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

DEC - 5 1996

HAND DELIEVERED 12/05/96
By H. L. "Jody" Plum

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Benito J. Garcia, Bureau Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo, Bldg. A
P. O. Box 26110
Santa Fe, NM 87505

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Dear Mr. Garcia:

Subject: Generator Treatment Notification and Request for a 30-Day Extension for Storage at TA-35

The purpose of this letter is to submit a Waste Analysis Plan (WAP) for generator treatment of corrosive aqueous waste within a <90-day storage area at Technical Area (TA) 35 as required by Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (20 NMAC 4.1), Subpart VIII, which adopts 40 CFR 268.7(a)(4). Additionally, Los Alamos National Laboratory (LANL) is requesting a 30-day extension for continued storage of this waste at TA-35 pursuant to 20 NMAC 4.1, Subpart III (40 CFR 262.34[b]).

LANL intends to neutralize 1325.6 gallons of corrosive, aqueous mixed waste (wastewater) generated from the excavation and removal of two abandoned tanks, TA-35-5 and TA-35-6. This wastewater is currently stored in six 375-gallon cross-link High-Density Polyethylene (HDPE) containers. Based on analytical results and site history, the wastewater was classified as mixed waste: the wastewater contains F-listed constituents; several metals and organic constituents exceed the Toxicity Characteristic regulatory levels; and the wastewater exhibits the characteristic of corrosivity because its pH is equal to or below 2.0. In addition, the wastewater contains numerous underlying hazardous constituents (refer to Table 2 in the WAP). Neutralization will allow the waste to be shipped in its current storage containers. If the wastewater is not neutralized, it will require repackaging in containers that meet Department of Transportation requirements for a corrosive waste. The neutralization option is preferred over repackaging because it minimizes radiological exposure to workers and the potential for any release of the wastewater into the environment. In addition, the neutralization option avoids additional waste generation, i.e., rinsing and disposal of the cross-link HDPE containers.

Although LANL has been working diligently to transport the waste off site, we believe it is prudent to request a 30-day extension at this time because the WAP must be submitted a minimum of 30 days prior to treatment (pursuant to 20 NMAC 4.1, Subpart VIII (40 CFR 268.7[a]). The 90-day time frame for this waste ends on December 16, 1996. Additional uncontrollable conditions contributing to the request for the extension are listed below:

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- The complexity of the hazardous waste constituents coupled with the complication of having a relatively hot radioactive component (strontium) restricted storage and treatment options.

- Existing commercial treatment options would require treatment on site in order to meet the waste acceptance criteria of the receiving off-site treatment facility. Additionally, these commercial treatment options proved to be extremely cost prohibitive.

- Since there are two U. S. Department of Energy facilities that can potentially manage the waste off-site, active negotiations were required to decide which facility would ultimately receive the waste.

- Idaho National Engineering Laboratory's Waste Experimental Reduction Facility was chosen as the preferred treatment facility; however, they cannot accept the waste prior to January 15, 1997 due to permit restrictions.

If you have any questions, please contact me at (505) 665-5042.

Sincerely,

H. L. "Jody" Plum
Office of Environment and Projects

LAAMEP:3JP-025

Enclosure

cc w/enclosure:
H. Haynes, Office of Counsel, LAAO

Waste Analysis Plan for
Liquid Wastes from Tanks TA-35-5, and TA-35-6 at TA-35

November 25, 1996

Introduction

This waste analysis plan (WAP) presents information on the chemical and physical nature of the liquid mixed waste to be neutralized in the less-than-90-day storage area at Los Alamos National Laboratory's (LANL) Technical Area (TA) -35 outside Building TA-35-2. Pursuant to Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (20 NMAC 4.1), Subpart VIII, which adopts 40 CFR 268.7 (a)(4), this plan fulfills the requirements for generator treatment of prohibited wastes (regulated under 20 NMAC 4.1, Subpart III, 40 CFR 262.34) in tanks or containers.

The waste to be treated is wastewater that was removed from two underground storage tanks: TA-35-5 [Potential Release Site (PRS) 35-003(b)] and TA-35-6 [PRS 35-003(c)]. This liquid was generated during Phase III of the TA-35 Decommissioning Project that included the removal and decontamination of three underground storage tanks, two of which contained radioactive wastewater originating from radiochemistry laboratories and radioactive lanthanum hot cells in Building TA-35-2. On September 17, 1996, the liquid was removed from these tanks and placed in 375- gallon crosslink high density polyethylene containers in a less-than-90-day storage area east of Building TA-35-2. The volume of waste to be treated is presented in Table 1.

