

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-309/82-11

Docket No. 50-309 License No. DPR-36 Safeguards Group 4

Licensee: Maine Yankee Atomic Power Company  
83 Edison Drive  
Augusta, Maine 04336

Facility Name: Maine Yankee Atomic Power Station

Inspection At: Wiscasset, Maine, and Framingham, Massachusetts

Inspection Conducted: July 19 - 21, 1982

Date of Last Material Control and Accounting Inspection: December 6 - 7, 1977

Type of Inspection: Unannounced, Material Control and Accounting

Inspectors: *W. L. Kushner* 9/14/82  
W. L. Kushner, Senior Safeguards Auditor date signed

Approved by: *A. T. Gody* 9/14/82  
A. T. Gody, Chief, Safeguards Section date signed  
Technical Programs Branch

Inspection Summary:

Inspection on July 19 - 21, 1982 (Report No. 50-309/82-11)

Areas Inspected: Routine, unannounced inspection by a regional based inspector of nuclear material control and accounting, including Organization and Operation; Measurement and Control; Shipping and Receiving; Storage and Internal Control; Inventory; Records and Reports; and Management of Material Control System. The inspection involved 19 inspector-hours onsite by one NRC inspector and was begun during regular hours.

Results: The licensee was in compliance with NRC requirements within the areas examined, except for the following item:

1. Failure of established special nuclear material (SNM) control and accounting procedures to assure that sources and detectors are received, recorded, reported, controlled, inventoried, and shipped as required.

## Details

### 1. Persons Contacted

#### Maine Yankee Atomic Power Station, Wiscasset, Maine

- \* E. Wood, Plant Manager
- W. Paine, Technical Assistant to the Plant Manager
- A. Jordan, Quality Control Supervisor
- \* F. Card, Assistant Engineer, Reactor Engineering
- S. LaFlamme, Assistant Engineer, Reactor Engineering
- B. Kimbal, Health Physics Foreman
- \* P. Swetland, NRC Resident Inspector

#### Yankee Atomic Electric Company, Framingham, Massachusetts

- \*\* R. Grube, Manager, Fuel Cycle Department
- R. Cacciapouti, Manager, Reactor Physics
- \*\* R. Chin, Senior Engineer, Economic Analysis Group
- M. Buchheit, Senior Engineer

\*Denotes those present at exit interview on July 19, 1982.

\*\*Denotes those present at exit interview on July 21, 1982.

### 2. Licensee Action on Previous Inspection Findings

There were no outstanding items from the prior inspection conducted December 6 - 7, 1977.

### 3. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the completion of the inspection at both the Wiscasset, Maine, and Framingham, Massachusetts sites. The scope and findings of the inspection were summarized.

### 4. 85102 - Material Control and Accounting (Reactor)

#### a. Organization and Operation

One violation was identified.

The possession and use of SNM were confined to locations and purposes authorized by the license. The licensee has established and documented an organizational structure responsible for SNM control and accounting. Written SNM control and accounting procedures were established, maintained, and followed. However, these procedures did not assure effective control and accounting of SNM contained in sources and detectors.

The procedure manual established requirements for shipping and receiving, storage and internal control, inventory, and records and reports for fuel assemblies, but did not address specific requirements for control and accounting of SNM in sources and detectors. As a result: (1) two detectors containing approximately 3 grams of U-235 (shipped as rad waste during September, 1978) were not documented, as required, on a Nuclear Material Transaction Report (Form NRC-741). Additionally, these detectors were not reported to the NRC, as required, on a Material Status Report (Form NRC-742) as a measured discard; (2) two detectors containing a total of approximately 3 grams of U-235 (received from Westinghouse on shipments ZYN-YNV-3 and 4 on April 6, 1978 and April 10, 1979, respectively) were not reported to the NRC, as required, on Form NRC-742 until January 16, 1981; and (3) five detectors containing a negligible quantity of U-235 (shipped as rod waste during 1981) were not coordinated through the Framingham Central Accounting Office to assure that requirements such as maintaining records to document receipt, inventory (including location), disposal, acquisition and transfer of all SNM possessed under license, regardless of its origin or method of acquisition and to assure that an effective physical inventory of all such SNM had been performed at intervals not to exceed twelve months.

This is a Severity Level V violation (82-11-01).

b. Measurement and Controls

No violations were identified.

The licensee calculated nuclear depletion and production from results of a plant calorimetric, which provided the nuclear heat rate of the core. The data was used in computer programs to establish total uranium and uranium-235 depletion and plutonium production and decay, by fuel assembly and in total, for required reporting periods. The computer tabulations were reviewed and were the basis for quantities reported on Material Balance Reports, Forms NRC-742 submitted between October 1, 1977, and March 31, 1982.

c. Shipping and Receiving

No violations were identified (Reference paragraph 4.a.).

