



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 13, 1992

Project M-32

Mr. Thomas Rowland, Director
West Valley Project Office
U. S. Department of Energy
Idaho Operations
P. O. Box 191
West Valley, NY 14171

Dear Mr. Rowland:

SUBJECT: FINAL RESULTS OF ANALYSIS ON WASTE EVAPORATOR ACID WASH

We have received results from New Brunswick Laboratory (NBL) of the analyses of the Liquid Waste Treatment System (LWTS) evaporator acid wash samples supplied by the West Valley Demonstration Project (WVDP). The results are in agreement with the analyses reported in a letter report of September 27, 1991, from J.C. Cwynar to T.J. Rowland, with subject title, "Final Report on Acid Cleaning of the LWTS Evaporator and Baseline Inventory of Fissile Material for TR-IRTS-11."

Based on an acid wash volume of 10,940 liters as reported in a phone call from West Valley Nuclear Services, the NBL analyses show that approximately 257 grams of plutonium and 9.2 kilograms of uranium were recovered from the LWTS evaporator by the three acid washes. These numbers compare to your results of 262 grams of plutonium and 9.4 kilograms of uranium as reported in the aforementioned letter report. The letter report also mentions that an additional 48.5 grams of plutonium was recovered from activities done in preparation for the acid wash. Therefore, the total amount of plutonium recovered from the LWTS is approximately 305 grams of plutonium; this amount compares to the 350 grams estimated by us as originally unaccounted for and presumed to be in the LWTS evaporator. Only a minimal quantity of plutonium remains unaccounted for and is presumed to be fixed in the LWTS evaporator.

Based upon the minimal amount of plutonium which remains in the LWTS evaporator, and new controls (such as pH control in Tank 8D-2) placed on the Integrated Radwaste Treatment System to limit future migration of plutonium into the LWTS evaporator, we feel that the issue concerning plutonium buildup

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in the evaporator to be resolved and that no threat to the health or safety of the public exists from this issue. If you have any questions, please feel free to call me at FTS 964-2667.

Sincerely,

/s/

Gary C. Comfort, Jr.
West Valley Project Manager
Advanced Fuel and Special
Facilities Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosure: NBL Report

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- RWeller, HLWM
- RECunningham
- JGreeves

bcc: PNair, CNWRA

[WV NBL LWTS EVAPORATOR ANAL.]

OFC	: IMAF	: IMAF	: IMAF	:	:	:
NAME	: GComfort:ls	: FBrown	: JSwift	:	:	:
DATE	: 02/13/92	: 02/13/92	: 02/13/92	:	:	:



Page 101	Date 8/2/91	Submitted By (Field/Regional Office, Etc.) NRC/NMSS	Inspection Number as Appropriate	Team Leader as Appropriate GARY COMFORT, NMSS PM
Source (Manufacturer/Contractor) WEST VALLEY NUCLEAR	City / State WEST VALLEY, NY	Form DOE/NRC-781	DOE/NRC Seal	

Description of Samples (include known impurities and approximate enrichment)

APPROXIMATELY 20ML SAMPLES OF WEST VALLEY
 EVAPORATOR ACID WASH

Classification

Sample	Report
<input checked="" type="checkbox"/> Unclassified	<input checked="" type="checkbox"/>
<input type="checkbox"/> Confidential	<input type="checkbox"/>
<input type="checkbox"/> Secret	<input type="checkbox"/>

(If sample is classified, state basis for classification, e.g., shape, composition, impurities, etc.)

Analyses Requested

g U/mL, g Pu/mL, Pu ISOTOPIC, U ISOTOPIC

Reporting Basis

As-recd. Wt.
 Dry Wt.
 Pickled Wt.