Table 1: Volume of Waste Liquids to be Treated

Original Tank	Present Storage Container Number	Volume (gal.)
TA-35-5	5(a)	286.5.
TA-35-5	5(b)	282.7
TA-35-5	5(c)	244.5
TA-35-5	5(d)	267.4
TA-35-5	5(e)	91.7
TA-35-6	6(a)	152.8
	Total Volume =	**1325.6**

The waste was analyzed to determine its regulatory status and to determine compliance with Land Disposal Restriction (LDR) treatment standards prior to pumping the waste into its present storage containers. A hazardous waste determination was made based on analytical results and site history. The wastewater contains F-listed constituents. Several metals and organic constituents exceed the Toxicity Characteristic (TC) regulatory levels. In addition, the wastewater was found to exhibit the characteristic of corrosivity because its pH is equal to or below 2.0. Table 2 compares the concentrations of F-listed, D-listed, and underlying hazardous constituents with the LDR treatment standards for wastewaters. Because of the presence of F-listed solvents and other constituents which render the waste characteristic (e.g., chromium), the wastewater will be shipped off site and treated to meet all applicable LDR treatment standards at a permitted and approved treatment, storage, and disposal facility (TSDF). The results of other inorganic and physical analyses are found in Table 3.

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Table 2
Comparison of Concentrations with Regulatory Levels for TA-35-5 and TA-35-6

Source	Exceeds LDR Standards	Hazardous Constituents	Maximum Concen-tration	Q	RCRA Waste Codes	TC Regulatory Threshold	LDR Treatment Standards for Wastewaters
TA-35-5	Yes	1,1-Dichloroethene	11.0 mg/l (TCLP)		D029	0.7 mg/l	0.025 mg/l
	Yes	Methylene Chloride	92.0 mg/l		F002	N/A	0.0989mg/l
	Yes	1,1,1-trichloroethane	150.0 mg/l		F002	N/A	0.054 mg/l
	Yes	1,2-dichloroethane	2.1 mg/l (TCLP)		D028	0.5 mg/l	0.21 mg/l
	No	Vinyl Chloride	0.030 mg/l		N/A	0.2 mg/l	0.27 mg/l
	No	Chloroethane	0.026 mg/l		N/A	N/A	0.27 mg/l
	No	Acetone	0.16 mg/l		N/A	N/A	0.28 mg/l
	Yes	Trans-1,2 Dichloroethene	0.069 mg/l		N/A	N/A	0.054 mg/l
	N/A	Cis-1,2 Dichloroethene	0.015 mg/l		N/A	N/A	
	Yes	Carbon Tetrachloride	0.380 mg/l		F002	0.5 mg/l	0.057 mg/l
	No	Benzene	0.014 mg/l		F005	0.5 mg/l	0.14 mg/l
	Yes	Trichloroethene	0.93 mg/l		F002	0.5 mg/l	0.054 mg/l
	No	1,2-Dichloropropane	0.0081 mg/l		N/A	N/A	0.85 mg/l
	No	Bromodichloromethane	0.0021 mg/l	J	N/A	N/A	0.35 mg/l
	No	MIBK	0.0026 mg/l	J	N/A	N/A	0.14 mg/l
	No	Toluene	0.0029 mg/l	J	F005	N/A	0.08 mg/l
	Yes	1,1,2-trichlorethane	0.15 mg/l		N/A	N/A	0.054 mg/l
	No	Tetrachloroethene	0.0097 mg/l		F002	0.7 mg/l	0.056 mg/l
	No	Dibromochloromethane	0.0014 mg/l	J	N/A	N/A	0.057 mg/l
	No	Ethylbenzene	0.017 mg/l		N/A	N/A	0.057 mg/l
	No	m,p-Xylene	0.051 mg/l		N/A	N/A	0.32 mg/l
	No	o-Xylene	0.025 mg/l		N/A	N/A	0.32 mg/l
	No	1,1,2,2-tetrachloroethane	0.033 mg/l		N/A	N/A	0.057 mg/l
	No	MEK	0.26 mg/l	J	F005	200.0 mg/l	0.28 mg/l
	Yes	Chloroform	5.0 mg/l		N/A	6.0 mg/l	0.046 mg/l
	No	Di-n-butyl pthalate	0.045 mg/l		N/A	N/A	0.057 mg/l
	N/A	Bis(2-ethylhexyl) pthalate	0.0027 mg/l	J	N/A	N/A	N/A
	Yes	Chromium	15 mg/l		D007	5.0 mg/l	2.77 mg/l
	No	Mercury	0.00034 mg/l		N/A	0.2 mg/l	0.15 mg/l
	No	Arsenic	0.068	B	N/A	5.0 mg/l	1.4 mg/l
	No	Barium	0.012 mg/l	B	N/A	100.0 mg/l	1.2 mg/l
	Yes	Lead	2.3 mg/l		N/A	5.0 mg/l	0.43 mg/l
	No	Silver	0.052 mg/l		N/A	5.0 mg/l	0.43 mg/l
	Yes	pH	2		D002	2.0	Deact. & meet 268.48 stds.

