laboratory trash	<input type="checkbox"/> Capacitor oil	<input checked="" type="checkbox"/> Non-salvageable
<input type="checkbox"/> Cyanide	<input type="checkbox"/> Glass	<input checked="" type="checkbox"/> Metallurgic	<input type="checkbox"/> UST remediation	<input checked="" type="checkbox"/> Nonrecyclable
<input checked="" type="checkbox"/> Heavy metal	<input type="checkbox"/> Plating solution	<input checked="" type="checkbox"/> Scrap metal	<input type="checkbox"/> Contaminated soils	<input checked="" type="checkbox"/> Building debris
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Etchant	<input type="checkbox"/> Medical/Biological	<input type="checkbox"/> Environmental/SWMU	<input checked="" type="checkbox"/> Firing site debris

General Description (Provide a general description of the waste and/or waste-generating process below.) This waste is flashed at TA-16-387 to remove potential HE contamination and can include: Scrap metal, discarded equipment, gres, plastic, firing site debris, drop tower debris, materials that are potentially HE contaminated are used as fuel for the flash. Non-listed solvent or oil contaminated rags or kumulips, and packing.

Waste Description (Check only one box in each column.)

Form	Ignitability (F)	Corrosivity (pH)	Reactivity	PCBs
<input checked="" type="checkbox"/> Solid	<input checked="" type="checkbox"/> < 100°	<input type="checkbox"/> ≤ 2.0	<input type="checkbox"/> Unstable	<input type="checkbox"/> < 50 ppm
<input type="checkbox"/> Semisolid/sludge	<input type="checkbox"/> 100° to 139°	<input type="checkbox"/> 2.1 to 12.4	<input type="checkbox"/> Water reactive	<input type="checkbox"/> 50 to 500 ppm
<input type="checkbox"/> Absorbed liquid	<input type="checkbox"/> 140° to 200°	<input type="checkbox"/> ≥ 12.5	<input type="checkbox"/> Cyanides	<input type="checkbox"/> > 500 ppm
<input type="checkbox"/> Liquid	<input type="checkbox"/> > 200°	<input checked="" type="checkbox"/> Not aqueous	<input type="checkbox"/> Sulfides	<input checked="" type="checkbox"/> None
<input type="checkbox"/> Gas cylinder or vessel	<input checked="" type="checkbox"/> Not ignitable		<input type="checkbox"/> Shock sensitive	
<input type="checkbox"/> Multilayered			<input type="checkbox"/> Class A or B explosive	
<input type="checkbox"/> Suspended solids			<input checked="" type="checkbox"/> Nonreactive	
<input type="checkbox"/> Powder or ash				

<p>Waste Origination</p> <p>A. Is this waste generated in a radiation controlled area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>B. If yes, is the waste generated or accumulated in a properly defined, registered radioactive materials management area (RMMA)? (RMMA # _____) <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>C. If the answer to question A is yes and you have determined that your waste is nonradioactive, provide justification in the additional comments section on the reverse side of this form.</p>	<p>Radioactivity <input checked="" type="checkbox"/> Nonradioactive</p> <p><input type="checkbox"/> Suspect <input type="checkbox"/> Radioactive</p> <p>Activity measure Radiation Type</p> <p><input type="checkbox"/> ≤ 2.0 nCi/g <input type="checkbox"/> alpha <input type="checkbox"/> gamma</p> <p><input type="checkbox"/> > 2.0 nCi/g <input type="checkbox"/> t^{1/2} < 20 yr <input type="checkbox"/> tritium</p> <p><input type="checkbox"/> > 10.0 nCi/g <input type="checkbox"/> t^{1/2} ≥ 20 yr</p> <p><input type="checkbox"/> > 100.0 nCi/g <input type="checkbox"/> beta</p>
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WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Waste Generator's Name (last, first, middle) Sandoval, Cynthia W.	Z Number 096496	Signature Cynthia W. Sandoval	Date 10-8-93
If your waste management coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional). -->		Name (last, first, middle) Sandoval, C. W.	Mail Stop 0930

Complete both sides of this form using a black or blue pen. Incomplete forms will be rejected. Send form to **ATTN: WPE, MS K490**.

Division/Group <i>ESA-2</i>	Telephone <i>7-8393</i>	Mail Stop <i>C930</i>	Technical Area <i>TA-16</i>	Building <i>Burn Ground</i>	Room <i>Flash Pad 387</i>
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Method of Characterization Knowledge of Process (KOP) - OR - Chemical/Physical Analysis (specify below)
 MSDS attached (optional) Request for analysis Analysis attached

Waste Categories (Choose one or more of the categories below that most accurately describes your waste.)

