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ENVIRONMENTAL MONITORING

As a result of changes in Technical Specifications, sampling milk for ^{131}I was discontinued on September 21, 1973.

Thirty-nine (39) samples were obtained during the second quarter from the perimeter monitoring stations and were analyzed for alpha and beta activity. The alpha activity ranged from 1.38 (10^{-16}) to 7.84 (10^{-16}) µCi/ml for an average of 3.14 (10^{-16}) µCi/ml. The beta activity ranged from 3.93 (10^{-14}) to 1.17 (10^{-13}) µCi/ml with an average of 6.56 (10^{-14}) µCi/ml.

LOW LEVEL LIQUID EFFLUENTS

The amounts of radioactivity in liquid discharged from the plant during this period and their relationship to the maximum permissible concentration (MPC) in the Cattaraugus Creek are shown in Table 1.

GASEOUS EFFLUENTS

The amount of particulate radioactivity discharged via the plant stack and the relationship to the release limit in the Technical Specifications is shown in Table 2. Change 20 to the Technical Specifications discontinued the requirements of Krypton-85 and Iodine-131 monitoring while plant operations are suspended.

SURVEILLANCE TESTS

During this period, tests were performed in accordance with Section 6 of the Technical Specifications. The completion dates are shown in Tables 3 and 4.

LOW LEVEL LIQUID WASTE TREATMENT PLANT PERFORMANCE

During this period, the LLWT was in operation a total of 21 days and treated 1,609,000 gallons of water. Forty-eight (48) drums of concentrated sludge were removed with radiation levels ranging from 6 to 10 mr/hr. Decontamination of waste water continues to be good. All water discharged has been below 2.0×10^{-5} µCi Cs^{137}/ml. Average removal factors for this period are shown below.

AVERAGE REMOVAL FACTOR

Isotope	Previous Quarter	This Quarter
Cs-137	94.5	93.3
Sr-90	99.3	Not Available
Ru-Rh-106	Insufficient Data	Insufficient Data
Gross Beta	95.0	92.5

No significant developments or modifications to the facility have occurred during the past quarter and operation has been routine.

Table 1

LIQUID EFFLUENTS--1978
(Curies)

Month	Gross α	Gross β	Tritium	Sr^{90}	I^{129}	% MPC[a] Measured In Cattaraugus Creek
Jan	0.00092	0.087	433	0.0023	0.00005	1.74
Feb	0.00007	0.040	166	0.0009	0.00002	1.61
Mar	0.00014	0.024	110	0.0016	0.00004	0.49
Apr	0.000001	0.00007	0.0006	0.00001	NR[c]	NA[b]
May	0.00037	0.016	57.7	NA[b]	0.00007	1.05
Jun	0.000001	0.00002	0.0001	NA[b]	NR[c]	NA[b]
1978	0.00150	0.167	766.7	0.0048[d]	0.00018	1.28[e]

[a] MPC (β) = 3.0 (10^{-7}) µCi/ml when Sr^{90} analyses are not available
MPC (β) = 1.0 (10^{-5}) µCi/ml when Sr^{90} analyses are included separately
MPC (α) = 5.0 (10^{-6}) µCi/ml

[b] Not yet available.

[c] Not required; there were no Lagoon 3 effluent releases for the month

[d] Release through April 1978

[e] MPC through March 1978

Table 2

PARTICULATE GASEOUS EFFLUENTS

Month	Curies	% Monthly Limit
January	.0001	0.04
February	.0001	0.04
March	.0001	0.03
April	.00004	0.02
May	.00005	0.02
June	.00009	0.03
1978	.00046	0.029