Reporting Unit

Wt./Sample Wt.
 Wt./Sample Vol.
 Wt./Element Wt.
 Other (specify)

NBL Sample No.	Requestor's Sample No.	NBL Sample No.	Requestor's Sample No.	NBL Sample No.	Requestor's Sample No.
91PU0269	5015A2-#5				
91PU0270	5015A2-#14				
91PU0271	5015A2-#24				
91PU0272	5015A2-#35				

For NBL Use Only

Date Analytical Service Request Received	Date Samples Received	Date Samples Shipped
08/29/91	08 29 91	

Report of Analysis Dated: 10/10/91

Sample Condition and Appearance:



NBL Sample No	Requestor's Sample No	WT% Pu238	WT% Pu239	WT% Pu240	WT% Pu241	WT% Pu242
91PU0269	5015A2-5	1.125 ± 0.2%	79.645 ± 0.03%	15.788 ± 0.15%	2.280 ± 0.2%	1.163 ± 0.2%
91PU0270	5015A2-14	1.126 ± 0.2%	79.646 ± 0.03%	15.796 ± 0.15%	2.279 ± 0.2%	1.154 ± 0.2%
91PU0271	5015A2-24	1.124 ± 0.2%	79.651 ± 0.03%	15.789 ± 0.15%	2.278 ± 0.2%	1.158 ± 0.2%
91PU0272	5015A2-35	1.125 ± 0.2%	79.656 ± 0.03%	15.782 ± 0.15%	2.279 ± 0.2%	1.158 ± 0.2%

Comments or Notes: Relative uncertainties are 95% confidence limits for a single determination based on present and previous measurements of isotopic standards, with a component added to account for known possible sources of systematic error.

Unknown Control Standards (% Relative Difference from Assigned Values)

Robert D. Oldham
 Signature
ROBERT D. OLDHAM, MANAGER
 Name, Title
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 Organization

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 Washington, D.C.

10/10/91

U.S. NRC - HQ

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 US Department of Energy
 New Brunswick Laboratory
 Argonne, Illinois
 Report of Analysis (General)


NBL Sample No.	Requestor's Sample No.	WT % U234	WT % U235	WT % U236	WT % U238	WT % U233
91PU0269	5015A2-5	0.018 ± 6%	1.715 ± 0.2%	0.173 ± 1%	98.069 ± 0.01%	0.025 ± 4%
91PU0270	5015A2-14	0.018 ± 6%	1.710 ± 0.2%	0.173 ± 1%	98.075 ± 0.01%	0.025 ± 4%
91PU0271	5015A2-24	0.018 ± 6%	1.713 ± 0.2%	0.173 ± 1%	98.072 ± 0.01%	0.025 ± 4%
91PU0272	5015A2-35	0.018 ± 6%	1.713 ± 0.2%	0.173 ± 1%	98.072 ± 0.01%	0.025 ± 4%

Comments or Notes: Relative uncertainties are 95% confidence limits for a single determination based on present and previous measurements of isotopic standards, with a component added to account for known possible sources of systematic error.

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ROBERT D. OLDHAM, MANAGER

Name Title

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NBL Sample No.	Requestor's Sample No.	U ASSAY	ATOMIC WT.			
91PU0269	5015A2-5	843±10 a	237.993			
91PU0270	5015A2-14	841±10 a	237.993			
		840±10 a				
91PU0271	5015A2-24	838±10 a	237.993			
		844±10 a				
91PU0272	5015A2-35	843±10 a	237.993			
		841±10 a				

Comments or Notes:

ASSAY REPORTED AS: a = micrograms/mL

The stated uncertainty is a 95% C.I. for a single observation. The standard deviation includes components for uncertainties in the spike assay and isotopic values, and mass spectrometric analytical error for the samples and sample/spike mixes.

Unknown Control Standards (% Relative Difference from Assigned Values)

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ROBERT D. OLDHAM, MANAGER
 Name Title

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ORIGINAL

NBL Sample No	Requestor's Sample No	Pu ASSAY	ATOMIC WT.			
91PU0269	5015A2-5	23.3±0.2 a	239.278			
		23.3±0.2 a				
91PU0270	5015A2-14	23.8±0.2 a	239.278			
		23.8±0.2 a				
91PU0271	5015A2-24	23.2±0.2 a	239.278			
		23.2±0.2 a				
91PU0272	5015A2-35	23.8±0.2 a	239.278			
		23.8±0.2 a				

Comments or Notes:
ASSAY REPORTED AS: a = micrograms/mL
 The stated uncertainty is a 95% C.I. for a single observation. The standard deviation includes components for uncertainties in the spike assay and isotopic values, and mass spectrometric analytical error for the samples and sample/spike mixes.

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