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Table 2 cont.
Comparison of Concentrations with Regulatory Levels for TA-35-5 and TA-35-6

Source	Exceeds LDR Standards	Hazardous Constituents	Maximum Concen-tration	Q	RCRA Waste Codes	TC Regulatory Threshold	LDR Treatment Standards for Wastewaters
TA-35-6	No	Chloromethane	0.014 mg/l			N/A	0.19 mg/l
	Yes	Bromomethane	0.17 mg/l		N/A	N/A	0.11 mg/l
	Yes	Acetone	0.330 mg/l		N/A	N/A	0.28 mg/l
	No	Methylene Chloride	0.016 mg/l		F002	N/A	0.089 mg/l
	No	MEK	0.068 mg/l		F005	200.0 mg/l	0.28 mg/l
	No	1,1,1-trichloroethane	0.004 mg/l	J	F002	N/A	0.054 mg/l
	No	MIBK	0.0046 mg/l	J	N/A	N/A	0.14 mg/l
	No	Nitrobenzene	0.022 mg/l		F004	2.0 mg/l	0.068 mg/l
	No	Arsenic	0.21 mg/l		N/A	5.0 mg/l	0.28 mg/l
	No	Barium	0.82 mg/l		N/A	5.0 mg/l	1.2 mg/l
	No	Cadmium	0.15 mg/l		N/A	1.0 mg/l	0.69 mg/l
	Yes	Chromium	16.0 mg/l		D007	5.0 mg/l	2.77 mg/l
	Yes	Lead	9.9 mg/l		D008	5.0 mg/l	0.69 mg/l
	Yes	Mercury	0.44 mg/l		D009	0.2 mg/l	0.15 mg/l
	No	Nickel	0.77 mg/l	B	N/A	5.0 mg/l	0.43 mg/l
	No	Silver	0.01 mg/l	B	N/A	5.0 mg/l	0.43 mg/l
	No	Vanadiu,	0.18 mg/l		N/A	N/A	4.3 mg/l
	Yes	pH	0.9		D002	2.0	Deact. & meet 268.48 stds.

Table 3 Physical Parameter Data Summary for TA-35-5 and TA-35-6

Analytes	TA-35-5 Liquid	Liquid
Bromide	<0.4 mg/L	21 mg/L
Chloride	810 mg/L	7.5 mg/L
Sulfide, Reactive	<3 mg/L	<3 mg/L
Total Sulfur	35 mg/L	38 mg/L
Fluoride	0.20 mg/L	<0.1 mg/L
Nitrate-Nitrite-Nitrogen	0.98 mg/L	3100 mg/L
Cyanide, Reactive	<0.01 mg/L	<0.01 mg/L
Corrosivity	2.0 pH units	0.90 pH units
Specific Gravity	1	1
Total Halides	1400 mg/L	1700 mg/L
Total Dissolved Solids	240 mg/L	6000 mg/L
Phosphorus	3.8 mg/L	580 mg/L

Although the crosslink high density polyethylene containers meet all applicable hazardous waste requirements for storage, the containers do not meet Department of Transportation (DOT) requirements for shipment of corrosive liquids. However, the containers will meet all DOT requirements if the corrosive waste is neutralized prior to shipment. In order to ship the waste off-site for treatment, the waste must be either transferred into DOT-approved 55-gallon drums or neutralized. Neutralization is the preferred alternative because it minimizes the possibility of a release of the liquid into the environment and lessens worker exposure. In addition, the neutralization alternative avoids disposing of the crosslink polyethelene containers as waste.