Table 3

SURVEILLANCE TESTS

Spec. #	Subject	Completed This Quarter	Comments
6.1	Raschig Ring Tanks		Tanks are to be scheduled prior to next processing use
6.2	Sump Alarms and Eductors		
	XC-2	3-17, 4-7, 4-28, 5-19, 6-9, 6-30	Satisfactory
	XC-3	3-17, 4-7, 4-28, 5-19, 6-9, 6-30	Satisfactory
	PPC	3-12, 4-2, 4-23, 5-14, 6-4, 6-25	Satisfactory
6.3	Waste Storage Tank Pan Instrumentation		
	8D-1, 8D-2	4-14, 5-2, 5-22, 6-12	Satisfactory
	8D-3, 8D-4	4-10, 5-2, 5-25, 6-16	Satisfactory
6.4	Emergency Utility Equipment		
	30T-1	4-6	Satisfactory
	31K-1	4-6	Satisfactory
	32G-4B	4-12, 6-12	Satisfactory
	31G-2, 2A	4-12, 6-12	Satisfactory
	31K-2, 2A	4-12, 6-12	Satisfactory
	32G-2A, 2B	4-12, 6-12	Satisfactory
	Diesel Fuel	4-3, 4-10, 4-17, 4-24, 5-1, 5-8, 5-15, 5-22, 5-29, 6-5, 6-12, 6-19, 6-29	Satisfactory
	Propane Fuel	4-3, 4-12, 4-17, 4-25, 5-1, 5-8, 5-15, 5-22, 5-30, 6-6, 6-12, 6-20, 6-26	Satisfactory
	15K-10A	4-6	Satisfactory
	15F-21	4-6	Satisfactory
6.5	Filters	4-7, 4-14, 4-24, 5-4, 5-9, 5-17, 5-22, 5-27, 5-30, 6-6, 6-15, 6-20, 6-27	Satisfactory
6.6	Dilution Air	Not required this period	
6.7	Boric Acid	Not required this period	
6.8	Locking Out	Not required this period	
6.9	Water Activity Alarms	6-27	Satisfactory
6.10	Poisoned Dissolver Baskets	Not required this period	
6.11	Solvent Analysis	Not required this period	

Table 4

FILTER REPLACEMENT

A complete change of the filters in the main ventilation system was made during this quarter.

PROCESSING SUMMARY

During this period there was no processing of fuel.

NUCLEAR FUEL SUMMARY

The following information is based upon nuclear material accountability records and indicates the disposition of nuclear material in fuel at the reprocessing plant.

A. INVENTORY

The total on-site inventory on June 30, 1978 was 167,133 kilograms of uranium and 1,066,083 grams of plutonium. An inventory description by source and material type is presented in Table 5.

B. RECEIPTS AND SHIPMENTS

During the quarter, there were no receipts of spent fuel assemblies at the West Valley site. There were 5 shipments of irradiated WEPCO fuel assemblies transferred to BNWL from NFS during the quarter, containing 1,907 kilograms of uranium and 15,067 grams of plutonium.

C. MEASURED WASTE AND ADJUSTMENTS

There was no measured waste of nuclear material during the reporting period.

No adjustments of NFS Lot 27A were required.

Table 5

NUCLEAR FUEL STATUS AS OF JUNE 30, 1978

	Kilograms			Grams
	Total U	U-235	U-233	Total Pu
I. INVENTORY (4/1/78)				
NFS	3,271	8.01	--	306
Dresden-1	20,429	144.03	0.30	117,860
RG&E	46,156	722.48	--	287,977
Consumers	11,130	238.68	--	64,454
WEPCO	45,298	482.95	--	359,928
Jersey Central	42,756	463.43	--	235,558
TOTAL	169,040	2,059.58	0.30	1,066,083
II. RECEIPTS (4/1/78-6/30/78)	No receipts during this period.			
III. REMOVALS (4/1/78-6/30/78)				
A. WEPCO Assembly Shipments to BNWL	1,907	16.84	--	15,067
B. Measured Waste & Adjus. Lot 27A	0	0	0	0
TOTAL	1,907	16.84	0	15,067
IV. INVENTORY (6/30/78)				
NFS	3,271	8.01	--	306
Dresden-1	20,429	144.03	0.30	117,860
RG&E	46,156	722.48	--	287,977
Consumers	11,130	238.68	--	64,454
WEPCO	43,391	466.11	--	344,861
Jersey Central	42,756	463.43	--	235,558
TOTAL	167,133	2,042.74	0.30	1,051,016

RADIOACTIVE WASTE

A. Solid Waste

The radioactive plant waste buried during this quarter consisted of 1,799.86 cu. ft. containing 34.199 curies. The material was buried as high level waste.

B. High Level Liquid Waste

As of June 30, 1978, the high level storage tank 8D-2 contained 533,900 gallons of neutralized waste with an activity of 5,268 µCi Cs-137/ml and 149 µCi Cs-134/ml.

