UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

September 30, 2013

Mr. Thomas A. Caine, Manager
Vallecitos Nuclear Center
GE-Hitachi Nuclear Energy Americas LLC
6705 Vallecitos Road
Sunol, CA 94586

SUBJECT: NRC INSPECTION REPORT 070-00754/13-002

Dear Mr. Caine:

This letter refers to the inspection conducted on September 10-12, 2013, at the Vallecitos Nuclear Center in Sunol, California. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The inspection results were presented to you at the conclusion of the onsite inspection. The enclosed report presents the results of this inspection. No violations were identified, and no response to this letter is required.

One Unresolved Item was identified during our previous inspection of your implementation of the U.S. Nuclear Regulatory Commission's (NRC) Decommissioning Planning Rule. The Unresolved Item involves your recordkeeping for a previous pool leak and for removal of an underground tank from the Radioactive Materials Laboratory building. At the close of the previous inspection, your staff was unable to locate these decommissioning records, records required to be maintained per Title 10 of the *Code of Federal Regulations* (CFR) 70.25(g). Since the previous inspection, your staff identified some additional information about these two previous events, and your staff added these records to your decommissioning file. During the inspection, your radiation safety officer stated that archived records will continue to be reviewed, and any additional decommissioning records that are identified will be added to the decommissioning recordkeeping file. Therefore, the NRC has determined that the Unresolved Item will be closed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, should you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Robert Evans, Senior Health Physicist, at 817-200-1234 or the undersigned at 817-200-1191.

Sincerely,

/RA/

D. Blair Spitzberg, Ph.D., Chief
Repository and Spent Fuel Safety Branch
Division of Nuclear Materials Safety

Docket: 070-00754
License: SNM-960

Enclosure:
NRC Inspection Report 070-00754/13-002

cc w/encl: See attached Service List

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	070-00754
License:	SNM-960
Report:	070-00754/13-002
Licensee:	GE-Hitachi Nuclear Energy Americas LLC
Facility:	Vallecitos Nuclear Center
Location:	Sunol, California
Dates:	September 10-12, 2013
Inspector:	Robert Evans, Ph.D., C.H.P, P.E., Senior Health Physicist Repository and Spent Fuel Safety Branch Division of Nuclear Materials Safety
Approved By:	D. Blair Spitzberg, Ph.D., Chief Repository and Spent Fuel Safety Branch Division of Nuclear Materials Safety
Attachment:	Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

GE-Hitachi Nuclear Energy Americas LLC
NRC Inspection Report 070-00754/13-002

This inspection was a routine, announced inspection of licensed activities being conducted at the Vallecitos Nuclear Center. In summary, the licensee was conducting site activities in accordance with regulatory, license, and procedure requirements.

Management Organization and Controls

- The licensee had sufficient staff for the work in progress. All management level and radiation protection staff positions were filled with qualified individuals. (Section 1)

Operational Safety

- The licensee was consolidating the special nuclear material in accordance with its consolidation plan. The licensee packaged radioactive material for shipment in accordance with procedure requirements, and the licensee shipped this material in accordance with regulatory requirements. The licensee was transferring special nuclear material from the Radioactive Materials Laboratory to the storage bunker in accordance with license and procedure requirements. The licensee's air sample results confirmed that the transfer activities were not creating airborne radiological hazards at the storage bunker. (Section 2)

Maintenance and Surveillance Testing of Safety Controls

- The licensee maintained and tested the criticality alarm systems in accordance with regulatory requirements and site procedures. (Section 3)

Implementation of the Decommissioning Planning Rule

- During the previous inspection, an Unresolved Item was identified related to decommissioning recordkeeping. In particular, the licensee did not have records for a previous pool leak and records documenting the removal of an underground tank. Since the last inspection, the licensee located some of these records. The licensee plans to continue searching for decommissioning-related records, and the licensee will add copies of these records to the decommissioning recordkeeping file as they are located. This Unresolved Item was closed. (Section 4)

Report Details

Summary of Site Status

At the time of the inspection, GE Hitachi Nuclear Energy continued to possess and store special nuclear material (SNM) at the Vallecitos Nuclear Center facility. Licensed operations include fuel examinations within various hot cells and storage of SNM. Other work in progress at the site included manufacturing of sealed sources under the licensee's State of California license.

On September 30, 2009, the licensee submitted a renewal application for its SNM-960 license to the U.S. Nuclear Regulatory Commission (NRC). The SNM license expired on June 30, 2010, but the license remains under timely renewal as provided in Title 10 of the *Code of Federal Regulations* (CFR) 2.109(a). By letter dated April 8, 2011, the licensee submitted a revised license renewal application to the NRC. However, by letter dated June 29, 2012, the licensee requested that the NRC temporarily suspend its review of the application.

