



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

September 30, 2005

Docket No. 05000309  
ISFSI Docket No. 07200030

License No. DPR-36

John Niles  
ISFSI Manager  
Maine Yankee Atomic Power Company  
321 Old Ferry Road  
Wiscasset, ME 04578-4922

SUBJECT: INTEGRATED INSPECTION 05000309/2005002, MAINE YANKEE ATOMIC  
POWER COMPANY, WISCASSET, MAINE

Dear Mr. Niles:

On September 9, 2005, we completed an integrated inspection at your Maine Yankee reactor facility of activities authorized by the above listed NRC license. We discussed our findings with you, Mr. James Connell, and others via a telephone conference on September 12, 2005. The enclosed report presents the results of this inspection

During this inspection period, we inspected your safety reviews, design changes, and modifications; Final Status Surveys; and radioactive waste management programs through selective examinations of procedures and representative records, interviews with personnel, observations by the inspectors, and independent measurements. We consider the programs to be implemented appropriately.

Current NRC regulations for decommissioning are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **Nuclear Materials; Materials Quick Links**; then **Decommissioning of Nuclear Facilities**, or you may obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 9:00 p.m. EST, Monday through Friday (except Federal holidays).

No reply to this letter is required. We appreciate your cooperation with us during this inspection.

Sincerely,

/RA/

Marie Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosures:

1. Inspection Report No. 05000309/2005002

J. Niles  
Maine Yankee Atomic Power Company

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cc w/encl:

G. Poulin, Chairman of the Board  
J. Connell, Vice President and Chief Nuclear Officer  
M. Thomas, Vice President and Chief Financial Officer  
E. Howes, Director, Public and Government Affairs  
J. M. Block, Attorney at Law  
J. Fay, Esquire, Corporate Counsel  
P. Dostie, State Nuclear Safety Inspector  
P. Brann, Assistant Attorney General  
First Selectman of Wiscasset  
M. Kilkelly, Chair - Community Advisory Panel  
Maine State Planning Officer - Nuclear Safety Advisor  
State of Maine, SLO Designee  
State Planning Officer - Executive Department  
Friends of the Coast

J. Niles  
Maine Yankee Atomic Power Company

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No. 05000309/2005002

Docket Nos. 05000309 & 07200030

License No. DPR-36

Licensee: Maine Yankee Atomic Power Company

Location: 321 Old Ferry Road  
Wiscasset, ME 04578-4922

Inspection Dates: June 10, 2005 - September 9, 2005

Inspectors: Mark C. Roberts, Senior Health Physicist  
Decommissioning Branch  
Division of Nuclear Materials Safety (DNMS), Region I

Bruce Watson, Health Physicist  
Reactor Decommissioning Section  
Division of Waste Management and Environmental Protection  
Office of Nuclear Materials Safety and Safeguards (NMSS)

Approved By: Marie T. Miller, Chief  
Decommissioning Branch, DNMS, Region I

## EXECUTIVE SUMMARY

Maine Yankee Atomic Power Company  
NRC Inspection Report No. 05000309/2005002

This integrated inspection included aspects of licensee safety reviews, design changes, and modifications; Final Status Surveys (FSS); and radioactive waste management programs. The report covers approximately a three-month period of announced inspections by one regional inspector and one NMSS inspector.

### Facilities Management and Control

Maine Yankee utilized the 10 CFR 50.59 process to make a change to its License Termination Plan (LTP) to clarify the use of remediation gamma scans to support FSS data. NRC staff determined that this change could not be used retroactively to resolve previous issues identified in FSS data reviews in selected Survey Units (SUs). Maine Yankee provided additional information so that NRC staff could conclude that the SUs met the dose criteria in the Maine Yankee LTP.

### Decommissioning Performance and Status Review

Maine Yankee provided adequate technical information to answer questions regarding the use of the In Situ Object Counting System (ISOCS) for surface measurements. Maine Yankee FSS procedure for systems, structures and soil was generally adequate, except that it should provide more specific requirements to ensure that a relocated survey point can be judged to be as representative as the original survey point. Maine Yankee verification surveys were adequate to demonstrate no re-contamination in previously remediated SUs. NRC random gamma walkover survey measurements were within the range of natural background levels.

### Radioactive Waste Management

Maine Yankee effectively implemented its program for loading and transporting radioactive waste. Corrective actions adequately addressed the requirements regarding limiting moisture content in radioactive waste shipments.