FACILITY PERFORMANCE AND MODIFICATIONS

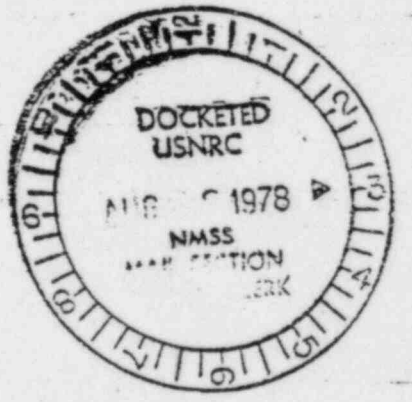
This section describes:

1. Major modifications that were either initiated or completed at the processing plant during the reporting period. There were no modifications initiated or completed during this reporting period.

2. A description of malfunctions of any equipment listed in Appendices 5.2, 9.51, 9.53 and 9.56 of the Final Safety Analysis Report which are important to safety. There were no malfunctions related to safety during this period.

Nuclear Fuel Services, Inc. P.O. Box 124 • West Valley, New York 14171
A Subsidiary of Getty Oil Company (716) 942-3235

July 27, 1978
9-78-068



Director
Office of Nuclear Material Safety
and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Enclosed is the forty-ninth quarterly report for the period April 1, 1978 to June 30, 1978 as required by Paragraph 5C(4) of Provisional License CSF-1.

If you have any questions or comments, please contact me.

Very truly yours,

NUCLEAR FUEL SERVICES, INC.

W. A. Oldham
General Manager

WAO/JPD/aa
Attachment

cc: NYSERDA Chairman
W. H. Lewis
H. W. Brook
J. R. Clark

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FEE EXEMPT

Nuclear Fuel Services, Inc. P.O. Box 124 • West Valley, New York 14171
A Subsidiary of Getty Oil Company (716) 942-3235

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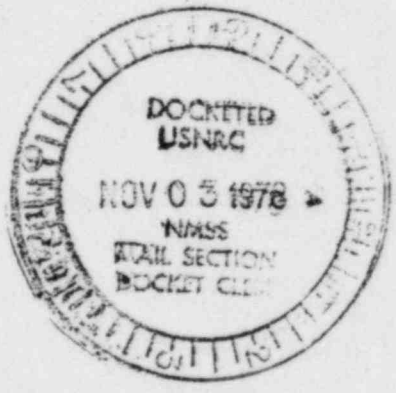
October 30, 1978
9-78-099

50-201



Director
Office of Nuclear Material Safety
and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Enclosed is the fiftieth quarterly report for the period July 1, 1978 to September 30, 1978 as required by Paragraph 5C(4) of Provisional License CSF-1.

If you have any questions or comments, please contact me.

Very truly yours,

NUCLEAR FUEL SERVICES, INC.

W. A. Oldham
General Manager

WAO/JPD/aa
Attachment

cc: NYSERDA Chairman
W. H. Lewis
H. W. Brook
J. R. Clark

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ENVIRONMENTAL MONITORING

As a result of changes in Technical Specifications, sampling milk for ^{131}I was discontinued on September 21, 1973.

Thirty-nine (39) samples were obtained during the third quarter from the perimeter monitoring stations and were analyzed for alpha and beta activity. The alpha activity ranged from 1.38 (10^{-16}) to 1.54 (10^{-15}) µCi/ml for an average of 4.08 (10^{-16}) µCi/ml. The beta activity ranged from 8.29 (10^{-15}) to 1.79 (10^{-13}) µCi/ml with an average of 3.31 (10^{-14}) µCi/ml.

LOW LEVEL LIQUID EFFLUENTS

The amounts of radioactivity in liquid discharged from the plant during this period and their relationship to the maximum permissible concentration (MPC) in the Cattaraugus Creek are shown in Table 1.

GASEOUS EFFLUENTS

The amount of particulate radioactivity discharged via the plant stack and the relationship to the release limit in the Technical Specifications is shown in Table 2. Change 20 to the Technical Specifications discontinued the requirements of Krypton-85 and Iodine-131 monitoring while plant operations are suspended.