<input type="checkbox"/> Flammable	<input type="checkbox"/> Pesticide	<input type="checkbox"/> Photographic	<input type="checkbox"/> Spent coolant	<input type="checkbox"/> Plastics
<input type="checkbox"/> Combustible	<input type="checkbox"/> Beryllium	<input type="checkbox"/> Sanitary	<input type="checkbox"/> Aerosol cans	<input type="checkbox"/> Filter media
<input type="checkbox"/> High explosive	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Radiochemistry	<input type="checkbox"/> Motor oil	<input type="checkbox"/> Vacuum filter media
<input type="checkbox"/> DOT oxidizer	<input type="checkbox"/> Solvent	<input type="checkbox"/> Paint waste	<input type="checkbox"/> Pump oil	<input type="checkbox"/> Cement paste
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Waste rags	<input type="checkbox"/> Laboratory trash	<input type="checkbox"/> Capacitor oil	<input checked="" type="checkbox"/> Nonsalvageable
<input type="checkbox"/> Cyanide	<input checked="" type="checkbox"/> Glass	<input type="checkbox"/> Metallurgic	<input type="checkbox"/> UST remediation	<input checked="" type="checkbox"/> Nonrecyclable
<input type="checkbox"/> Heavy metal	<input type="checkbox"/> Plating solution	<input checked="" type="checkbox"/> Scrap metal	<input type="checkbox"/> Contaminated soils	<input checked="" type="checkbox"/> Building debris
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Etchant	<input type="checkbox"/> Medical/Biological	<input type="checkbox"/> Environmental/SWMU	<input checked="" type="checkbox"/> Firing site debris

General Description (Provide a general description of the waste and/or waste-generating process below.)
Administratively controlled waste from a HE processing area that has been flushed for health & safety reasons; can include scrap metal, discarded equipment, glass, firing site debris, drop tower debris, ash, & gravel.

Waste Description (Check only one box in each column.)

Form	Ignitability (F)	Corrosivity (pH)	Reactivity	PCBs
<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> < 100°	<input type="checkbox"/> ≤ 2.0	<input type="checkbox"/> Unstable	<input type="checkbox"/> < 50 ppm
<input type="checkbox"/> Semisolid/sludge	<input type="checkbox"/> 100° to 139°	<input type="checkbox"/> 2.1 to 12.4	<input type="checkbox"/> Water reactive	<input type="checkbox"/> 50 to 500 ppm
<input type="checkbox"/> Absorbed liquid	<input type="checkbox"/> 140° to 200°	<input type="checkbox"/> ≥ 12.5	<input type="checkbox"/> Cyanides	<input type="checkbox"/> > 500 ppm
<input type="checkbox"/> Liquid	<input type="checkbox"/> > 200°	<input checked="" type="checkbox"/> Not aqueous	<input type="checkbox"/> Sulfides	<input checked="" type="checkbox"/> None
<input type="checkbox"/> Gas cylinder or vessel	<input checked="" type="checkbox"/> Not ignitable		<input type="checkbox"/> Shock sensitive	
<input type="checkbox"/> Multilayered			<input type="checkbox"/> Class A or B explosive	
<input type="checkbox"/> Suspended solids			<input checked="" type="checkbox"/> Nonreactive	
<input type="checkbox"/> Powder or ash				

Waste Origination

A. Is this waste generated in a radiation controlled area? Yes No

B. If yes, is the waste generated or accumulated in a properly defined, registered radioactive materials management area (RMMA)? (RMMA # _____) Yes No

C. If the answer to question A is yes and you have determined that your waste is nonradioactive, provide justification in the additional comments section on the reverse side of this form.

Radioactivity	<input checked="" type="checkbox"/> Nonradioactive
<input type="checkbox"/> Suspect	<input type="checkbox"/> Radioactive
Activity measure	Radiation Type
<input type="checkbox"/> ≤ 2.0 nCi/g	<input type="checkbox"/> alpha <input type="checkbox"/> gamma
<input type="checkbox"/> > 2.0 nCi/g	<input type="checkbox"/> t ^{1/2} < 20 yr <input type="checkbox"/> tritium
<input type="checkbox"/> > 10.0 nCi/g	<input type="checkbox"/> t ^{1/2} ≥ 20 yr
<input type="checkbox"/> > 100.0 nCi/g	<input type="checkbox"/> beta

WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Waste Generator's Name (last, first, middle) <i>Sandoval, Cynthia W</i>	Z Number <i>96496</i>	Signature <i>Cynthia W Sandoval</i>	Date <i>3-21-94</i>
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If your waste management coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional). → <i>Sandoval, Cynthia W.</i>	Mail Stop <i>C930</i>
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Toxic Metals (Indicate if any of the following toxic metals are present in your waste at the posted concentrations.)

