



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

June 26, 2023

Mr. Carlos Martinez, Site Manager  
GE Hitachi Nuclear Energy  
Vallecitos Nuclear Center  
6705 Vallecitos Road  
Sunol, CA 94586

SUBJECT: GE-HITACHI NUCLEAR ENERGY AMERICAS LLC – U.S. NUCLEAR  
REGULATORY COMMISSION ROUTINE SAFETY INSPECTION REPORT  
NO. 05000073/2023201

Dear Mr. Martinez:

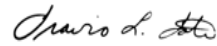
From April 18 – 20, 2023, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Nuclear Test Reactor located at the General Electric – Hitachi Vallecitos Nuclear Center. The enclosed report presents the results of the inspection which were discussed on April 20, 2023, with you and members of your staff.

The inspection examined 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. The inspector reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified. No response to this letter is required.

In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Kevin Roche at (301) 415-1554, or by email to [Kevin.Roche@nrc.gov](mailto:Kevin.Roche@nrc.gov).

Sincerely,



Signed by Tate, Travis  
on 06/26/23

Travis L. Tate, Chief  
Non-Power Production and Utilization  
Facility Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Docket No. 50-073  
License No. R-33

Enclosure:  
As stated

cc: GovDelivery Subscribers

SUBJECT: GE-HITACHI NUCLEAR ENERGY AMERICAS LLC – U.S. NUCLEAR  
REGULATORY COMMISSION ROUTINE SAFETY INSPECTION REPORT  
NO. 05000073/2023201 DATED: JUNE 26, 2023

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**U.S. NUCLEAR REGULATORY COMMISSION**  
**OFFICE OF NUCLEAR REACTOR REGULATION**

Docket No.: 50-073

License No.: R-33

Report No.: 05000073/2023201

Licensee: GE-Hitachi Nuclear Energy Americas, LLC

Facility: Nuclear Test Reactor

Location: Vallecitos Nuclear Center, Sunol, CA

Dates: April 18 – April 20, 2023

Inspector: Kevin M. Roche

Approved by: Travis L. Tate, Chief  
Non-Power Production and Utilization  
Facility Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Enclosure

## EXECUTIVE SUMMARY

GE-Hitachi Nuclear Energy Americas LLC  
Nuclear Test Reactor  
Inspection Report No. 05000073/2023201

The primary focus of this routine, announced safety inspection was the onsite review of selected aspects of the GE-Hitachi Nuclear Energy Americas LLC (GEH, the licensee) Class II research reactor facility safety program, including: (1) procedures; (2) experiments; (3) health physics; (4) design changes; (5) committees, audits and reviews, (6) maintenance logs and records, and (7) transportation activities since the last U.S. Nuclear Regulatory Commission (NRC) inspection of these areas. The NRC staff determined the licensee's safety program was acceptably directed toward the protection of public health and safety. No violations or deviations were identified.

### Procedures

- Facility procedural review, revision, control, and implementation satisfied technical specification (TS) requirements.

### Experiments

- Conduct and control of experiments and irradiations in accordance with TSs, the applicable experiment irradiation authorizations, and associated procedures.

### Health Physics

- The inspector found that surveys, postings, and personnel dosimetry met regulatory requirements.
- The inspector found that radiation monitoring equipment was maintained and calibrated as required by TSs.
- The inspector found that calculations of effluents released from the facility satisfied license and regulatory requirements and releases were within the specified regulatory limits.

### Design Changes

- The latest changes completed by the licensee were reviewed using the criteria specified in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59, "Changes, tests and experiments," determined to be acceptable, and reviewed and approved by the Vallecitos Technological Safety Committee (VTSC).

### Committees, Audits and Reviews

- The review and audit program was conducted by the VTSC as required.
- The composition and meeting frequency satisfied requirements specified in the TSs.

### Maintenance Logs and Records

- Follow-up on unresolved item (URI) 05000073/2022202-01, related to maintenance on the #4 safety control rod.

### Transportation Activities

- Shipments of radioactive material were made in accordance with the applicable regulatory and procedural requirements.

## REPORT DETAILS

### Summary of Facility Status

GEH operates a 100-kilowatt test reactor in support of neutron radiography, experiments, reactor operator training, and periodic equipment surveillances. During the inspection, the reactor was operated for radiography.

