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

October 5, 2005

Docket No. 05000309 License No. DPR-36
ISFSI Docket No. 07200030

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

SUBJECT: INTEGRATED INSPECTION 05000309/2005001, MAINE YANKEE ATOMIC POWER COMPANY, WISCASSET, MAINE

Dear Mr. Niles:

On July 29, 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. Also enclosed with this letter is a report from the NRC's contractor the Oak Ridge Institute for Science and Education's (ORISE's) Environmental Survey and Site Assessment Program (ESSAP) detailing the results of recent confirmatory measurements conducted at the site.

During this inspection period, we inspected your self assessment, 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; 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. 05000309/2005001
2. ORISE Report, “Confirmatory and In-Process Inspection Surveys of Remaining Land Areas, Maine Yankee Atomic Power Company, Wiscasset, Maine”, June 2005 (ML052660359)

cc w/enclosure 1:
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
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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection No.	05000309/2005001
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:	February 5, 2005 - July 29, 2005
Inspectors:	Mark C. Roberts, Senior Health Physicist Decommissioning Branch Division of Nuclear Materials Safety (DNMS), Region I John Buckley, Maine Yankee Project Manager Reactor Decommissioning Section Division of Waste Management and Environmental Protection Office of Nuclear Materials Safety and Safeguards (NMSS) Bruce Watson, Health Physicist Reactor Decommissioning Section Division of Waste Management and Environmental Protection NMSS
Approved By:	Marie T. Miller, Chief Decommissioning Branch, DNMS, Region I

EXECUTIVE SUMMARY

Maine Yankee Atomic Power Company
NRC Inspection Report No. 05000309/2005001

This integrated inspection included aspects of self assessment, Final Status Surveys (FSS), and radioactive waste management programs. The report covers approximately a six-month period of announced inspections by one regional inspector, two NMSS inspectors, and three NRC contractors from the Oak Ridge Institute for Science and Education's (ORISE) Environmental Survey and Site Assessment Program (ESSAP).

Facilities Management and Control

Maine Yankee effectively utilized their condition reporting system to identify, evaluate, and correct identified deficiencies. Adequate records were maintained to document corrective actions.

Decommissioning Performance and Status Review

NRC/ORISE radiological surveys and sample analysis performed in the open land areas did not identify any radiological contamination in excess of NRC-approved site-specific release criteria or NRC effluent release regulations. These results confirmed that the licensee was conducting adequate FSS. Specific details of ESSAP's evaluation are contained in the accompanying ORISE Report.

Radioactive Waste Management

The licensee was implementing its environmental radiation monitoring program for the Independent Spent Fuel Storage Installation.

The radioactive waste transportation program was effective. Maine Yankee developed and implemented effective corrective actions to respond to the discovery of water leaking from gondola railcars.

Due to delays in receiving a sufficient number of railcars for radioactive waste shipments, Maine Yankee developed and implemented an ad hoc plan to relocate a large quantity of contaminated soil and debris to clear site areas for FSS.

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 Self-Assessment, Auditing, and Corrective Actions

a. Inspection Scope (Inspection Procedure (IP) 40801)

The inspector reviewed selected Condition Reports (CRs) generated through the licensee's corrective action program. The inspector focused on CRs relating to transportation and final status survey activities. Information was gathered through a review of records and discussions with cognizant personnel.

b. Observations and Findings

Corrective actions in CRs related to transportation and FSS were effective and timely. The CRs associated with waste transportation activities related to issues involving the integrity of lids for railcars or the condition of material being shipped to ensure excessive water was not present. Conditions related primarily to inadvertent contamination of areas during remediation were identified in CRs generated from review of FSS activities.

The inspector noted that immediate actions taken by the licensee were appropriate for the identified issues. Longer term corrective actions including procedure changes and training of personnel addressed root causes. The inspector confirmed adequate records were maintained to document issues and the subsequent corrective actions. No findings of significance were identified.

c. Conclusions

Maine Yankee effectively utilized their condition reporting system to identify, evaluate, and correct identified deficiencies. Adequate records were maintained to document corrective actions.