SURVEILLANCE TESTS

During this period, tests were performed in accordance with Section 6 of the Technical Specifications. The completion dates are shown in Tables 3 and 4.

LOW LEVEL LIQUID WASTE TREATMENT PLANT PERFORMANCE

During this period, the LLWT was in operation a total of 11 days and treated 1,230,000 gallons of water. Forty-two (42) drums of concentrated sludge were removed, each having a radiation level of 10 mr/hr. Decontamination of waste water continues to be good. All water discharged has been below 2.0×10^{-5} µCi Cs^{137}/ml. Average removal factors for this period are shown below.

AVERAGE REMOVAL FACTOR

Isotope	Previous Quarter	This Quarter
Cs-137	93.3	93.7
Sr-90	99.3	Insufficient Data
Ru-Rh-106	Insufficient Data	Insufficient Data
Gross Beta	92.5	96.8

No significant developments or modifications to the facility have occurred during the past quarter and operation has been routine.

Table 1

LIQUID EFFLUENTS--1978
(Curies)

Month	Gross α	Gross β	Tritium	Sr^{90}	I^{129}	% MPC[a] Measured In Cattaraugus Creek
Jan	0.00092	0.087	433	0.0023	0.00005	1.74
Feb	0.00007	0.040	166	0.0009	0.00002	1.61
Mar	0.00014	0.024	110	0.0016	0.00007*	0.49
Apr	0.000001	0.00007	0.0006	0.00001	NR[c]	1.20
May	0.00037	0.016	57.7	0.0045	0.00013*	1.05
Jun	0.000001	0.00002	0.0001	0.00001	NR[c]	3.76
Jul	0.000001	0.00007	0.0003	0.00001	NR[c]	NA[b]
Aug	0.000002	0.00008	0.0005	0.00001	NR[c]	NA[b]
Sep	0.000001	0.00005	0.0004	0.00001	NR[c]	NA[b]
1978	0.00151	0.167	766.7	0.0094	0.00027	1.64[d]

[a]MPC (β) = 3.0 (10^{-7}) μCi/ml when Sr^{90} analyses are not available
MPC (β) = 1.0 (10^{-5}) μCi/ml when Sr^{90} analyses are included separately
MPC (α) = 5.0 (10^{-6}) μCi/ml

[b]Not yet available.

[c]Not required; there were no Lagoon 3 effluent releases for the month

[d]MPC through June 1978

*Corrected value

Table 2

PARTICULATE GASEOUS EFFLUENTS

Month	Curies	% Monthly Limit
January	.0001	0.04
February	.0001	0.04
March	.0001	0.03
April	.00004	0.02
May	.00005	0.02
June	.00009	0.03
July	.00006	0.02
August	.00006	0.03
September	.00024	0.08
1978	.00084	0.034

Table 3

SURVEILLANCE TESTS

Spec. #	Subject	Completed This Quarter	Comments
6.1	Raschig Ring Tanks		Tanks are to be scheduled prior to next processing use
6.2	Sump Alarms and Eductors		
	XC-2	7-16, 8-8, 8-27, 9-17	Satisfactory
	XC-3	7-16, 8-8, 8-27, 9-17	Satisfactory
	PPC	7-16, 8-8, 8-27, 9-17	Satisfactory
6.3	Waste Storage Tank Pan Instrumentation		
	8D-1, 8D-2	7-12, 7-28, 8-16, 9-12, 9-27	Satisfactory
	8-3, 8D-4	7-12, 7-28, 8-16, 9-12, 9-27	Satisfactory
6.4	Emergency Utility Equipment		
	30T-1	7-10	Satisfactory
	31K-1	7-10	Satisfactory
	32G-4B	7-10	Satisfactory
	31G-2, 2A	8-12	Satisfactory
	31K-2, 2A	8-12	Satisfactory
	32G-2A, 2B	8-12	Satisfactory
	Diesel Fuel	7-3, 7-10, 7-17, 7-24, 7-31, 8-7, 8-14, 8-21, 8-28, 9-4, 9-11, 9-18, 9-25	Satisfactory
	Propane Fuel	7-3, 7-10, 7-17, 7-25, 7-31, 8-8, 8-14, 8-21, 8-30, 9-5, 9-11, 9-19, 9-26	Satisfactory
	15K-10A	7-10	Satisfactory
	15F-21	7-10	Satisfactory
6.5	Filters	7-12, 7-20, 7-24, 8-4, 8-10, 8-15, 8-22, 9-1, 9-8, 9-13, 9-19, 9-25	Satisfactory
6.6	Dilution Air	Not required this period	
6.7	Boric Acid	Not required this period	
6.8	Locking Out	Not required this period	
6.9	Water Activity Alarms	9-30	Satisfactory
6.10	Poisoned Dissolver Baskets	Not required this period	
6.11	Solvent Analysis	Not required this period	