## REPORT DETAILS

### Summary of Facility Activities

Maine Yankee is continuing to operate their Independent Spent Fuel Storage Installation (ISFSI). Building demolition activities are complete and soil excavation, debris removal and final status survey activities are continuing.

### **1.0 Facilities Management and Control**

#### **1.1 Safety Reviews, Design Changes, and Modifications**

a. Inspection Scope (Inspection Procedure (IP) 37801)

The inspectors reviewed changes to the Maine Yankee License Termination Plan (LTP) using the 10 CFR 50.59 process. The changes involved the clarification of the use of gamma remediation surveys to support Final Status Survey (FSS) data. Information was gathered through a review of documents, FSS reports and discussions with cognizant personnel.

b. Observations and Findings

In order to clarify issues relating to concrete remediation gamma scans and the use of this information to supplement FSS information submitted to the NRC, Maine Yankee made an LTP change utilizing the process identified in 10 CFR 50.59. The change involved adding an attachment to one section of the LTP that was intended to clarify the mechanism for determining if there was contamination at depth in concrete areas. The change to the LTP using the 10 CFR 50.59 process was adequate. The inspector, however, determined that the change could not be used retroactively to eliminate the requirement for using remediation gamma scans to support Maine Yankee's determination that there was no contamination at depth in the selected Survey Units (SUs). NRC reviewed additional survey information and were able to resolve technical issues relating to residual contamination in these SUs. The inspectors determined that there was sufficient information to conclude that the SUs met the LTP remediation criteria. Because the gamma survey issues were resolved, the clarification was no longer necessary and Maine Yankee eliminated the attachment to the LTP by means of another LTP change using 10 CFR 50.59. The inspector determined that this second change was completed in accordance with 10 CFR 50.59.

c. Conclusions

Maine Yankee utilized the 10 CFR 50.59 process to make a change to its LTP to clarify the use of remediation gamma scans to support FSS data. NRC staff determined that this change could not be used retroactively to resolve previous issues identified in FSS data reviews in selected SUs. Maine Yankee provided additional information so that NRC staff could conclude that the SUs met the dose criteria in the Maine Yankee LTP.

Enclosure

## 2.0 Decommissioning Performance and Status Review

### 2.1 Inspection of Final Status Surveys

a. Inspection Scope (IPs 40801, 83801)

The inspectors reviewed information related to FSS documents and requests for additional information submitted for NRC review. In particular, the inspectors focused on areas where additional information was needed to clarify the information and data provided to the NRC in FSS documents. Random walkover gamma surveys were also performed by one of the inspectors. Information was gathered through a review of documents, discussions with cognizant personnel, and survey instrument measurements.

b. Observations and Findings

Maine Yankee FSS Report Supplement 9A, 10 and 10A, FA-0400, FR-2600, FR2900, Use of In Situ Object Counting System (ISOCS) for Concrete and Asphalt Measurements

The inspectors reviewed Maine Yankee's information provided on use of the ISOCS gamma counting system for FSS measurements on residual concrete surfaces in the Fuel Building, electrical duct banks, and asphalt surfaces along roads and rail areas. The ISOCS system had been specifically approved for volumetric soil measurements and this methodology was being extended for use on concrete surfaces at soil/concrete interfaces below grade, concrete duct banks where access was difficult, and road surfaces along railroad tracks. The inspectors reviewed specific calculations and the validation of the tests conducted by Maine Yankee and discussed this information with Maine Yankee FSS staff. The licensee provided additional information as requested on the efficiencies of the ISOCS and scan minimum detectable activities in various fields of view.

Maine Yankee FSS Report Supplement 9A - FR-0400-SU1

In Condition Report (CR)-05-023, Maine Yankee documented that the State of Maine, using a sodium iodide (NaI) detector and ratemeter, found residual contamination in SU FA-0400-01 that was in excess of 30,000 counts per minute (cpm) gamma. This criterion was used by Maine Yankee to evaluate contamination at depth in concrete structures. Maine Yankee had conducted scans of concrete surfaces in SU FA0400-01 and found no indication at or above the remediation criterion. NRC staff requested an explanation for this occurrence since similar equipment was used for both surveys.