2.0 Decommissioning Performance and Status Review

2.1 Inspection of FSS Activities

a. Inspection Scope (IP 83801)

On November 16, 2004, December 8, 2004, and April 25 -27, 2005, NRC staff from the Office of Nuclear Material Safety & Safeguards and the NRC Region I Office and NRC's contractor, ORISE, performed a review of Maine Yankee's implementation of their FSS program. NRC staff performed a review of FSS

records and ORISE staff performed independent radiological surveys and sampling in open land areas. Information was gathered through reviews of documents, interviews with cognizant personnel, performance of confirmatory radiological surveys, and collection and analysis of water, sediment and soil samples.

b. Observations and Findings

The open land areas surveyed included designated Class 1 Areas (contamination above release criteria) in accordance with the guidance in NUREG-1575, Rev. 1, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" within the former restricted areas and Class 3 Areas (impacted, but residual activity expected to be a small fraction of the release criteria) immediately outside the former restricted area. Surveys within the former restricted area included Survey Areas FR 0100, Survey Unit (SU) 3; FR 0111, SU's 9, 10 and 17, and FR 0200, SU 3. These SU's included portions of the containment building and LSA building footprints. Balance of plant Class 3 Areas outside the former restricted area included FR 0900, SU's 2 and 3.

The Class 1 Areas had been remediated and each of the areas surveyed had an FSS completed by the licensee. The ORISE staff performed survey and sampling activities in these areas in accordance with NRC-approved site-specific survey plans and ORISE survey procedures and Quality Assurance manual. Surveys in these areas were intended to be confirmatory surveys of Maine Yankee's FSS. Independent survey activities consisted of gamma surface scans using sodium iodide detectors and ratemeters and collection of random and judgmental soil, sediment, and water samples. Samples and data were transported to the ORISE, Oak Ridge, TN facility for analysis and interpretation.

The ORISE surface scans identified five locations with elevated gamma count rates within the Class 1 Areas. The gamma count rates in all remaining areas were within the range of ambient background levels. A judgmental soil sample was collected in each of the five locations. An additional 29 random soil samples were collected in the areas encompassed by the surveys. Soil samples were analyzed by gamma spectrometry and the results compared to the appropriate site-specific derived concentration guideline levels ($DCGL_W$) for Cs-137 and Co-60 in soil from Maine Yankee's NRC-approved License Termination Plan (LTP). All results were less than the appropriate $DCGL_W$ for the areas. Specific details are contained in ORISE Report, "Confirmatory and In-Process Inspection Surveys of Remaining Land Areas, Maine Yankee Atomic Power Company, Wiscasset, Maine", June 2005. A copy of this report is attached and publicly available through the NRC's website via ADAMS Accession No. ML052660359.

In addition to the gamma surveys and soil sampling, NRC staff requested water and sediment samples be collected from an area west of the restricted area at a location where water was being drained from an open excavation in Survey Area

FR 0111, SU19. This SU had been remediated, and FSS successfully completed by the licensee; however, the excavation was near areas where remediation had not been completed. The area had not yet been backfilled and water was collecting in the excavation. Maine Yankee staff had contamination control measures in place to maintain the area clean and Maine Yankee radiation protection staff collected and analyzed water samples daily. The inspector reviewed the Maine Yankee data and determined that the water was well below the NRC effluent release criteria. The NRC/ORISE sample results also did not identify any levels exceeding LTP or effluent release regulations.

c. Conclusion:

NRC/ORISE radiological surveys and sample analysis performed in the open land areas did not identify any radiological contamination in excess of NRC-approved site-specific release criteria or NRC effluent release regulations. These results confirmed that the licensee was conducting adequate Final Status Surveys. Specific details of ESSAP's evaluation are contained in the accompanying ORISE Report.