The licensee resubmitted its renewal application to the NRC on November 12, 2012. In its revised renewal application, the licensee requested that the license be downgraded to a possession and storage only license. The licensee also submitted updated Decommissioning Funding Plans (DFPs) to the NRC and State of California on November 30, 2012, based on the licensee's revised license renewal application. The NRC informed the licensee by letter dated June 27, 2013, that it had conditionally accepted the revised license renewal application, pending receipt of some missing information. This missing information included a request for an updated Radiological Contingency and Emergency Plan as well as an updated seismic analysis.

During an August 9, 2013, teleconference call, the licensee informed the NRC staff that it planned to withdraw, revise, and resubmit its renewal application and DFPs. Accordingly, by letter dated September 11, 2013, the NRC informed the licensee that it would suspend its review of the DFPs pending revision and resubmittal to the NRC. However, during the inspection, the licensee's staff informed the NRC inspector that it planned to continue to pursue a possession and storage only license. At the close of the onsite inspection, the licensee was attempting to arrange a meeting with NRC and State of California staff to discuss its plans for revising the NRC's SNM license and the State of California's byproduct material license.

As part of the renewal application package, the licensee submitted a proposed inventory consolidation plan to the NRC. Prior to the inspection, the licensee had consolidated most of its SNM from various locations around the site. The licensee placed this material into metal liners for long-term storage.

During the inspection, the licensee was transferring liners containing SNM from the Radioactive Materials Laboratory to the storage bunker. In the near future, the licensee plans to remove all residual SNM contamination from the waste evaporator plant as well as various onsite laboratories. The SNM contamination will most likely be disposed as radioactive waste.

After the consolidation of the SNM is complete, the licensee plans to conduct radiological surveys of the cleaned areas to ensure that the areas are free of residual SNM contamination. The licensee plans to submit a completion report to the NRC after the consolidation effort has been completed. The licensee plans to submit this report to the NRC during late-2013 or early 2014.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

The inspector reviewed the licensee's oversight and control of licensed activities.

1.2 Observations and Findings

The inspector reviewed the licensee's organizational structure to ensure that all positions had been staffed. The licensee implemented one change to the organization since the previous inspection. By letter dated September 11, 2013, the licensee informed the NRC that it had reassigned a different person to the position of Manager, Vallecitos Nuclear Center. The new manager previously provided oversight of laboratory activities. The change was effective September 2, 2013. In addition, the inspector noted that all radiation protection staff positions were filled with qualified individuals. The inspector concluded that the licensee had sufficient staff for the work in progress.

1.3 Conclusions

The licensee had sufficient staff for the work in progress. All management level and radiation protection staff positions were filled with qualified individuals.

2 Operational Safety (88020)

2.1 Inspection Scope

The inspector reviewed the licensee's control of SNM to ensure compliance with license and procedure requirements.

2.2 Observations and Findings

The licensee plans to convert its SNM license from a possession and use license into a possession and storage only license. In support of this effort, the licensee developed an inventory consolidation plan. The purpose of the consolidation plan was to reduce the inventory of SNM within the onsite laboratories and hot cells, and to consolidate this material at the onsite storage bunker. The inspector reviewed the licensee's SNM consolidation efforts.

The consolidation of the SNM was being conducted in phases. One of the first phases involved the transfer of some SNM to the licensee's out-of-state fuel fabrication facility for recycling and reuse. The shipped material included unirradiated, enriched uranium pellets, pellet fragments, and uranium powder. The licensee shipped this material to the fuel fabrication facility several weeks ago.

The inspector reviewed the licensee's procedure requirements for packaging the SNM for shipment. The licensee packaged the SNM in 11 metal cans and 6 barrels in accordance with certain procedural restrictions. These restrictions included limits for the ratios between fissile and non-fissile material and limits for the total amount of uranium-235 contained in certain packages. The licensee's records indicate that all 17 packages complied with these packaging restrictions. The inspector concluded that all packages were prepared in compliance with procedural requirements.

The inspector reviewed the licensee's SNM shipment records. This exclusive use shipment consisted of 17 packages. The material was shipped as radioactive Low Specific Activity LSA-II material. The licensee's records indicate that it also conducted a radiological survey of the trailer and cab prior to actual shipment. The inspector concluded that the licensee shipped the SNM in accordance with U.S. Department of Transportation regulations.

The inventory consolidation plan also provides instructions for shipment of some residual SNM and other non-SNM wastes to an out-of-state disposal facility. A licensee representative stated that this shipment will occur in November 2013, and this shipment will include natural uranium, thorium, and depleted uranium. In the near future, the licensee plans to clean out the waste evaporator plant, various contaminated laboratories, and possibly the hot cells. The licensee plans to consolidate this SNM contamination and ship the material offsite for disposal. The licensee then plans to conduct radiological surveys to confirm that these areas are free of residual SNM. The licensee does not plan to free-release any of these areas for unrestricted use, in part, because state-licensed radioactive materials will continue to be used and stored in these areas.