Table 4

FILTER REPLACEMENT

There were no filter changes made during this quarter.

PROCESSING SUMMARY

During this period there was no processing of fuel.

NUCLEAR FUEL SUMMARY

The following information is based upon nuclear material accountability records and indicates the disposition of nuclear material in fuel at the reprocessing plant.

A. INVENTORY

The total on-site inventory on September 30, 1978 was 166,759 kilograms of uranium and 1,045,629 grams of plutonium. An inventory description by source and material type is presented in Table 5.

B. RECEIPTS AND SHIPMENTS

During the quarter, there were no receipts of spent fuel assemblies at the West Valley site. There was a shipment of one (1) irradiated WEPCO fuel assembly to BNWL during the quarter containing 374 kilograms of uranium and 3,314 grams of plutonium.

C. MEASURED WASTE AND ADJUSTMENTS

There was no measured waste of nuclear material during the reporting period.

No adjustments of NFS Lot 27A were required.

D. LOSS ON DECAY OF PU-241

A total reduction of two thousand and seventy-three (2,073) grams of plutonium from previous inventory to update for loss on decay corrections.

Table 5

NUCLEAR FUEL STATUS AS OF SEPTEMBER 30, 1978

	Kilograms			Grams
	Total U	U-235	U-233	Total Pu
I. INVENTORY (7/1/78)				
NFS	3,271	8.01	--	306
Dresden-1	20,429	144.03	0.30	117,860
RG&E	46,156	722.48	--	287,977
Consumers	11,130	238.68	--	64,454
WEPCO	43,391	466.11	--	344,861
Jersey Central	42,756	463.43	--	235,558
TOTAL	167,133	2,042.74	0.30	1,051,016
II. RECEIPTS (7/1/78-9/30/78)	No receipts during this period.			
III. REMOVALS (7/1/78-9/30/78)				
A. WEPCO Assembly Shipments to BNWL	374	3.50	--	3,314
B. Measured Waste & Adjus. Lot 27A	0	0	0	0
C. Pu-241 Decay	--	--	--	2,073
TOTAL	374	3.50	0	5,387
IV. INVENTORY (9/30/78)				
NFS	3,271	8.01	--	306
Dresder-1	20,429	144.03	0.30	117,608
RG&E	46,156	722.48	--	287,410
Consumers	11,130	238.68	--	64,367
WEPCO	43,017	462.61	--	340,730
Jersey Central	42,756	463.43	--	235,208
TOTAL	166,759	2,039.24	0.30	1,045,629

RADIOACTIVE WASTE

A. Solid Waste

The radioactive plant waste buried during this quarter consisted of 1,123.69 cu. ft. containing 170.952 curies. The material was buried as high level waste.

B. High Level Liquid Waste

As of September 30, 1978, the high level storage tank 8D-2 contained 584,500 gallons of neutralized waste with an activity of 4,620 μCi Cs-137/ml and 130 μCi Cs-134/ml.

FACILITY PERFORMANCE AND MODIFICATIONS

This section describes:

1. Major modifications that were either initiated or completed at the processing plant during the reporting period. There were no modifications initiated or completed during this reporting period.

2. A description of malfunctions of any equipment listed in Appendices 5.2, 9.51, 9.53 and 9.56 of the Final Safety Analysis Report which are important to safety.

   During Shift 1 on 9/19/78 the North Head End Ventilation Fan, 15K-20, went out of service due to a failed bearing.

   The ventilation system continued to operate on the spare LPG driven fan until repairs were effected and 15K-20 was returned to service on 9/21/78.