Based on discussions with cognizant Maine Yankee personnel and a review of Maine Yankee procedures and other related documents, the inspector determined that Maine Yankee performed their scanning measurements in accordance with Procedure PMP 6.7.1, Final Status Survey Procedure for Systems, Structures and Soils. The procedure directs scans to be performed with the E-600 ratemeter in "peak hold" mode while scanning within three inches of the surface to be monitored at a scan speed of two inches per second. The highest count rate encountered is then logged into the instrument memory. The State of Maine used a similar NaI detector, however the measurement was made at near contact of the surface with a very slow scan speed in order to locate the small elevated area. The inspector determined that the reduced scan speed and closer measurement distance could account for the measurement differences.

Maine Yankee FSS Report Supplement 9A NRC - FR-2600-SU1:

FR- 2600-SU1 was a Class 3 survey unit consisting of electrical duct banks within and outside the restricted area boundary. The duct banks are accessed through a series of manhole and handhole structures. The Maine Yankee survey design identified 14 direct beta survey locations in these structures, two of which were floor surfaces in manholes. In conducting the direct measurements, the survey technician relocated the two floor measurements to locations on the lower wall surfaces due to the presence of water and sediment on the floor of the manhole. NRC staff noted that the LTP did not allow moving the survey point without randomly determining new survey locations. The NRC staff was concerned that the movement of the survey points from a horizontal surface to a vertical surface may not be representative of residual contamination levels in the manhole.

The inspector discussed this issue with cognizant Maine Yankee personnel and reviewed Maine Yankee procedures and other related documents. Maine Yankee had attempted to remove water from one of the manholes, but was not successful in maintaining the area dry enough for a beta survey on the floor. Maine Yankee staff felt that similar problems would be evident in the other manhole structures and made no further attempts to remove water from other manholes. Maine Yankee performed the beta survey measurements in accordance with Procedure PMP 6.7.1, Final Status Survey Procedure for Systems, Structures and Soils. This procedure allows relocation of a survey point to within one meter of the designated survey location if there is interference in surveying the exact location. In this case, Maine Yankee staff also performed additional gamma spectrometry measurements (direct readings using the ISOCS and analysis of water and sediment samples from the manholes) that did not identify plant-related contamination in excess of the release criteria.

In discussions with the Chief Nuclear Officer, the inspector noted that the Maine Yankee staff followed the applicable procedure for relocating measurement points because of the condition of the floor surface and made additional measurements to verify the absence of residual contamination. However, the

Enclosure

inspector discussed that the procedure should provide more specific guidance to ensure that a relocated survey point can be judged to be as representative as the original survey point.

Maine Yankee FSS Report Supplement 10 and 10A, FR-2900 SU 2 and SU3, Railroad Tracks and Roadways

NRC staff noted that contaminated soil and debris were removed from the Industrial Area and transported over railroad tracks and roadways where FSS had already been conducted. Although Maine Yankee took precautions to prevent re-contamination of these areas and performed verification surveys in these areas to demonstrate that contamination above release criteria was not present, NRC staff expressed concern that this practice may be inconsistent with the LTP. NRC staff reviewed the results of the verification surveys performed following the movement of the contaminated soil and debris to determine if an adequate survey was performed for these areas. The inspector discussed the issue with cognizant Maine Yankee staff including the Chief Nuclear Officer and reviewed relevant LTP sections. LTP section 5.1.2.a permits the FSS Superintendent enough latitude to authorize the movement of truck and rail loads of contaminated debris to traverse a cleared area, and there was no indication of re-contamination.

Gamma Walkover Survey Measurement Results

The inspector traversed selected areas of the Maine Yankee site and made gamma count rate measurements using a portable 2" x 2" NaI gamma detector and scaler/ratemeter (Scaler - Ludlum Model 221, Serial Number 117354 Detector - Ludlum Model 44-10, Serial Number 132946, Calibrated July 20, 2005, Calibration Due July 20, 2006.) Most of the survey units had been backfilled, covered with new soil and seeded to control erosion. Portions of the following Maine Yankee Survey Units were surveyed by random walk through.

- \* FR-2900 SUs 2, 3
- \* FR-0100 SUs 1,2,3
- \* FR-0200 SU 3,4,5,6,7,8,9
- \* FR-0111 SUs 8,9,10,12,13,14,15,16,17,18,19,20

Within the scope of the surveys, all areas were found to be within the range of natural background levels.

c. Conclusion:

Maine Yankee provided adequate technical information to answer questions regarding the use of the ISOCS for surface measurements. Maine Yankee FSS procedure for systems, structures and soil was generally adequate, except that it should provide more specific requirements to ensure that a relocated survey point can be judged to be as representative as the original survey point. Maine

Enclosure

Yankee verification surveys were adequate to demonstrate no re-contamination in previously remediated SUs. NRC random gamma walkover survey measurements were within the range of natural background levels.