arsenic	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <5.0 ppm	<input type="checkbox"/> ≥5.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
barium	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <100.0 ppm	<input type="checkbox"/> ≥100.0 ppm	<input type="checkbox"/> TCLP	<input checked="" type="checkbox"/> Other
cadmium	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <1.0 ppm	<input type="checkbox"/> ≥1.0 ppm	<input type="checkbox"/> TCLP	<input checked="" type="checkbox"/> Other
chromium	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <5.0 ppm	<input type="checkbox"/> ≥5.0 ppm	<input type="checkbox"/> TCLP	<input checked="" type="checkbox"/> Other
lead	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <5.0 ppm	<input type="checkbox"/> ≥5.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
mercury	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.2 ppm	<input type="checkbox"/> ≥0.2 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
nickel	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <134.0 ppm	<input type="checkbox"/> ≥134.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
selenium	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <1.0 ppm	<input type="checkbox"/> ≥1.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
silver	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <5.0 ppm	<input type="checkbox"/> ≥5.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
thallium	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <130.0 ppm	<input type="checkbox"/> ≥130.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other

Organic Compounds (Indicate if any of the following organic compounds are present in your waste at the posted concentrations.)

benzene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.5 ppm	<input type="checkbox"/> ≥0.5 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
carbon tetrachloride	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.5 ppm	<input type="checkbox"/> ≥0.5 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
chlorobenzene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <100.0 ppm	<input type="checkbox"/> ≥100.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
chloroform	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <5.0 ppm	<input type="checkbox"/> ≥5.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
cresol	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <200.0 ppm	<input type="checkbox"/> ≥200.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
1,4-dichlorobenzene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <7.5 ppm	<input type="checkbox"/> ≥7.5 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
1,2-dichloroethane	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.5 ppm	<input type="checkbox"/> ≥0.5 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
1,1-dichloroethylene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.7 ppm	<input type="checkbox"/> ≥0.7 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
2,4-dinitrotoluene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.13 ppm	<input type="checkbox"/> ≥0.13 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
hexachlorobenzene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.13 ppm	<input type="checkbox"/> ≥0.13 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
hexachlorobutadiene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.5 ppm	<input type="checkbox"/> ≥0.5 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
hexachloroethane	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <3.0 ppm	<input type="checkbox"/> ≥3.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
methyl ethyl ketone	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <200.0 ppm	<input type="checkbox"/> ≥200.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
nitrobenzene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <2.0 ppm	<input type="checkbox"/> ≥2.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
pentachlorophenol	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <100.0 ppm	<input type="checkbox"/> ≥100.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
pyridine	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <5.0 ppm	<input type="checkbox"/> ≥5.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
tetrachloroethylene/perchloroethylene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.7 ppm	<input type="checkbox"/> ≥0.7 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
trichloroethylene	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.5 ppm	<input type="checkbox"/> ≥0.5 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
2,4,6-trichlorophenol	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <400.0 ppm	<input type="checkbox"/> ≥400.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
2,4,6-trichlorophenol	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <2.0 ppm	<input type="checkbox"/> ≥2.0 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other
vinyl chloride	<input checked="" type="checkbox"/> None	<input type="checkbox"/> <0.2 ppm	<input type="checkbox"/> ≥0.2 ppm	<input type="checkbox"/> TCLP	<input type="checkbox"/> Other

Hazardous Constituents (Identify hazardous constituents for F- and K-listed wastes and substances causing waste to exhibit a characteristic.)

Additional Comments (Provide comments regarding the chemical or radiological nature of the waste.)

* Potential trace content as a plating on screws, etc.

Per conversation w/ generator - metals changed 3/23/94

This waste profile will replace NPF # 03208.

Do not write in this box - EM-8 use only

Waste Classification		<input type="checkbox"/> Non-RCRA waste		<input checked="" type="checkbox"/> RCRA-regulated solid waste		<input type="checkbox"/> RCRA-regulated hazardous waste		<input type="checkbox"/> Radioactive waste	
<input type="checkbox"/> PCB		<input type="checkbox"/> non-PCB TSCA waste		<input type="checkbox"/> asbestos		<input type="checkbox"/> municipal refuse		<input type="checkbox"/> nonhazardous chemical waste	
						<input checked="" type="checkbox"/> administratively controlled waste		<input type="checkbox"/> sanitary/industrial sludges	
						<input type="checkbox"/> hazardous waste		<input type="checkbox"/> mixed low-level waste	
						<input type="checkbox"/> mixed transuranic waste		<input type="checkbox"/> low-level waste	
								<input type="checkbox"/> transuranic waste	
RCRA Code 1	RCRA Code 2	RCRA Code 3	RCRA Code 4	RCRA Code 5	RCRA Code 6	RCRA Code 7	RCRA Code 8		

