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Environmental Management
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Date: **APR 04 2018**

Symbol: EPC-DO: 18-143

LA-UR: 18-22623

Locates Action No.: N/A



Mr. John E. Kieling, Chief
 Hazardous Waste Bureau
 New Mexico Environment Department
 2905 Rodeo Park Drive East, Building 1
 Santa Fe, NM 87505

Subject: Transmittal of Analytical Results of the Seventh Pre-treatment Sample for the Los Alamos National Laboratory Hazardous Waste Facility Permit

Dear Mr. Kieling:

The purpose of this letter is to report analytical results as required by the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit issued to the Department of Energy (DOE) and Los Alamos National Security, LLC (LANS), collectively the Permittees, in November 2010. Permit Section 7.6(2) and Section C.3.2.4 of Permit Attachment C (*Waste Analysis Plan*) require the collection of pre-treatment solid waste samples from six remediated nitrate salt-bearing waste containers and pre-treatment liquid waste samples from two unremediated nitrate salt-bearing waste containers. Analytical results from LANL on-site laboratory testing must be provided to the New Mexico Environment Department Hazardous Waste Bureau (NMED-HWB) within 60 days of the sample collection.

The first liquid pre-treatment sample from container S844602 (repackaged to container 69907 then into container 70195) was collected on January 25, 2018. NMED-HWB approved a 10-day extension of time to submit the analytical results on March 23, 2018. Enclosure 1 includes a memorandum detailing the analytical results from the on-site analytical laboratory to the waste generating organization.

Enclosure 2 includes a table with a column indicating expected ranges for each analyte based on the Permittee's surrogate waste testing for remediated nitrate salt-bearing waste. The expected ranges for the waste stream were developed by the Permittees from the ranges of the surrogate materials utilized while developing the treatment method for nitrate salt waste. Most constituents and properties of this sample were comparable to the expected ranges for the waste stream.

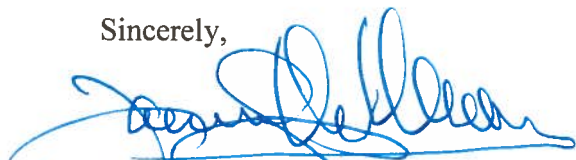
Arsenic, Selenium, Beryllium, chloride, oxalate within the sample were all reported at slightly greater than expected concentrations. The measured concentrations are very close to the expected ranges when the



measurement uncertainty is taken into account and do not affect the hazardous waste characterization information for the waste stream. Additionally, the concentration variances should not have any bearing on the effectiveness of the stabilization treatment process.

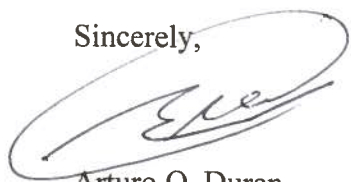
If you have comments or questions regarding this submittal, please contact Arturo Duran (Environmental Management) at (505) 665-7772 or Mark P. Haagenstad (LANS) at (505) 665-2014.

Sincerely,



Benjamine B. Roberts
Division Leader

Sincerely,



Arturo Q. Duran
Permitting and Compliance Manager

BBR/AQD/MPH:eim

- Enclosures:
- 1) Analytical Results for Sample Collected from Unremediated Nitrate Salt-Bearing Waste Container S844602
 - 2) Comparison Table of Expected Chemical Constituents/Properties

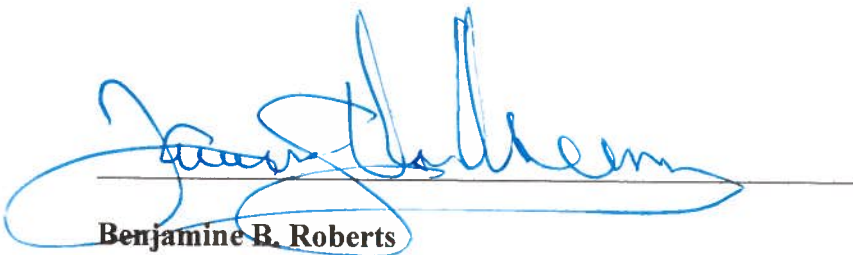
Copy:

- Laurie King, USEPA/Region 6, Dallas, TX (E-File)
- Neelam Dhawan, NMED/HWB, Santa Fe, NM, (E-File)
- Siona Briley, NMED/HWB, Santa Fe, NM, (E-File)
- Robert Murphy, NMED/HWB, Santa Fe, NM, (E-File)
- Pam Allen, NMED/HWB, Santa Fe, NM, (E-File)
- Douglas E. Hintze, EM-LA, (E-File)
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- Enrique Torres, ADEM, (E-File)
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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 designed to assure that qualified personnel properly gather and evaluate the information 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.



Benjamine B. Roberts
Division Leader
Environmental Protection and Compliance Programs
Los Alamos National Laboratory

3/29/2018

Date Signed



Arturo Q. Duran
Permitting Manager
Environmental Management
Los Alamos Field Office
U.S. Department of Energy

4/3/2018

Date Signed

ENCLOSURE 1

Analytical Results for Sample Collected from Unremediated
Nitrate Salt-Bearing Waste Container S844602

EPC-DO: 18-143

LA-UR-18-22623

Date: **APR 04 2018** _____

memorandum

Actinide Analytical Chemistry

To/MS: David Funk, ADEP, MS J910
Randy Erickson, ADEP, MS J910
From/MS: Rebecca Chamberlin, C-AAC, MS G740 *RC*
Pat Martinez, C-AAC, MS G740 *PM*
Phone: 7-1841/5-1646
Symbol: C-AAC-18-009
Date: 3/22/2018

SUBJECT: Analytical Results for Drum 70195 UNS Liquid Sample (Pre-Treatment)

Sample Summary

Drum #	70195
Type of Sample	Pre-Treatment UNS liquid sample
Sample ID	UNS SAMPLE A
Sample collection date	1/25/18
Analysis start date	2/14/18

Sample description Liquid sample from UNS drum 70195. The liquid had a rusty greenish color with very little suspended solids. All analysis data is reported on a weight basis.