SNM receiving and shipping arrangements were under the supervision of the Reactor Engineering Department Supervisor. The completion of Nuclear Material Transaction Reports (Form NRC-741) were under the supervision of the Treasurer, Yankee Atomic Electric Company. A sample review was performed of Forms NRC-741 generated during the inspection period to determine proper signature, timely dispatch, and accuracy of data.

d. Storage and Internal Controls

No violations were identified (Reference paragraph 4.a).

Item Control Areas (ICA's) were established. Fuel assembly transfers were controlled by the Reactor Engineer and documented on Core Component Handling Checklists, which were the basis for updating Fuel Assembly History Cards. These transfers and history cards were reviewed by the inspector on a sample basis. No discrepancies were noted.

e. Inventory

No violations were identified (Reference paragraph 4.a.).

The licensee had taken inventories, as required by 10 CFR 70.51(d). An inventory verification was performed by the inspector on July 19, 1982, which consisted of:

- a piece count of all fuel assemblies (72) received during May and June 1982. Also, serial numbers of 24 assemblies were verified and checked against the New Fuel Storage Area Map.
- a visual inspection of the spent fuel pool and review of the spent fuel pool and core maps. Assemblies listed on these maps were verified to the control room tag board and traced to Core Component Handling Checklists and Fuel Assembly History Cards.
- a review of the source inventory record, updated May 1982, to determine inventory control of various sources and detectors containing SNM.

f. Records and Reports

No violations were identified (Reference paragraph 4.a.).

The inspection results were attained through an audit of the licensee's records, reports, and underlying data. All Material Balance Reports (Form NRC-742) submitted by the licensee during the inspection period were reviewed.

In conjunction with this review, the licensee was advised that depleted uranium is to be reported in kilograms versus grams.

Exhibits I and II, attached to this report, summarize the licensee's special nuclear material activity for the period October 1, 1977, through March 31, 1982.

g. Management of Material Control Systems

No violations were identified (Reference paragraph 4.a.).

The licensee was in the process of revising the SNM control and accounting procedures.

Audits of the site were performed annually by the Operational Quality Assurance Department of Yankee Atomic Electric Company. The licensee was advised that these audits should also include the SNM control and accounting functions that are performed by Yankee Atomic Electric Company at Framingham, Massachusetts.

EXHIBIT I

Maine Yankee Atomic Power Company

Material Balance for Period: October 1, 1977 - March 31, 1982

Reporting Identification Symbol: YNV

Reporting Unit: grams

	<u>Enriched Uranium</u>		<u>Plutonium</u>	
	<u>Element</u>	<u>Isotope</u>	<u>Element</u>	<u>Isotope</u>
Inventory (10/1/77)	215,206,089	2,960,445	1,082,057	839,465
Additions:				
Receipts	82,346,272	2,479,516	- 0 -	- 0 -
Production	<u>- 0 -</u>	<u>- 0 -</u>	<u>778,212</u>	<u>534,831</u>
Material to Account for:	<u>297,552,361</u>	<u>5,439,961</u>	<u>1,860,269</u>	<u>1,374,296</u>
Removals:				
Shipments	1,519,656	39,451	- 0 -	- 0 -
Degradation to Other Materials	66,571,961	417,510	- 0 -	- 0 -
Fission and Transmutation	3,676,442	2,028,205	- 0 -	- 0 -
Decay	<u>-0-</u>	<u>-0-</u>	<u>18,437</u>	<u>18,437</u>
Total Removals:	71,768,059	2,485,166	18,437	18,437
Inventory (3/31/82)	<u>225,784,302</u>	<u>2,954,795</u>	<u>1,841,832</u>	<u>1,355,859</u>
Material Accounted for:	<u>297,552,361</u>	<u>5,439,961</u>	<u>1,860,269</u>	<u>1,374,296</u>

EXHIBIT II

Maine Yankee Atomic Power Company

Material Balance for Period: October 1, 1977 - March 31, 1982

Reporting Identification Symbol: YNV

	<u>Plutonium-238 (grams)</u>		<u>Depleted Uranium (kilograms)</u>	
	<u>Element</u>	<u>Isotope</u>	<u>Element</u>	<u>Isotope</u>
Inventory (10/1/77)	3.8	3.1	-0-	-0-
Additions:				
From Other Materials	<u>-0-</u>	<u>-0-</u>	<u>66,572</u>	<u>418</u>
Material to Account for:	<u>3.8</u>	<u>3.1</u>	<u>66,572</u>	<u>418</u>
Removals:	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
Total Removals:	-0-	-0-	-0-	-0-
Inventory (3/31/82)	<u>3.8</u>	<u>3.1</u>	<u>66,572</u>	<u>418</u>
Material Accounted for:	<u>3.8</u>	<u>3.1</u>	<u>66,572</u>	<u>418</u>