EM-8 Reviewer's Signature	Date	Cost Center/Program Code for Analysis	Reference Number
Michelle Cash	3/23/94		8180

A.2.4 Shops Department Wastes

The Main Shops Department, Building TA-3-39, houses most of the machine shop capabilities at the Laboratory. Waste materials from machining operations are segregated by metal when generated. (For example, there are containers for aluminum chips and turnings.) Some machining operations generate waste lithium metal and lithium hydride, both of which are hazardous because of their reactivity (D003). These materials, when generated, are known and are not commingled with other metal wastes. The Main Shops Department also generates waste nonhalogenated solvents (F003) and halogenated degreasers (F001) and solvents (F002).

A.2.5 Explosives Wastes

High explosives (HE) waste is generated by the Dynamics Testing (M) and Design Engineering (WX) Divisions in the course of processing and testing various HE materials. Processing includes pressing, machining, and casting HE. Waste occurs as discrete pieces of HE, as well as chips, machine cuttings, and powder. Solid HE may include off-specification or old explosives, as well as scrap pieces of HE from processing operations. The chips, cuttings, and powder are usually in the form of waterborne suspensions, collected in specially designed accumulating/settling sump tanks. Spent carbon (K045) from the TA-16 wastewater treatment unit is generated approximately twice a year. Wastes also consist of materials contaminated with HE; these may include paper, oil, solvents, wood, machine tools, fixtures, etc. HE-contaminated equipment, tools, and other large items are considered reactive, D003. HE-contaminated oil may also contain listed solvents, F001, F002, F003, and/or F005, as well as exhibit the characteristic of EP-toxicity for barium, D005. Chemically, the predominant wastes consist of HMX (high melting explosives), RDX (cyclonite), TNT (2,4,6 trinitrotoluene), PETN (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).

A.2.6 Maintenance Activity Wastes

The Laboratory's Engineering Division and support maintenance contractor, Pan Am, generate a variety of wastes in the course of performing maintenance work. Hazardous wastes range from residual pesticides and herbicides (D001 and D016) to paints/thinners (D001, D008, and F003). Classification of these wastes can generally be performed by process knowledge and the use of Material Safety Data Sheets (MSDS's).

A.2.7 Chemically Contaminated Equipment

In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated may be considered hazardous waste. Empty process tanks are typical contaminated items. Empty drums and containers meet the requirements of HWMR-6 Part 2, Section 261.7 and are therefore not considered hazardous waste. Generation of this type of hazardous waste occurs throughout the Laboratory facilities and produces a wide variety of waste types.

A.2.8 Waste Treatment Residues

Treatment operations at the Laboratory generate solid hazardous waste. These residues include the barium contaminated sand from the explosives burning operation, ash from the incinerator, and sludge from the chemical treatment operations. The classification and volume of this waste varies with the waste that was treated.

A.4.6.1 Uncomposited labpack waste

These wastes are generally solid material and therefore do not lend themselves to composting. They will be packaged in overpack containers with absorbent. The entire container is then usually destined for offsite land disposal. The packing list of bottles and cans in the overpack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.6.2 Process waste

Four categories of inorganic process waste exist: liquid waste, primary metal waste, nonroutine solid waste, and routine solid waste. Inorganic liquid waste is generally acidic or basic and is thus treated under the scenarios described in Sections A.4.2 and A.4.3.

Process knowledge is considered adequate for the further treatment/disposal/recycle of wastestreams such as lead and mercury. In both cases the metal is available as a hazardous waste but that knowledge alone suffices to allow for proper storage, treatment, and disposal.

Nonroutine solid waste is periodically generated throughout the Laboratory. This waste will be analyzed for EP toxic metals, nickel, and thallium. This allows confirmation of the presence of inorganic LDR material. The absence of organic LDR will be established by either documented KOP or analyses. The test methods employed are listed in Table A-3. Sampling is performed using a core sampler if possible or a grab sampler if it is not possible to penetrate the waste with a core sampler. Because this is defined as a nonroutine wastestream, every unique drum or batch will be sampled.

There is one routinely generated inorganic solid waste at the Laboratory. It is the barium contaminated sand from the explosives burning operation. Barium is the only established parameter of concern for treatment and therefore is the only parameter routinely analyzed for. Annually, a sample will be analyzed for the other listed metals. Sampling is conducted with a core sampler. Test methods are listed in Table A-3.

If a nonroutine wastestream becomes a routine waste or a new wastestream is identified, it will follow the pattern established in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.7 Explosives Waste

Due to the limited number of areas producing explosives waste and the safety problems associated with analyzing explosives waste, process knowledge of the waste sent for treatment by open burning or open detonation is the waste analysis record. Table A-4 lists the various explosives used at the Laboratory. Open burning/open detonation is conducted under interim status per HWMR-5 Part VI, Section 265.382.