DEC 28 1978

Docket No. 50-201

Nuclear Fuel Services, Incorporated
ATTN: R. W. Deuster
President
Suite 600
6000 Executive Boulevard
Rockville, Maryland 20352

Gentlemen:

Subject: Inspection 78-10

This refers to the inspection conducted by Mr. D. Holody of this office on November 20-21, 1978 at your West Valley, New York facility of activities authorized by NRC License No. CSF-1 and to the discussions of our findings held by Mr. Holody with Mr. W. Oldham of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Our inspector also verified the steps you have taken to correct the item of noncompliance brought to your attention in a letter dated November 15, 1977. We have no further questions regarding your action at this time.

Within the scope of this inspection, no items of noncompliance were observed.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must be accompanied by an affidavit executed by the owner of the information, which identifies the document or part sought to be withheld, and which contains a statement of reasons which addresses with specificity the items which will be

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OFFICE ▶	SAFEGUARDS	SAFEGUARDS	FFMS	SAFEGUARDS		
SURNAME ▶	Holody/meo	Joyner	Kinney	Martin		
DATE ▶	12/15/78	12/22/78	12/22/78	12/24/78		

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NRC Form 318 (Rl) (5-76) NRCM 0240

U. S. GOVERNMENT PRINTING OFFICE: 1978-273-593

considered by the Commission as listed in subparagraph (b) (4) of Section 2.790. The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

No reply to this letter is required; however, should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

Walter G. Martin, Chief
Safeguards Branch

Enclosure: Office of Inspection and Enforcement Inspection Report Number 50-201/78-10

cc w/encl:
W. A. Oldham, General Manager

bcc w/encl:
IE Mail & Files (For Appropriate Distribution)
Central Files
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Nuclear Safety Information Center (NSIC)
Technical Information Center (TIC)
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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-201/78-10

Docket No. 50-201 Safeguards Group 2

License No. CSF-1 Priority 1 Category RP

Licensee: Nuclear Fuel Services

6000 Executive Boulevard

Rockville, Maryland 20352

Facility Name: West Valley Reprocessing Plant

Inspection at: West Valley, New York

Inspection conducted: November 20-21, 1978

Inspectors: D. Holody 12/15/78
D. Holody, Mathematical Statistician — date signed

_____ date signed

_____ date signed

Approved by: James H. Joyner 12/18/78
J. H. Joyner, Chief, Nuclear Material Control Support Section, Safeguards Branch — date signed

Inspection Summary:

Inspection on November 20-21, 1978 (Report No. 50-201/78-10)
Areas Inspected: Routine, unannounced inspection by a regional based inspector of nuclear material control and accounting including: licensee action on previous inspection findings; organization; operation; measurement and controls; shipping and receiving; storage and internal control; inventory; ID and its associated LEID; records and reports, and, management of material control system. The inspection involved 15 inspector-hours on site by one NRC inspector.
Results: No items of noncompliance were identified.

7903230853

Region I Form 12
(Rev. April 77)

DETAILS

1. Persons Contacted

*W. Oldham, Plant Manager
*J. Duckworth, Manager, Technical Services
*S. Greco, Accountability Supervisor
*T. DeBoer, Director, Technical Development Programs, New York State - ERDA

* denotes those present at the exit interview

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance Item (50-201/77-09-01): Failure to report the plutonium-241 decay in spent fuel assemblies on the semiannual material status report (Form NRC-742). Review of the reports submitted for the six-month periods ending March 31, 1978 and September 30, 1978, indicated that Pu-241 decay is now being calculated and reported.

3. Facility Organization

The licensee established an organizational structure that is responsive to nuclear material control and accounting. There have been no organization changes since the last inspection which would affect the nuclear material control and accounting program.

The ultimate responsibility for activities at the facility rests with the West Valley site General Manager. The responsibility for planning, coordinating and administering the SNM control and accounting function is assigned to the Technical Services Manager. Management of the SNM Material Control and Accounting system is the responsibility of the Accountability Supervisor. This responsibility includes maintaining the general ledger, subsidiary accounts, records and reports.

4. Facility Operation

Fuel reprocessing activities were suspended at the facility in April, 1972. Since that time the two basic operations conducted at the facility have been (a) the receipt and storage of spent fuel assemblies, and (b) the transfer of decontamination solutions to the waste tank.

