



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

April 14, 2021

Mr. Matt Feyrer, Site Manager
Vallecitos Nuclear Center
GE Hitachi Nuclear Energy Americas, LLC
6705 Vallecitos Road
Sunol, CA 94586

SUBJECT: GE HITACHI NUCLEAR ENERGY AMERICAS, LLC. – MATERIAL CONTROL AND
ACCOUNTING PROGRAM NRC INSPECTION REPORT 070-00754/2021-001

Dear Mr. Feyrer:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted from March 15-18, 2021, at the Vallecitos Nuclear Facility in Sunol, California. The purpose of the inspection was to determine whether licensed activities were being conducted safely and in conformance with the NRC requirements. The final inspection results were discussed with you and members of your staff at the conclusion of the onsite inspection on March 18, 2021. No violations were identified and no response to this letter is required.

During this inspection, NRC staff examined activities conducted under the NRC Materials License SNM-960 as they relate to public health and safety, and to confirm 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.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, and Attachment 1 of the enclosed inspection report 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>. However, Attachment 2 of the enclosed inspection report contains security-related information in accordance with 10 CFR 2.390(d)(1) and its disclosure to unauthorized individuals could present a security vulnerability. Therefore, Attachment 2 of the enclosed inspection report will not be made available electronically for public inspection in the NRC Public Document Room or from ADAMS.

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M. Feyrer

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Should you have any questions concerning this inspection, please contact Mr. Chris D. Steely, Health Physicist, at 817-200-1432 or the undersigned at 817-200-1154.

Sincerely,

Natasha A. Greene, PhD, Chief
Reactor Inspection Branch
Division of Nuclear Materials Safety

Docket No. 070-00754
License No. SNM-960

Enclosure:
NRC Inspection Report 070-00754/2021-001
Attachment 1: Publicly Available
Attachment 2: Non-Publicly Available

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M. Feyrer

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DATED APRIL 14, 2021

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report – Region IV**

Docket Number: 070-00754

License Number: SNM-960

Report Number: 070-00754/2021-001

Licensee: GE Hitachi Nuclear Energy Americas, LLC

Facility: Vallecitos Nuclear Center

Location: Sunol, California

Inspection Dates: March 15-18, 2021

Inspectors: Chris D. Steely, Health Physicist
Reactor Inspection Branch
Division of Nuclear Materials Safety

Stephanie G. Anderson, Senior Health Physicist
Reactor Inspection Branch
Division of Nuclear Materials Safety

Accompanied By: Mary C. Muessle, Director
Division of Nuclear Materials Safety

Approved By: Natasha A. Greene, PhD, Chief
Reactor Inspection Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

GE Hitachi Nuclear Energy Americas, LLC.
NRC Inspection Report 070-00754/2021-001

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

Industrial/Academic/Research Programs

- The inspectors evaluated the elements of Safety Operations, Radiological Controls, and Facility Support at Vallecitos Nuclear Center. Within each element, the inspectors determined the licensee was adequately implementing its programs as required by license SNM-960 and regulatory requirements. The licensee provided oversight and control of site activities in accordance with regulatory, license, and procedure requirements. Site staffing was adequate to fulfill the requirements of the license. (Attachment 1, Section 1.2)

Material Control and Accounting

- The inspectors evaluated the licensee's Material Control and Accounting program. The results of the inspection contain security-related information and are documented in the non-public, Attachment 2 of this report.

Report Details

Summary of Plant Status

The NRC approved a 10-year license renewal for SNM-960, on August 9, 2017 (ADAMS Accession Number ML17097A188). Consistent with Confirmatory Order EA-14-144, dated April 22, 2015 (ML14269A172), the NRC addressed the appropriate categorization (i.e., Category I, II, or III) of the facility during the review of the license renewal application. The NRC staff concluded that due to the uniqueness of the facility and the type and form of the licensed material, the licensee will not be categorized at this time. As a result of the license renewal, the NRC re-assigned the facility program code to 22155, "SNM greater than critical mass for commercial products and other non-fuel-cycle activities." Since the program code was changed, the inspection manual chapter was changed to 2800 and the following inspection procedures were determined to be utilized for the facility starting in Fiscal Year 2018 (ML18023A453):

- Inspection Procedure 71130.11, "Material Control and Accounting (MC&A)," will be used for MC&A inspections on a triennial frequency.
- Inspection Procedure 87126, "Industrial/Academic Research Programs," will be used for all safety operations, radiological controls, and facility support inspections on a triennial frequency.
- Inspection Procedure 81700.09, "Security Measures for Licensed Facilities," will be used for all physical security inspections on a triennial frequency.