A.4.8 Contaminated Solid Waste

The waste covered by this category is generally classified as debris. Contaminated soil would be addressed under the respective chemical category as outlined in the above sections. The contaminant of concern is known for all waste in this category but the substrate can not be readily analyzed. Therefore, until the item in question is cleaned it is treated as a hazardous waste. The types of waste covered by this provision would be tanks and rags.

A.4.9 Waste Treatment Residuals

Waste treatment residuals are the liquid and solid wastestreams resulting from the treatment of a hazardous waste. There are currently four types of residual streams: the treated liquid and precipitate

GROUP M-1 ANALYTICAL LABORATORY REPORT

REQUESTER: P. VELARDE

SAMPLE: ASH BARREL #1, BARREL #2

ANALYSIS REQ'D: % BARIUM SULFATE

OPERATOR: W. KING

LAB. No. 21869

P. C. CE-18

DATE REC'D 9-15-93

REPORTED: 10-7-93

SAMPLE	BARIUM SULFATE
BARREL #1	6,000 ppm
BARREL #2	<100 ppm

Picked up 2-3-94

Complete both sides of this form using a black or blue pen. Incomplete forms will be rejected. Send form to ATTN: WPF, MS K490.

Division/Group ESA-WMA	Telephone 7-8393	Mail Stop C930	Technical Area TA-16	Building Burn Gound	Room Burn Trays Filter Vessels
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Method of Characterization Knowledge of Process (KOP) - OR - Chemical/Physical Analysis (specify below)
 MSDS attached (optional) Request for analysis Analysis attached

Waste Categories (Choose one or more of the categories below that most accurately describes your waste.)

<input type="checkbox"/> Flammable	<input type="checkbox"/> Pesticide	<input type="checkbox"/> Photographic	<input type="checkbox"/> Spent coolant	<input type="checkbox"/> Plastics
<input type="checkbox"/> Combustible	<input type="checkbox"/> Beryllium	<input type="checkbox"/> Sanitary	<input type="checkbox"/> Aerosol cans	<input type="checkbox"/> Filter media
<input type="checkbox"/> High explosive	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Radiochemistry	<input type="checkbox"/> Motor oil	<input type="checkbox"/> Vacuum filter media
<input type="checkbox"/> DOT oxidizer	<input type="checkbox"/> Solvent	<input type="checkbox"/> Paint waste	<input type="checkbox"/> Pump oil	<input type="checkbox"/> Cement paste
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Waste rags	<input type="checkbox"/> Laboratory trash	<input type="checkbox"/> Capacitor oil	<input type="checkbox"/> Nonsalvageable
<input type="checkbox"/> Cyanide	<input type="checkbox"/> Glass	<input type="checkbox"/> Metallurgic	<input type="checkbox"/> UST remediation	<input type="checkbox"/> Nonrecyclable
<input type="checkbox"/> Heavy metal	<input type="checkbox"/> Plating solution	<input type="checkbox"/> Scrap metal	<input type="checkbox"/> Contaminated soils	<input type="checkbox"/> Building debris
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Etchant	<input type="checkbox"/> Medical/Biological	<input type="checkbox"/> Environmental/SWMU	<input type="checkbox"/> Firing site debris

General Description (Provide a general description of the waste and/or waste-generating process below.)
Ash from high explosives burning operation. May contain sand. Less than 100 ppm Barium

Waste Description (Check only one box in each column.)

Form	Ignitability (F)	Corrosivity (pH)	Reactivity	PCBs
<input type="checkbox"/> Solid	<input type="checkbox"/> < 100°	<input type="checkbox"/> ≤ 2.0	<input type="checkbox"/> Unstable	<input type="checkbox"/> < 50 ppm
<input type="checkbox"/> Semisolid/sludge	<input type="checkbox"/> 100° to 139°	<input type="checkbox"/> 2.1 to 12.4	<input type="checkbox"/> Water reactive	<input type="checkbox"/> 50 to 500 ppm
<input type="checkbox"/> Absorbed liquid	<input type="checkbox"/> 140° to 200°	<input type="checkbox"/> ≥ 12.5	<input type="checkbox"/> Cyanides	<input type="checkbox"/> > 500 ppm
<input type="checkbox"/> Liquid	<input type="checkbox"/> > 200°	<input checked="" type="checkbox"/> Not aqueous	<input type="checkbox"/> Sulfides	<input checked="" type="checkbox"/> None
<input type="checkbox"/> Gas cylinder or vessel	<input checked="" type="checkbox"/> Not ignitable		<input type="checkbox"/> Shock sensitive	
<input type="checkbox"/> Multilayered			<input type="checkbox"/> Class A or B explosive	
<input type="checkbox"/> Suspended solids			<input checked="" type="checkbox"/> Nonreactive	
<input checked="" type="checkbox"/> Powder or ash				