The majority of the onsite SNM will be stored in the storage bunker. The bunker can be used for storage of SNM as well as irradiated reactor hardware. In accordance with the consolidation plan, the licensee recently collected discreet quantities of SNM from onsite laboratories, hot cells, and the radioactive material storage vault. The SNM was packaged into liners for transport and storage. The licensee used two types of liners, short liners and long liners. The liners consist of aluminum shells with brass caps, metals that tend to resist corrosion. The licensee conducted a criticality safety analysis and concluded that each liner cannot contain more than 300 grams of SNM. The inspector reviewed the licensee's inventory records and confirmed that each transferred liner contained less than 300 grams of SNM.

The inspector noted that the licensee had two liners in storage at the bunker that contained more than 300 grams of SNM. (These two liners were already in storage at the bunker prior to the licensee's implementation of the SNM consolidation plan.) A previous criticality safety analysis concluded that these two liners can safely remain in storage, but the licensee will have to update the analysis prior to future movement or transfer of these liners.

During the onsite inspection, the licensee was transferring liners containing SNM from the dry storage pit to the storage bunker. The inspector observed the licensee conduct the transfer operations. By procedure, only one liner can be transferred at a time. The license carefully placed each liner in a transfer cask, transferred the liner to the bunker, and carefully moved the liner from the transfer cask into the bunker. The licensee implemented radiological controls to protect site workers during transfer operations. After each transfer, the workers conducted radiological surveys to ensure that the tools, transfer cask surface, and work area were free of residual contamination. The inspector noted that the licensee was conducting the transfer work in accordance with maintenance instructions and procedure requirements.

The licensee conducted the SNM transfers using two different types of transfer casks. Appendix A to License SNM-960 provides the requirements for onsite transfer casks. The inspector compared the casks in service to the license requirements. The inspector

concluded that the licensee was conducting the transfers using casks that were in compliance with license requirements.

To help ensure that loose SNM contamination was not creating occupational or environmental hazards, the licensee conducted air sampling within the storage bunker and at the outlet of the building ventilation system. The inspector reviewed the licensee's air sample results. The sample results were less than the respective action levels indicating that transfer operations were not creating localized airborne radioactivity hazards. The inspector will review the occupational exposure records for site workers during a future inspection, after the SNM consolidation work has been completed.

Finally, the SNM consolidation plan requires the licensee to remove all material not being stored in the bunker from the vicinity of the bunker. At the time of the onsite inspection, the licensee continued to store various radioactive materials in shielded casks or transfer containers within the storage bunker building. To satisfy the consolidation plan, the licensee will have to transfer this material into the storage bunker, remove the material from the bunker area, dispose of the material, or revise the consolidation plan. At the conclusion of the onsite inspection, the licensee had not decided which options to pursue.

2.3 Conclusions

The licensee was consolidating the onsite SNM in accordance with its consolidation plan. The licensee packaged radioactive material for shipment in accordance with procedure requirements, and the licensee shipped this material in accordance with regulatory requirements. The licensee was transferring SNM from the Radioactive Materials Laboratory to the storage bunker in accordance with license and procedure requirements. The licensee's air sample results confirmed that the transfer activities were not creating airborne radiological hazards at the storage bunker.

3 Maintenance and Surveillance Testing of Safety Controls (88025)

3.1 Inspection Scope

The inspector conducted a review of the licensee's criticality alarm systems to ensure compliance with regulatory and procedure requirements.

3.2 Observations and Findings

Regulation 10 CFR 70.24 provides the criticality accident requirements. This regulation requires licensees to maintain criticality alarm systems. The licensee maintains two criticality alarm systems to monitor for criticality accidents. Each alarm system consists of three detectors, and a criticality alarm will activate if two of three detectors measure radiation levels above the alarm setpoints. Each alarm system has two alarm setpoints, the alert and the high level alarm. The inspector reviewed the licensee's operation and maintenance of the two alarm systems during SNM transfer operations.

To support SNM transfer operations, the licensee temporarily modified the setpoint of one alarm system. The licensee issued Change Authorization 13-08 during late August 2013 to support the movement of SNM. This temporary change increased the alarm setpoint for the detector nearest to the transfer operations (Detector 3) to prevent

spurious activation of the criticality alarm. Normally, the alert is set at 10 millirem per hour, while the high level alarm is set at 20 millirem per hour. The licensee conducted a calculation and concluded that the maximum alarm setpoint for Detector 3 was 745 millirem per hour. As long as the high level alarm setpoint was 745 millirem per hour or less, then this criticality alarm system remained in compliance with 10 CFR 70.24 requirements.