3.0 Radioactive Waste Management

3.1 Effluent and Environmental Monitoring

a. Inspection Scope (IPs 86750, 40801)

The inspector reviewed the environmental radiation monitoring measurements conducted in the vicinity of the ISFSI. Information was gathered through a review of documents and discussions with cognizant personnel.

b. Observations and Findings

Prior to the end of 2004, Maine Yankee Radiation Protection staff performed periodic radiation exposure rate measurements in the vicinity of the ISFSI. Exposure rate measurements include both gamma and neutron measurements. In addition, Maine Yankee made continuous environmental radiation measurements using dosimeters placed in the field at each of the 16 compass points surrounding the ISFSI and at offsite control locations. At the start of 2005, this program was turned over to a radiological contractor service for implementation.

The inspector reviewed measurements conducted under the Maine Yankee program and the current contractor program. Measurements were being conducted as required by procedures. The inspector discussed trending and comparing data under the two programs with the Radiation Protection Manager once sufficient data are collected under the new program. No significantly

elevated radiation exposure data were evident from the previous or current measurements. No findings of significance were identified.

c. Conclusion

The licensee was implementing its environmental radiation monitoring program for the ISFSI.

3.2 Offsite Transportation of Radioactive Materials

a. Inspection Scope (IPs 86750, 40801)

The inspector conducted a review of Maine Yankee's process and procedures for rail shipments of radiologically contaminated waste. The primary focus of the inspection related to reviewing 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 relevant CRs, and discussions with cognizant individuals.

b. Observations and Findings

Maine Yankee uses gondola railcars with lids for shipping radioactive waste from the site to the Envirocare of Utah facility for disposal. Recent waste shipments to Envirocare consist primarily of low-level contamination in soil, concrete pieces, and steel reinforcing bars. A pool of over 100 gondola cars are dedicated to the Maine Yankee decommissioning project. Gondola cars are filled at the site and shipped via a series of railroad companies to their final destination in Utah. Railcars are then emptied at the Envirocare site and a radiological survey is performed by Envirocare staff. Because Maine Yankee's decommissioning is ongoing, the railcars are typically returned directly to the Maine Yankee site to repeat the process. Maine Yankee has shipped more than 1500 railcars (greater than 300 million pounds) of waste to Envirocare.

In late March 2005, Maine Yankee staff identified water leaking from railcars that had been prepared for shipping and wrote a CR to document the issue. Maine Yankee developed a series of corrective actions that included postponing the current shipment, inspecting and sealing gaps, plugs, or seams in the gondola cars with suitable caulk or sealants, and adding absorbent material to reduce potential for free-standing water. On April 13, 2005, shipments of railcars from Maine Yankee that had arrived at Envirocare were identified with water leaking and one railcar contained free-standing water in excess of the Envirocare license conditions. These railcars had been shipped prior to the identification of the leaking railcars at the Maine Yankee site. Maine Yankee wrote another CR to document this more extensive condition. Due to the free-standing water issue, Envirocare temporarily suspended Maine Yankee's access to the burial facility until adequate corrective actions were developed. Maine Yankee believed that

the loading of frozen material that eventually thawed during transit was the cause of the excessive water in the railcars and a gradual degrading of the sealant that had been applied at the beginning of the project contributed to the leaking.

Maine Yankee developed more extensive correction actions that included the immediate return of all 48 railcars that were in transit, to the Maine Yankee site for inspection and sealing, off-loading all material from railcars, and testing soil for acceptable percent water content prior to loading. More effective water absorbents were also employed to ensure free-standing water was eliminated.

The inspector observed the sealing of railcars with silicon caulk and roofing compound. Sealants were placed around all drain plugs and the bottom seams of the railcars. Soil piles were spread out and moved to facilitate drying. Prior to loading, the inspector observed samples being dried and tested to determine water content. Soils were not loaded until a representative sample indicated a water content of less than 11 percent, the amount of water that Envirocare found suitable for compaction without exceeding the site free-standing water license conditions. The inspector also reviewed the modified procedure that incorporated the changes to the waste loading program. No findings of significance were identified.

c. Conclusion

The radioactive waste transportation program was effective. Maine Yankee developed and implemented effective corrective actions to respond to the discovery of water leaking from gondola railcars.