The irradiated fuel assemblies are located in canisters in the spent fuel pool. The fuel storage canisters each contain one assembly, except for the canisters containing fuel received from Dresden, which may contain up to three assemblies. All other special nuclear material is located in the alpha laboratory, process control laboratory, emission spectrometry laboratory, sample storage cell, or hot cell.

No items of noncompliance were identified.

5. Measurement and Controls

Transfer of decontamination solution to the waste tank is performed periodically. These solutions, created through cleanout of the process system, contain small amounts of plutonium and uranium. The uranium is depleted, because the last reprocessing campaign contained depleted uranium. The acid solutions are transferred to Tank 7D-10 for neutralization and measurement prior to discharge to the waste tank (8D-2).

These solutions are the only material on which special nuclear material measurements are performed. The measurements consist of (a) volumetric determination of the amount of solution being transferred, (b) fluorometric analysis of solution samples for determination of percent uranium, and (c) alpha counting of solution samples for determination of percent plutonium.

Two samples are drawn from each batch of decontamination solution by using a recirculating vacuum airjet sampler system. The solution is air sparged prior to sampling. The average of the analysis of the two samples is used as the accountability value.

No items of noncompliance were identified.

6. Shipping and Receiving

There have not been any receipts of fuel assemblies at the facility since the last material control and accounting inspection on November 1-2, 1977. However, six fuel assemblies have been shipped to Battelle Northwest Laboratories since that time. The Material Transaction Reports (Form NRC-741) for these six shipments were reviewed and found to be accurate and to have been submitted on a timely basis.

No items of noncompliance were identified.

7. Storage and Internal Control

The system of internal control is limited since the only movements of material are (a) transfers of assemblies within the pool, which may occur when assemblies are shipped or received, and (b) the periodic transfer of the decontamination solutions to the waste tank.

Whenever an assembly is transferred to a new location in the pool, a new NFS Form 10 (Fuel Receiving and Storage Record) is completed. The form specifies the canister identification, assembly identification and the old and new grid location in the pool. These forms were reviewed and found to be acceptable for transfers made at the time the six fuel assemblies were shipped to Battelle.

An NFS Form 83 is completed whenever a batch of decontamination solution is transferred to the waste tank. This form records the volume transferred, as well as the amount of uranium and plutonium. Forms 83 which have been completed in the past year were audited and found to be acceptable.

No items of noncompliance were identified.

8. Inventory

The licensee is required, by Section 5 of the Fundamental Nuclear Material Control Plan, to perform an inventory of the special nuclear material on a semiannual basis. The last inventory was performed on July 31, 1978. With the exception of Pu-241 decay, the inventory has not changed since that time.

During the inspection, the licensee's inventory was verified by the inspector by (1) performing a piece count of the 750 spent fuel assemblies located in the spent fuel pool (including 300 grams of U-233 contained in U-233/Th-233 oxide rods in one grid location) and (2) observing the special nuclear material included in the cells and laboratories. The latter inventory consisted of:

(a) 291 grams Pu in plutonium nitrate solutions located in the hot cells or sample storage cell

(b) 5 grams Pu in plutonium oxide in the emission spectrometry laboratory

(c) 2 grams Pu in plutonium nitrate solution, and 13 g Pu in a PuBe neutron source located in the alpha laboratory

(d) 15 grams Pu in samples located in the product laboratory

(e) 2 grams Pu in metal and sulfate standards located in the process control laboratory

In performing the verification of the spent fuel pool, the inspector identified the serial number on some of the casks and crosschecked the grid location to the location indicated by the status boards at the pool and in the Accountability Supervisor's office. All crosschecks were in agreement.

No items of noncompliance were identified.

9. Inventory Difference (ID)

A negative ID (material gain) is obtained during any period in which decontamination solutions are generated. However, there is no change to the inventory since this entry into the general ledger is offset by entry of a positive measured discard when this solution is tranferred to the waste tank. The inspector reviewed the ID for each of the two six-month reporting periods ending March 31, 1978 and September 30, 1978.

The plutonium ID for the period ending March 31, 1978 was not offset by a measured discard (MD) of the same amount.