At the time of the inspection, the licensee continued to possess and store special nuclear material (SNM) at the Vallecitos Nuclear Center (VNC). Historically, the licensee performed activities under its license that included fuel examinations within various hot cells. At the time of this inspection, the majority of SNM was consolidated in containers at the designated storage area. The remaining SNM was located in a designated vault and consisted of standards used for creating primary control standards for laboratory analysis and engineering studies. The inspectors observed that there continues to be very little work involving SNM under the SNM license.

1 Industrial/Academic/Research Programs (87126)

1.1 Inspection Scope

The inspectors reviewed the licensee's oversight and control of licensed activities within the elements of Safety Operations, Radiological Controls, and Facility Support. The inspectors reviewed the licensee's training program for compliance with regulations and license requirements.

1.2 Observations and Findings

a. Safety Operations

The inspectors observed the licensee's safety operations at the site to include the elements of Criticality Safety, Radiological Waste Transportation, and Fire Protection.

Since the last SNM inspection in 2018, procedure 6200, "Criticality Inspections," has been idled by the licensee. This is in response to a license amendment to SNM-960, dated May 17, 2019 (ML19100A214), that exempts the licensee from 10 CFR 70.24, "Criticality Accident Requirements." Accordingly, this new exemption is notated in this inspection report and will only be included on future inspections if the license is amended to remove the exemption.

The licensee has an onsite fire team, with responsibilities for the buildings licensed under the SNM-960 licensee. The inspectors reviewed the fire control systems (e.g., detection and suppression) in the Radiological Laboratory Building, Building 103, Hillside Storage Facility (HSF), and Waste Evaporation Plant (WEP), to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the areas. The inspectors noted that the licensee effectively maintained fire detection and suppression capability and maintained passive fire protection features in a good material condition. The inspectors verified the fire hoses and extinguishers were in good condition and available for immediate use, and that fire detectors and sprinklers were unobstructed. There was good housekeeping in the facility and there were no unnecessary transient materials that could impact fire protection controls.

The inspectors reviewed the licensee's radioactive waste shipment log, which documented two shipments since the last inspection in 2018. These shipments occurred on December 17, 2018 and January 8, 2021. The inspectors reviewed the shipment documentation for compliance with the regulations under 10 CFR 71.2, "Transportation of Licensed Material," and licensee procedures. The two shipments were a mixture of evaporator sludge, friable asbestos, and trash and were classified as Dry Active Waste (DAW). All shipments were accurately characterized, packaged appropriately, and the shipping papers were generated in accordance with NRC and Department of Transportation requirements and with licensee procedures. The inspectors also reviewed the training requirements and documentation for personnel involved in the shipment of radioactive waste material. The training was appropriate and adequately documented to be in compliance with regulatory requirements.

b. Radiological Controls

The inspectors observed the licensee's radiological controls at the site that included the elements of Radiation Protection and Environmental Protection as defined by licensee procedure WI-27-105-02, "Management of Occupational Radiation Exposure," Rev. 4. The inspectors determined that the licensee had established adequate written procedures for the Radiation Protection program that implemented regulatory requirements. Based on interviews with licensee personnel and review of procedures, the inspectors determined that the requirements were established and maintained to control radioactive materials and prevent or minimize any associated hazards of radioactivity and radioactive materials.

The licensee performed the 2020 annual review of the RP program content and implementation as required by 10 CFR 20.1101(c). This was verified by inspectors with the review of the document, "Focused Self-Assessment Report," conducted from September 21, 2020 to October 2, 2020. The licensee reviewed each program area for the multiple licenses authorized at the facility, including personnel qualifications, training

requirements, respiratory and exposure monitoring programs, as well as radiological instrumentation, survey and contamination measurements, and controls at the facility. In addition, the inspectors reviewed the As Low As is Reasonably Achievable (ALARA) program, as required by 10 CFR 20.1101, "Radiation Protection Programs." The licensee procedure for the ALARA program is now included in WI-27-105-02, "Management of Occupational Radiation Exposure." The licensee convened quarterly meetings of the ALARA Committee, as required by procedure, and evaluated radiation dose goals throughout the year. The ALARA Committee approved the 2020 dose goal of 6.510 person-rem. The actual dose received during 2020 was 7.146 person-rem which is within regulatory requirements. The majority of dose received at the facility was under the approved license of their 10 CFR Part 50 program and the State of California, in lieu of the SNM-960 license, based on the work activities performed at the facility.