Volume Collected ~ 30 mL

pH Measurement 0.02

Density 1.316 ± 0.004 (0.3%) g/cm³

Radionuclides (NDA, SNAP)	nCi/g	µg/g	(% uncertainty)*
Am 241	1.26E+04	3.4	3.6%
Am243	3.11E-01	0.001	6.2%
Np 237	8.99E-01	1.2	3.3%
Pu 238	3.86E+02	0.02	163%
Pu 239	1.21E+04	179	3.4%
Pu 240	3.07E+03	12	45.5%
Pu 241	1.46E+04	0.13	22.4%
U 235	1.50E-01	64	4.6%

Anions (Ion Chromatography)** µg/g +/- 10% except where noted***

Nitrate (NO ₃ ⁻)	300,000 (30.0 wt%)	
Nitrite (NO ₂ ⁻)	Not Detected	
Chloride (Cl ⁻)	1300	
Fluoride (F ⁻)	670	
Sulfate (SO ₄ ²⁻)	800	12%
Oxalate (C ₂ O ₄ ²⁻)	37,000 (3.7 wt%)	

RCRA Metals (ICP-MS/AES)	µg/g	+/- 20% except where noted***
Silver (Ag)	0.53	
Arsenic (As)	2.0	
Barium (Ba)	0.47	
Cadmium (Cd)	12	
Chromium (Cr)	160	
Mercury (Hg)	0.13	
Lead (Pb)	7700	
Selenium (Se)	3.3	
Cations (ICP-MS/AES)	µg/g	+/- 20% except where noted***
Sodium (Na)	100,000 (10.0 wt%)	
Aluminum (Al)	3300	
Calcium (Ca)	790	
Potassium (K)	3400	
Magnesium (Mg)	370	
Silicon (Si)	13	33%
Iron (Fe)	1500	
Zinc (Zn)	21	
Beryllium (Be)	1.2	
Manganese (Mn)	18	
Nickel (Ni)	43	
Copper (Cu)	45	
Estimated Composition	wt% (g/100 g sample)	
Anions	34.0	
Cations	11.7	
Water	54.3	

*The NDA SNAP results are reported with 2 X standard deviation (2σ). All other uncertainties are reported as 1 X standard deviation (1σ).

**Ion chromatography was done and results calculated based on the units of µg/mL. The values were converted to µg/g using the density of the solution.

***Measurement uncertainty is 10% for anions and 20% for cations/RCRA. Uncertainties in excess of these values may be a result of sample inhomogeneity.

Sample Photo



UNS SAMPLE A

Labware LIMS# 23422. Analytical procedures and work instructions used:

- 1) ANC 212, Ion Chromatography
- 2) ANC 102, Inductively Coupled Plasma—Mass Spectrometry Using the VG Elemental Plasma Quad
- 3) ANC 221, Operating the Jobin-Yvon (JY) Inductively Coupled Plasma – Atomic Emission Spectrometer
- 4) WI-5, Analytical Sample Receipt, Subsampling, and Distribution within Analytical Chemistry
- 5) WI-30, Chemical Analysis, Characterization and Research
- 6) WI-42, Radiochemical Research and Development at CMR

Cy: Craig Taylor, C-AAC, MS G740
C-AAC File

ENCLOSURE 2

Comparison Table of Expected Chemical Constituents/Properties

EPC-DO: 18-143

LA-UR-18-22623

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Expected Chemical Constituents/Properties of Pre-Treatment Nitrate Salt-Bearing Waste

Analyte	Analysis Results	Expected Range within Waste Stream	Unit
Nitrate	30 %	20-70	%
Lead	0.77 %	0-40	%
Water	54.3 %	10-30	%
Sodium	10 %	0-25	%
Aluminum	3,300 ppm	0-10,000	ppm
Calcium	790 ppm	0-10,000	ppm
Iron	1,500 ppm	0-10,000	ppm
Magnesium	370 ppm	0-50,000	ppm
Potassium	3,400 ppm	0-10,000	ppm
Arsenic	2 ppm	0-1	ppm
Barium	0.47 ppm	0-10	ppm
Beryllium	1.2 ppm	0-1	ppm
Cadmium	12 ppm	0-100	ppm
Chromium	160 ppm	0-1,000	ppm
Copper	45 ppm	0-1,000	ppm
Gallium	Not detected	0-1,000	ppm
Mercury	0.13 ppm	0-1	ppm
Nickel	43 ppm	0-1,000	ppm
Selenium	3.3 ppm	0-1	ppm
Silicon	13 ppm	0-1,000	ppm
Silver	0.53 ppm	0-1	ppm
Chloride	1,300 ppm	0-1,000	ppm
Fluoride	670 ppm	0-1,000	ppm
Nitrite	Not detected	0-1,000	ppm
Oxalate	3.7 %	0-1	%
Sulfate	800 ppm	0-10,000	ppm
pH	0.02	0-7	pH
Organic Matter	Not applicable	5-90	%