Treatment

These acidic wastewaters will be neutralized by adding a concentrated solution of sodium hydroxide until the treated waste has a pH greater than 5 but less than 8, as measured in the aqueous residuals. Adjustment of the pH will result in deactivation to remove the hazardous characteristic of corrosivity. The sodium hydroxide will be slowly added to the waste in the containers while the wastewater is mechanically stirred. The containers are composed of crosslink high density polyethylene that is compatible with the acidic waste and is capable of withstanding the heat of reaction generated during treatment. The pH of the liquid will be closely monitored using a calibrated pH meter to ensure that the chemical reaction is controlled and that the pH does not exceed 8.

A site-specific health and safety plan (SSHASP) will be prepared and approved prior to conducting any treatment activity. The SSHASP will evaluate all potential hazards to human health and the environment and describe mitigating measures to minimize or eliminate these hazards. All personnel involved in the treatment activity will be trained in accordance with the SSHASP. A site safety officer will be present at all times during the activity to enforce conditions specified the SSHASP.

Description of Waste Generating Activity

Historical Activities

TA-35, also known as Ten Site, is located on the mesa between Mortandad and Ten Site canyons. TA-35-2, completed in 1951, once housed radiochemistry laboratories. Major research and development activities housed in this building included a hot cell used to prepare kilocurie sources of radioactive lanthanum, two experimental nuclear reactors, and a lithium tritide component development facility. In addition, a tritium facility was operated inside building TA-35-2 from 1954 until 1974.

Building TA-35-2 exhausted both off-gas and wastewater to the phase separator pit (TA-35-3) located east of TA-35-2. The phase separator pit was designed to receive combined liquid and gaseous waste streams, separating the liquid and gaseous phases by means of vortex shedding. Liquid effluents from the phase separator pit were collected and stored in three underground tanks (TA-35-4, TA-35-5, and TA-35-6), caustic treated for acidity, and then discharged to 50,000-

gallon capacity concrete storage tanks at the TA-35 Wastewater Treatment Plant.

Current Activities

The liquid waste to be treated was generated September 17, 1996 during Phase III of the TA-35 Decommisioning Project. Phase III included excavation, removal, and waste disposal of the phase separator pit and storage tanks TA-35-4, TA-35-5, and TA-35-6. Upon removal, all three tanks were found to be in tact. TA-35-4 was empty. TA-35-5 and TA-35-6 collectively contained approximately 1,325 gallons of wastewater. Presently, the wastewater is stored in six 375-gallon crosslink high density polyethlyene containers.

Waste Sampling and Analysis

In accordance with generator requirements, the liquid wastes were previously analyzed to determine whether they meet the applicable LDR treatment standards in 20 NMAC 4.1,Subpart VIII, 40 CFR 268, Subpart D. The liquid waste was sampled in accordance with SW846 methods and analyzed by qualified and approved laboratories.

The pH of the liquid will be measured using a calibrated pH meter during the addition of the concentrated sodium hydroxide solution. Subsequent to neutralization, one 250 ml grab sample will be collected from each container and analyzed for pH using SW-846 Method 9040 by a qualified and approved laboratory to verify that the pH is between 5 and 8. One grab sample is considered representative of the liquids in each container because the liquid will be stirred during treatment such that the pH of the waste will be consistent throughout.

The liquid from the tanks will then be transported to an approved off-site TSDF for treatment by incineration. The off-site TSDF will collect representative samples of the treatment residuals for analysis at an EPA-approved laboratory to verify that all applicable LDR standards have been met prior to land disposal.

Waste Certification

All analytical results completed in support of LDR requirements will be retained by the LANL Environmental Restoration Program. When the wastewater treatment residuals can be demonstrated to meet the applicable treatment standards, they can be land disposed at an approved TSDF. LANL will prepare and supply a notice and certification with information required under 20 NMAC 4.1, Subpart VIII CFR 268.7 (a)(1) and (b)(5)(iv) for each shipment of this liquid waste sent for off-site treatment and subsequent land disposal.