The inspectors also reviewed the Environmental Protection program in accordance with licensee procedure, "Environmental Monitoring Manual," Rev. 5, and license requirements. As part of the review, the inspectors conducted onsite inspections, interviewed licensee personnel, and evaluated the training program. The inspectors reviewed effluent exhaust of Building 103, the weekly air sample station analysis, the process of boiling off liquid waste at the WEP, and the storage of all liquid and dry waste at the facility. Some evaporator sludge and DAW was shipped off-site, as stated previously in this report, to a waste disposal facility in Clive, Utah.

As part of the effluents inspection, the inspectors reviewed the licensee's "Effluent Monitoring and Environmental Surveillance Programs Annual Report 2020." All effluent exhaust, weekly air sample analysis, and ground water samples were within acceptable limits. The inspectors determined that the licensee was effectively implementing the Environmental Protection program in accordance with their procedure and regulatory requirements.

The inspectors evaluated the waste management program. The waste was adequately protected from fire and the elements and stored in waste containers with the appropriate labels in accordance with 10 CFR Part 20. The inspectors reviewed procedures for the waste evaporator operation and for onsite storage. The licensee was in compliance with their procedures and 10 CFR Part 20, Appendix B requirements.

During the SNM evaluation onsite, the inspectors toured the HSF, the Building 103 vault storage area, and the WEP. The inspectors determined through observations that all SNM storage and process areas were posted and labeled in accordance with applicable regulatory requirements for radiation areas containing radioactive materials. It was also noted that storage containers in all locations were appropriately labeled with the required information.

c. Facility Support

In an NRC Safety Evaluation Report for the license renewal (ML17097A193), the NRC recognized that a previous analysis had removed the license condition requiring a radiological contingency and emergency plan for the licensed materials. During the license renewal, the NRC re-validated that analysis. The results of the evaluation considered the following scenarios: Fire; UF₆ cylinder rupture; and a criticality accident. Analyses of fire scenarios indicated that the ventilation and filtration systems limit the

release of SNM due to a fire to insignificant quantities. Included in the scenario was the operation of a mixed oxide fuel laboratory in Building 102 and the expected plutonium inventory in Building 103. Maximum off-site boundary zone dose was calculated to be well within regulatory limits. Also, operation of the mixed oxide laboratory is no longer a licensed activity. It was concluded that fire is not a credible scenario for requiring an emergency plan.

In considering a scenario of a rupture of a UF₆ cylinder, it was noted that there are no facilities for handling UF₆ cylinders at VNC; therefore, that accident scenario is not applicable.

The SNM materials utilized at the VNC are in a form where the potential for a criticality accident is considered to be non-credible. Since a criticality accident is considered to be a non-credible event due to the physical characteristics preventing the accumulation of SNM required and the optimum conditions of moderation, reflection, and geometry, no emergency plan is necessary for VNC.

The inspectors also evaluated the entrances to areas of radioactive waste and SNM storage along with the licensee procedures that proscribe how these areas are to be monitored and secured. The inspectors determined that these areas are appropriately secured and monitored and that the licensee was in compliance with their own procedures and applicable regulatory requirements.

1.3 Conclusions

The inspectors evaluated the elements of Safety Operations, Radiological Controls, and Facility Support at VNC. Within each element, the inspectors determined the licensee was adequately implementing its programs as required by license SNM-960 and regulatory requirements. The licensee provided oversight and control of site activities in accordance with regulatory, license, and procedure requirements. Site staffing was adequate to fulfill the requirements of the license.

2 **Exit Meeting**

On March 18, 2021, the NRC inspectors presented the final inspection results to Mr. Matt Feyrer, Site Manager, and other members of the licensee's staff. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. The licensee stated that all documents and procedures reviewed during the inspection were marked as proprietary.

**SUPPLEMENTAL INSPECTION INFORMATION – HEALTH AND SAFETY
KEY POINTS OF CONTACT**

M. Feyrer, Site Manager, Vallecitos Nuclear Center
J. Ayala, Radiation Protection Supervisor
H. Stuart, Radiation Protection Technician
J. Smyly, Environmental Health and Safety Manager
D. Heckman, GEH Licensing
B. Lockwood, GEH-GM Operations

INSPECTION PROCEDURE USED

IP 87126 Industrial/Academic/Research Programs

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed/Discussed

None

LIST OF ACRONYMS

ALARA	As Low As Reasonably Achievable
CFR	<i>Code of Federal Regulations</i>
HSF	Hillside Storage Facility
MC&A	Material Control and Accounting
NRC	U.S. Nuclear Regulatory Commission
Rev	Revision
SNM	Special Nuclear Material
VCN	Vallecitos Nuclear Center
WEP	Waste Evaporator Plant