Waste Origination A. Is this waste generated in a radiation controlled area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No B. If yes, is the waste generated or accumulated in a properly defined, registered radioactive materials management area (RMMA)? (RMMA # _____) <input type="checkbox"/> Yes <input type="checkbox"/> No C. If the answer to question A is yes and you have determined that your waste is nonradioactive, provide justification in the additional comments section on the reverse side of this form.	Radioactivity <input checked="" type="checkbox"/> Nonradioactive <input type="checkbox"/> Suspect <input type="checkbox"/> Radioactive Activity (Becquerels) <input type="checkbox"/> ≤ 2.0 nCi/g <input type="checkbox"/> > 2.0 nCi/g <input type="checkbox"/> > 10.0 nCi/g <input type="checkbox"/> > 100.0 nCi/g Radiation Type <input type="checkbox"/> alpha <input type="checkbox"/> gamma <input type="checkbox"/> tritium <input type="checkbox"/> beta <input type="checkbox"/> t ^{1/2} < 20 yr <input type="checkbox"/> t ^{1/2} ≥ 20 yr
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WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Waste Generator's Name (last, first, middle) Velarde, Peter N.	Z Number 074172	Signature <i>Peter Velarde</i>	Date 8/22/94
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If your waste management coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional). -->	Name (last, first, middle) Sandoval, Cynthia W.	Mail Stop C930
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Complete both sides of this form using a black or blue pen. Incomplete forms will be rejected. Send form to **ATTN: WPF, MS K490**.

Division/Group <i>ESA-NMA</i>	Telephone <i>7-8393</i>	Mail Stop <i>C930</i>	Technical Area <i>TA-16</i>	Building <i>Burn Ground</i>	Room <i>Burn trays Filter vessels</i>
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Method of Characterization: Knowledge of Process (KOP) - OR - Chemical/Physical Analysis (specify below)
 MSDS attached (optional) Request for analysis Analysis attached

Waste Categories (Choose one or more of the categories below that most accurately describes your waste.)

<input type="checkbox"/> Flammable	<input type="checkbox"/> Pesticide	<input type="checkbox"/> Photographic	<input type="checkbox"/> Spent coolant	<input type="checkbox"/> Plastics
<input type="checkbox"/> Combustible	<input type="checkbox"/> Beryllium	<input type="checkbox"/> Sanitary	<input type="checkbox"/> Aerosol cans	<input type="checkbox"/> Filter media
<input type="checkbox"/> High explosive	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Radiochemistry	<input type="checkbox"/> Motor oil	<input type="checkbox"/> Vacuum filter media
<input type="checkbox"/> DOT oxidizer	<input type="checkbox"/> Solvent	<input type="checkbox"/> Paint waste	<input type="checkbox"/> Pump oil	<input type="checkbox"/> Cement paste
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Waste rags	<input type="checkbox"/> Laboratory trash	<input type="checkbox"/> Capacitor oil	<input type="checkbox"/> Nonsalvageable
<input type="checkbox"/> Cyanide	<input type="checkbox"/> Glass	<input type="checkbox"/> Metallurgic	<input type="checkbox"/> UST remediation	<input type="checkbox"/> Nonrecyclable
<input type="checkbox"/> Heavy metal	<input type="checkbox"/> Plating solution	<input type="checkbox"/> Scrap metal	<input type="checkbox"/> Contaminated soils	<input type="checkbox"/> Building debris
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Etchant	<input type="checkbox"/> Medical/Biological	<input type="checkbox"/> Environmental/SWMU	<input type="checkbox"/> Firing site debris

General Description (Provide a general description of the waste and/or waste-generating process below.)
Ash from high explosives burning operation. May contain sand. Greater than 100 ppm Barium.

Waste Description (Check only one box in each column.)