3.3 Onsite Relocation of Radioactive Debris

a. Inspection Scope (IPs 86750, 71801)

The inspector conducted a review of Maine Yankee's ad hoc plan to relocate a large volume of radioactive waste soil and debris in order to allow final status surveys to be conducted in the footprint of the former restricted area. Information was gathered through a review of work plans and discussions with cognizant individuals.

b. Observations and Findings

Because of delays in railcars being returned to the Maine Yankee site for reloading and transport to the Envirocare of Utah disposal site, Maine Yankee decided to relocate approximately 50 million pounds of contaminated soil and debris to a prepared area adjacent to the ISFSI in order to complete FSS measurements in the former restricted area. The prepared area had already been surveyed and met the LTP release criteria; however, Maine Yankee

requested that the three-acre parcel remain part of the licensed area associated with the ISFSI.

The licensee initially used dump trucks to move material, but subsequently used a railcar once a suitable area to unload the railcar was established. Radiation protection staff developed a plan for contamination control and survey measures so that the areas being traversed would remain clean. Contamination control measures included, but were not limited to, maintaining dump trucks in the clean area during loading and unloading, visually monitoring loading activities to ensure material being loaded did not spill out onto exterior truck surfaces, performing radiological surveys of trucks exiting the loading and unloading areas, and maintaining a segregated travel path for the trucks. Radiation protection staff performed periodic surveys of the loading and unloading areas to confirm that the contamination control measures were effective. Truck and railcar travel paths were surveyed at the end of each day. Discussions with radiation protection staff and management confirmed that the measures employed were effective in preventing contamination in clean areas from the relocation of the waste piles. No findings of significance were identified.

c. Conclusion

Due to delays in receiving a sufficient number of railcars for radioactive waste shipments, Maine Yankee developed and implemented an ad hoc plan to relocate a large quantity of contaminated soil and debris to clear site areas for FSS.

4.0 Management Meetings

4.1 Community Advisory Panel (CAP) Meeting

On February 24, 2005, Mark C. Roberts, NRC Region I, attended the Maine Yankee CAP Meeting. Mr. Roberts presented an overview of NRC activities and inspection findings relating to Maine Yankee and answered questions from the panel. This was the final meeting of the Decommissioning panel. A new panel will be formed to monitor spent fuel storage issues.

4.2 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. Obrion, 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

Oak Ridge Institute for Science and Education
T. Bauer, Project Leader
D. Herrara, Environmental Survey Health Physicist
E. Keys, Environmental Survey Health Physicist

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

INSPECTION PROCEDURES USED

IP 36801	Organization, Management & Cost Controls
IP 40801	Self-Assessment, Auditing, and Corrective Actions
IP 71801	Decommissioning Performance and Status Review
IP 83801	Inspection of Final Status Surveys
IP 86750	Solid Radwaste Management & Transportation of Radioactive Material

Attachment

ITEMS OPENED, CLOSED, AND DISCUSSED

Items Opened: None

Items Closed: None

Items Discussed: None

LIST OF ACRONYMS USED

CAP	Community Advisory Panel
CFR	Code of Federal Regulations
cpm	counts per minute
CR	Condition Report
$DCGL_W$	Derived Concentration Guideline Level (average for wide areas)
$DCGL_{EMC}$	Derived Concentration Guideline Level Elevated Measurement Comparison
DNMS	Division of Nuclear Materials Safety
dpm/100 cm^2	disintegrations per minute per 100 square centimeters
ESSAP	Environmental Survey & Site Assessment Program
FSS	Final Status Survey
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
LTP	License Termination Plan
MARSSIM	Multi-Agency Radiation Survey & Site Investigation Manual
mR	milliRoentgens
MY	Maine Yankee
MYAPC	Maine Yankee Atomic Power Company
NMSS	Office of Nuclear Materials Safety and Safeguards
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education
PDR	Public Document Room
pCi/g	picocuries per gram
SU	survey unit