Based on this calculation, the licensee elected to temporarily increase the alert setpoint for Detector 3 to 50 millirem per hour and increase the high alarm setpoint to 100 millirem per hour. These setpoints were sufficient to minimize the potential for a spurious alarm during SNM movement. The licensee started moving SNM in late-August 2013. The licensee's staff increased the setpoints for Detector 3 just prior to SNM movement. The licensee's staff decreased the setpoints to the normal levels (10/20 millirem per hour) after the movement of SNM had been completed for the day.

The inspector observed the licensee's instrument technician adjusting these alarm setpoints. The inspector confirmed that the technician adjusted the alert and high level alarm setpoints to the values provided in the Change Authorization. At the end of the day, the technician readjusted the setpoints to the normal values. The technician also conducted a criticality system functional test using radioactive check sources to ensure that the alarms would activate at the desired setpoints. The test demonstrated that the criticality alarm system would have responded if a criticality accident had occurred during SNM movement.

In recent years, the licensee has experienced problems with the two criticality alarm systems primarily due to the age of the equipment. The inspector reviewed the licensee's maintenance history for these two alarm systems. In response to the aging equipment, the technician has to lower at least one detector's alarm setpoints to 9 millirem per hour for the alert and 14 millirem per hour for the high level alarm. The inspector noted that the licensee's lowering of the alarm setpoints was a conservative response to the aging equipment. The licensee is considering possible design changes to the alarm system. The NRC will review any changes implemented by the licensee to the criticality alarm systems during future inspections.

3.3 Conclusions

The licensee maintained and tested the criticality alarm systems in accordance with regulatory requirements and site procedures.

4 Decommissioning Planning Rule Implementation (Temporary Instruction 2600/017)

4.1 (Closed) Unresolved Item 070-00754/1301-01: Maintenance of Records Important to Decommissioning

During the March 2013 inspection, the inspector identified an Unresolved Item related to decommissioning recordkeeping. (The March 2013 inspection is documented in NRC Inspection Report 070-00754/13-001 dated May 16, 2013). In particular, the licensee could not find decommissioning records for a previous pool leak and for removal of an underground storage tank. Regulation 10 CFR 70.25(g) specifies that licensees shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Because records of the pool leak

and the underground storage tank were not available for review during the inspection, the inspector was unable to confirm if the licensee was in compliance with the requirements of 10 CFR 70.25(g).

By letter dated June 14, 2013, the licensee informed the NRC that it had not located records of the pool leak and tank removal, but stated that it would continue to search for these and similar records.

During this inspection, the inspector reviewed the licensee's actions taken to locate these missing records. Since the previous inspection, the licensee located some of the missing records. The records indicate that water from the Building 102 storage pool leaked through the foundation and into subsurface soils in the mid-1970s. The records also indicate that the contamination consisted primarily of state-regulated radioactive material including cobalt-60 and cesium-137. No other radionuclide, including SNM contamination, was specifically mentioned in the records.

In addition, the licensee's records indicate that an underground tank was removed from Radioactive Materials Laboratory building in September 1990. This 16,000-gallon tank was removed because it was a single-wall tank. At that time, the licensee was replacing all single-wall tanks with double-wall tanks. This tank was used to collect pool overflow water and provide interim storage for radioactive waste water. The licensee identified low levels of cobalt-60 (less than one-half picocurie per gram) in the soil at that time, but no SNM contamination was identified.

In summary, the licensee identified some records for the pool leak and tank removal, and the licensee added these records to its decommissioning file. The radiation safety officer stated that additional records would be added to the decommissioning recordkeeping file as they are identified.

5 Exit Meeting Summary

The inspector presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on September 12, 2013. The licensee did not identify as proprietary any information provided to or reviewed by the inspector.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

J. Ayala, Radiation Protection Supervisor
D. Boorn, Instrument Technician
T. Caine, Manager, Vallecitos Nuclear Center
D. Krause, Program Manager, Regulatory Compliance
E. Saito, Manager, Environmental Health and Safety
K. Zanotto, Manager, Production

INSPECTION PROCEDURES USED

IP 88005	Management Organization and Controls
IP 88020	Operational Safety
IP 88025	Maintenance and Surveillance Testing of Safety Controls
TI 2600/017	Review of the Implementation of the Decommissioning Planning Rule

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

070-00754/1301-01	URI	Verify licensee has sufficient records to comply with decommissioning recordkeeping requirements

Discussed

None

LIST OF ACRONYMS

CFR	*Code of Federal Regulations*
DFP	Decommissioning Funding Plan
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
SNM	special nuclear material
TI	Temporary Instruction
URI	Unresolved Item