ID	(4) grams Pu
MD	26 grams Pu
Difference	22 grams Pu

This difference resulted when the "E" bottle, located in the sample storage cell, pressurized and leaked approximately 68 milliliters of plutonium nitrate solution. This solution had a plutonium concentration of 326 grams per liter, resulting in a spill of 22 grams Pu. This spill was washed to Tank 7D-10, which contained other decontamination solution. Upon measurement, the total SNM content of Tank 7D-10 was determined to be 26 grams Pu. This amount was discharged to the waste tank. An ID entry of (4) grams and an MD entry of 26 grams was made in the general ledger.

No items of noncompliance were identified.

10. Records and Reports

The inspector reviewed the licensee's system of records and reports which consist of source documents, accountability records, and accountability reports. The review covered the two six-month reporting periods ending March 31, 1978 and September 30, 1978. Material Balance Summaries for the twelve month period are provided in Exhibits 1-3.

The source documents generated during the two material status report periods were reviewed and found to be accurate. These included the Form NRC-741 transfer documents for the six shipments, the Fuel Receiving and Storage Records (NFS Form 10) for the assemblies, the Tank 7D-10 Waste Data volume of a batch of decontamination solution transferred from 7D-10 to the waste tank, and the NFS Forms 10 which list the analytical results for the solutions. No discrepancies were detected.

The accountability records were reviewed and found to be up-to-date. These included both pool status boards, the general ledger and the waste subsidiary account.

The accountability reports that were reviewed consisted of the two semiannual Material Status Reports and the monthly ID and measured discard report. These reports were completed in an acceptable manner. During a previous inspection, the licensee was cited for not reporting the Pu-241 decay on the Form NRC-742. Review of the two periods indicated that the licensee has corrected this item. The inventory was also adjusted by the amount of previously unreported Pu-241 decay that occurred in prior periods.

No items of noncompliance were identified.

11. Management of Materials Control System

An audit of the material control and accounting program was performed on June 21, 1978 by a member of the NFS corporate office, Rockville, Maryland. The results of the audit were documented in a letter to the licensee on July 6, 1978. The audit indicated that the records and reports were accurate, and the material control and accounting program was functioning properly.

No items of noncompliance were identified.

12. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on November 21, 1978. The scope and findings of the inspection were presented.

Exhibit I
NFS
Material Balance Summary
10/1/77 - 9/30/78
Plutonium
RIS:YDE

	Grams Pu	Pu 239 & 241
Beginning Inventory (10/1/77)	1,087,770	829,190
Receipts	-	-
Material to Account For	1,087,770	829,190
Removals		
Pu-241 Decay		
Previously Unreported	19,467	19,467
This Period	4,243	4,243
Shipments		
YDE-HYA #1	2,824	2,066
YDE-HYA #2	2,823	2,068
YDE-HYA #3	2,794	2,056
YDE-HYA #4	3,308	2,384
YDE-HYA #5	3,318	2,390
YDE-HYA #6	3,314	2,389
Measured Discards	26	22
ID	(4)	(4)
Ending Inventory (9/30/78)	1,045,657	792,109
Material Accounted For	1,087,770	829,190

Exhibit II
NFS
Material Balance Summary
10/1/77 - 9/30/78
Enriched Uranium
RIS:YDE

	Grams U	Grams U-235
Beginning Inventory (10/1/77)	150,375,394	1,965,904
Receipts	-	-
Material to Account For	150,375,394	1,965,904
Removals		
Shipments		
YDE-HYA #1	386,618	3,265
YDE-HYA #2	386,617	3,259
YDE-HYA #3	386,836	3,329
YDE-HYA #4	373,741	3,510
YDE-HYA #5	373,683	3,483
YDE-HYA #6	373,731	3,495
Measured Discards	-	-
ID	-	-
Ending Inventory (9/30/78)	148,094,168	1,945,563
Material Accounted For	150,375,394*	1,965,904

* includes 300 grams U-233 (See Exhibit III)

Exhibit III
NFS
Material Balance Summary
10/1/77 - 9/30/78
U-233
RIS:YDE

	Grams	
	U	U-233
Beginning Inventory (10/1/77)	523	300
Receipts	-	-
Material to Account For	523	300
Removals	-	-
Ending Inventory (9/30/78)	523	300
Material Accounted For	523*	300

* contains 152 grams U-235