Form <input type="checkbox"/> Solid <input type="checkbox"/> Semisolid/sludge <input type="checkbox"/> Absorbed liquid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas cylinder or vessel <input type="checkbox"/> Multilayered <input type="checkbox"/> Suspended solids <input checked="" type="checkbox"/> Powder or ash	Ignitability (F) <input type="checkbox"/> < 100° <input type="checkbox"/> 100° to 139° <input type="checkbox"/> 140° to 200° <input type="checkbox"/> > 200° <input checked="" type="checkbox"/> Not ignitable	Corrosivity (pH) <input type="checkbox"/> ≤ 2.0 <input type="checkbox"/> 2.1 to 12.4 <input type="checkbox"/> ≥ 12.5 <input checked="" type="checkbox"/> Not aqueous	Reactivity <input type="checkbox"/> Unstable <input type="checkbox"/> Water reactive <input type="checkbox"/> Cyanides <input type="checkbox"/> Sulfides <input type="checkbox"/> Shock sensitive <input type="checkbox"/> Class A or B explosive <input checked="" type="checkbox"/> Nonreactive	PCBs <input type="checkbox"/> < 50 ppm <input type="checkbox"/> 50 to 500 ppm <input type="checkbox"/> > 500 ppm <input checked="" type="checkbox"/> None
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<p>Waste Origination</p> <p>A. Is this waste generated in a radiation controlled area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>B. If yes, is the waste generated or accumulated in a properly defined, registered radioactive materials management area (RMMA)? (RMMA # _____) <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>C. If the answer to question A is yes and you have determined that your waste is nonradioactive, provide justification in the additional comments section on the reverse side of this form.</p>	<p>Radioactivity <input checked="" type="checkbox"/> Nonradioactive</p> <p><input type="checkbox"/> Suspect <input type="checkbox"/> Radioactive</p> <p>Activity Measure Radiation Type</p> <p><input type="checkbox"/> ≤ 2.0 nCi/g <input type="checkbox"/> alpha <input type="checkbox"/> gamma</p> <p><input type="checkbox"/> > 2.0 nCi/g <input type="checkbox"/> t^{1/2} < 20 yr <input type="checkbox"/> tritium</p> <p><input type="checkbox"/> > 10.0 nCi/g <input type="checkbox"/> t^{1/2} ≥ 20 yr</p> <p><input type="checkbox"/> > 100.0 nCi/g <input type="checkbox"/> beta</p>
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WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Waste Generator's Name (last, first, middle) <i>Velarde, Peter N.</i>	Z Number <i>074172</i>	Signature <i>Peter Velarde</i>	Date <i>8/22/94</i>
If your waste management coordinator is the custodian of your waste management documentation, provide the name and mail stop of this person (optional). -->		Name (last, first, middle) <i>Sandora Cynthia W.</i>	Mail Stop <i>C930</i>