### 3.0 Radioactive Waste Management

#### 3.1 Transportation of Radioactive Materials

a. Inspection Scope (IPs 86750)

The inspector conducted a review of Maine Yankee's process and procedures for rail shipments of radiologically contaminated waste. Review activities focused on the waste loading operations that had been relocated to the ISFSI area and the ongoing implementation of previous corrective actions following the identification of railcars leaking water. Information was gathered through observation of work in progress, inspections of loaded railcars, review of shipping documents, and discussions with cognizant individuals.

b. Observations and Findings

In order to complete FSS activities in the former restricted area footprint of the site, Maine Yankee relocated approximately 50,000,000 pounds of low-level contaminated soil and debris to an area along the railroad tracks adjacent to the ISFSI. Material was relocated via truck and railcar into a prepared area within a three-acre parcel. Maine Yankee had originally requested that this parcel be included in the release of non-ISFSI land areas, but amended its request.

The inspector observed that the waste loading and radiological control activities were being performed in accordance with appropriate procedures and protocols. The required testing of soil for water content and the addition of water absorbing material into each railcar was being performed as required by the Maine Yankee corrective action program. Workers were observed to be following appropriate radiological control practices at the re-established location. The inspector reviewed selected shipping records and found that the shipping records were complete and the new checklists required by the corrective actions were being completed. No findings of significance were identified.

c. Conclusion

Maine Yankee effectively implemented its program for loading and transporting radioactive waste. Corrective actions adequately addressed the requirements regarding limiting moisture content in radioactive waste shipments.

#### **4.0. Management Meetings**

##### **4.1 Exit Meeting**

The inspectors presented inspection results to representatives of the licensee's staff at the end of each inspection visit during the inspection period. On September 12, 2005, a summary of the inspection findings for the entire inspection period was presented to John Niles, James Connell, and others via telephone conference. Licensee representatives acknowledged the inspection findings.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee and Contractor Staff

\*J. Connell, Radiation Protection Manager  
M. Evringham, Contracts/Procurement  
T. Feigenbaum, President  
R. Gann, Radiological Remediation Supervisor  
W. Henries, Director, Engineering  
E. Howes, Director Public and Government Affairs  
\*L. Jewett, Assistant Operations Manager  
M. Meisner, Chief Nuclear Officer  
E. Mercer, Radiological Engineering Supervisor  
\*J. Niles, Manager, Operations & Maintenance  
M. O'Brien, ISFSI Maintenance  
D. O'Donnell, FSS QC  
J. Packer, Final Site Survey  
G. Pillsbury, Engineer - Final Site Survey  
M. Readinger, Manager, Radwaste  
J. Rzasa, Security Supervisor  
M. Whitney, Licensing

### State of Maine

P. Dostie, Maine Nuclear Safety Inspector

\* Denotes those attending the telephone conference on September 12, 2005

## INSPECTION PROCEDURES USED

IP 37801: Safety Reviews, Design Changes, and Mods at PSRs  
IP 40801: Self-Assessment, Auditing, and Corrective Actions  
IP 83801: Inspection of Final Status Surveys  
IP 86750: Solid Radwaste Management & Transportation of Radioactive Material

**ITEMS OPENED, CLOSED, AND DISCUSSED**

**Items Opened:** None

**Items Closed:** None

**Items Discussed:** None

**LIST OF ACRONYMS USED**

CFR	Code of Federal Regulations
cpm	counts per minute
CR	Condition Report
DCGL <sub>W</sub>	Derived Concentration Guideline Level (average for wide areas)
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level Elevated Measurement Comparison
DNMS	Division of Nuclear Materials Safety
dpm/100 cm <sup>2</sup>	disintegrations per minute per 100 square centimeters
FSS	Final Status Survey
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
ISOCS	In Situ Object Counting System
LTP	License Termination Plan
MARSSIM	Multi-Agency Radiation Survey & Site Investigation Manual
mR	milliRoentgens
MY	Maine Yankee
MYAPC	Maine Yankee Atomic Power Company
NaI	Sodium Iodide
NMSS	Office of Nuclear Materials Safety and Safeguards
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
pCi/g	picocuries per gram