RED-8010 (CTR)
13:20:20

LOS ALAMOS NATIONAL LABORATORY EMPLOYEE DEVELOPMENT SYSTEM
EMPLOYEE TRANSCRIPTS

PACT
FROM 01/01/1990 TO 09/20/1994 09/20/94

DIVISION : 3M DDESA
GROUP : 9603 ESA-2
I-NO/NAME: 074172 VELARDE PETER JR

COURSE TITLE	COURSE NUMBER	SESSION NUMBER	SESSION DATE	GROUP CHARGED	COST CENTER	PGM CODE	HOURS	FEE
RESPIRATORS: AIR-PURIFYING	3549	819	05/10/94	ESA-2	000000		2.50	
ANNUAL SECURITY REFRESHER	1425	100	03/01/94	ESA-2	000000		1.00	
RADIOLOGICAL WORKER I TRAINING	7453	111	02/08/94	ESA-2	000000		8.00	
WASTE MINIMIZATION ORIENTATION (VIDEO)	8598	10	11/17/93	ESA-2	000000		.50	
DEPARTMENT OF TRANSPORTATION: DRUG AWARENESS TRAINING	7498	5	03/25/93	ESA-2	630300	X597	2.00	
P&T FEDERAL HIGHWAY MOTOR CARRIER SAFETY REGULATIONS	7806	6	03/25/93	ESA-2	000000		2.00	
RCRA TSDF WORKERS AND SUPERVISORS	7781	1	02/05/93	ESA-2	000000		11.50	
BUILDING MANAGERS ORIENTATION PROGRAM (ENG-DO)	7288	5	11/10/92	ESA-2	630300	X597	4.00	
RESPIRATORS: AIR-PURIFYING	3549	495	08/24/92	ESA-2	000000		2.50	
PRESSURE SAFETY ORIENTATION	769	22	06/09/92	ESA-2	000000		4.00	
PERFORMANCE APPRAISAL	2706	11	05/27/92	ESA-2	630300	X597	8.00	
UNDER THE INFLUENCE - VIDEO	5615	7	12/16/91	ESA-2	000000		.50	
BROKEN GLASS: SECOND EDITION - (VIDEO)	6630	1	11/25/91	ESA-2	000000		.25	
CONTROL SYSTEM OPERATION, 500-TON ELMES PRESS BLDG. 430, BAY 2	7882	1	11/18/91	ESA-2	000000		2.00	
ACCIDENT INVESTIGATION (VIDEO)	6473	1	10/28/91	ESA-2	000000		.30	
ON GUARD	6177	1	09/23/91	ESA-2	000000		.12	
BUILDING MANAGER TRAINING (TIGER PREPARATION)	7739	3	09/18/91	ESA-2	000000		1.50	
SPILL COORDINATOR TRAINING	691	7	09/17/91	ESA-2	000000		6.00	
DON'T PANIC: "FIRST RESPONSE TO A HAZMAT INCIDENT - VIDEO"	4468	3	08/26/91	ESA-2	000000		1.00	
BUILDING MANAGER ORIENTATION	7895	1	07/25/91	ESA-2	000000		2.00	
BUILDING MANAGERS ORIENTATION PROGRAM	5299	4	07/18/91	ESA-2	000000		4.00	
FIRE EXTINGUISHER TRAINING: FIGHT OR FLIGHT	5224	108	06/24/91	ESA-2	000000		.50	
DEVELOPING AND DELIVERING ON-THE-JOB INSTRUCTION(WX-DO)	7012	2	04/29/91	ESA-2	000000		3.00	
SEXUAL HARASSMENT PREVENTION TRAINING FOR SUPERVISORS	5430	9	04/11/91	ESA-2	000000		2.00	
AIR PURIFYING RESPIRATORS	3549	152	11/20/90	ESA-2	575000		2.50	
INCIDENTIAL CRANE SAFETY COURSE	2396	24	11/13/90	ESA-2	575000		4.00	
HAZARDOUS WASTE REGULATIONS WORKSHOP	5176	1	10/23/90	ESA-2	960300		16.00	395.00
EMERGENCY REPORTING AND FIRE EXTINGUISHMENT	4421	5	10/03/90	ESA-2	575000		1.00	
ANNUAL SECURITY REFRESHER	1425	48	10/01/90	ESA-2	661300		2.00	
SUBSTANCE ABUSE EDUCATION PROGRAM FOR SUPERVISORS	2705	39	09/20/90	ESA-2	630300		8.00	
CPR - ADULT	3583	111	08/29/90	ESA-2	575000		4.00	
OSHA SAFETY TRAINING	4418	6	08/13/90	ESA-2	570300		32.00	
HAZARDOUS WASTE GENERATOR TRAINING - HSE	4419	132	07/19/90	ESA-2	575000		3.00	
ELECTRICAL SAFETY AWARENESS	2377	52	05/24/90	ESA-2	575000		2.50	
HAZ/COM TRAINING - INTRODUCTION	2398	53	02/15/90	ESA-2	575000		2.00	
FIELD SPOT TESTS FOR CAST AND PLASTIC BONDED EXPLOSIVES	5104	1	02/14/90	ESA-2	910100		2.00	
FORKLIFT SAFETY FUNDAMENTAL	753	26	02/13/90	ESA-2	575000		1.50	
FORKLIFT CERTIFIED	5649	20	02/01/90	ESA-2	000000		1.00	

Statistics for Environmental Applications - A Short Course -

When: December 15 & 16, 1994 Where: Picacho Inn, Santa Fe, NM
Sponsored by: Sandia National Laboratories

• Session 1 - Basic Statistics

- Descriptive Statistics
 - Measures of location
 - Measures of spread
 - Graphical displays
- Distributions and Probability
 - Random variables
 - Expectation
 - Discrete distributions
 - Continuous distributions
- Sampling Distributions

• Session 2 - Statistical Inference

- Estimation
 - Confidence intervals
- Hypothesis Testing
 - Type I and II errors
 - Tests about means
 - Tests about variances
 - Goodness-of-fit tests

• Session 3 - Environmental Applications for Data Comparison

- Review of Data Quality Objectives (DQO) concepts
- Comparison of sample data (e.g., lab vs field, 80/20 splits)
- Comparison of samples to background (e.g., parametric vs non-parametric tests)
- Comparison of samples to risk-based concentration thresholds
 - Introduction to Précis (a risk assessment tool) and Action Levels

• Session 4 - Statistical Sampling Strategies

- Locating Hot Spots/ Grid sampling
- Composite sampling
- Random sampling
- Judgemental sampling

• Session 5 - Introduction to Geostatistics

- Basic geostat concepts (e.g., Kriging, etc.)
- Variogram analyses
- Probabilistic concepts
- Latin Hypercube Sampling (LHS)

• Session 6 - Introduction to the Optimization Program to Minimize Analytical Sampling (OPTMAS), a Decision Support Tool for surface soil sampling optimization

- Methodology/Mathematical foundation
- Code demonstration
- Case Study

• Session 7 - Introduction to the Borehole Optimization Support System (BOSS), a Decision Support Tool for optimizing monitor well and borehole placement

- Methodology/Mathematical foundation
- Code demonstration
- Case Study