#### 1. Procedures

##### a. Inspection Scope (IP 69001-02.03)

The inspector reviewed selected aspects of the following to verify that the licensee was complying with the requirements of TS Sections 6.4 and 6.8:

- standard operating procedure (SOP) No. 9.2, "Standard Operating Procedures," Revision 1
- SOP 1.1, "Primary Coolant System," Revision 1
- SOP 2.3, "Log N and Period Amplifier," Revision 1
- SOP 12.3, "Safety Rod Drives," Revision 2
- SOP 6.4, "Daily Surveillance Check Sheet," Revision 3
- Vallecitos safety standard 25.1, "Document Control," Revision 14

##### b. Observations and Findings

The inspector found that written procedures for the activities listed in TS 6.4 were available. The inspector verified those activities included normal reactor operations, abnormal operations, emergency conditions involving the potential or actual release of radioactivity, radiation protection, and a number of other topics. The inspector also verified that the official, approved copies of reactor operations procedures were kept in the control room as stipulated.

##### c. Conclusion

The inspector determined procedural review, revision, control, and implementation satisfied TS requirements for the procedures reviewed.

#### 2. Experiments

##### a. Inspection Scope (IP 69001-02.06)

The inspector reviewed the following to verify compliance with TSs 3.5, 4.5, 6.2, and 6.4:

- SOP 10.1, "Experiment Type Approval (ETA)," Revision 0
- SOP 10.2, "Individual Experiment Review and Approval," Revision 0
- completed SOP 10.6, "Cable-held Retractable Irradiation System," Revision 1

b. Observations and Findings

The inspector reviewed the process for the approval and conduct of experiments at the facility. The inspector noted that no new experiments were approved since the last inspection. The inspector verified that the licensee's work tracking spreadsheet raises flags to notify of any restrictions and limitation thresholds that might be exceeded by the prepared work. The inspector found that experiments and storage on site were addressed and in adherence. The inspector determined that the experimental review process and approval for handling and storage of trinitrotoluene-equivalent explosive material is in accordance with the TS and approved procedures.

c. Conclusion

The inspector concluded that experiments were reviewed and performed in accordance with the TS requirements and the licensee's written procedures.

**3. Health Physics**

a. Inspection Scope (IP 69001-02.07)

The inspector reviewed the following to verify compliance with 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," and 10 CFR Part 20, "Standards for Protection Against Radiation," TSs 3.4 and 6.3, and procedural requirements:

- CP-27-105, "Radiation Protection Program," Revision 8
- WI-27-105-01, "Posting and Control of Radiological Areas," Revision 4
- WI-27-105-02, "Management of Occupational Radiation Exposure," Revision 5
- NSP-3060, "Radiation Survey Records and Reporting," Revision 11
- nuclear test reactor (NTR) operators training record for the last two years.
- annual radiation safety training
- NTR employee dosimetry records for 2022
- observed daily contamination surveys on April 20, 2023
- completed SOP 12.30, "Stack Particulate Monitor," Revision 0
- SOP 12.31, "Stack Gas Monitor," Revision 1

b. Observations and Findings

The inspector toured the facility and observed operations and maintenance activities. The inspector found practices regarding the use of dosimetry, radiation monitoring equipment, placement of radiological signs and postings, use of protective clothing, and the handling and storing of radioactive material or contaminated equipment was in accordance with regulations and the licensee's written radiation protection program.

The inspector reviewed records of radiation surveys and accompanied a radiation technician taking contamination and area radiation surveys during the inspection of the nuclear reactor facility and found them within the limits specified



by the facility postings. The inspector did not observe any unmarked radioactive material in the facility. The inspector noted that the licensee posted a copy of the current NRC Form 3, "Notice to Employees," as required by 10 CFR Part 19. The inspector reviewed dosimetry results and determined that doses to facility occupants was minimal. The inspector found that radiation monitoring devices were calibrated within the frequencies specified in the procedures.

The inspector noted from records that training was provided for radiation workers assigned to the facility and individuals were not issued dosimetry or given access until the training was successfully completed. The inspector found that the annual reports referenced above described the gaseous waste generated at the facility, with gaseous argon-41 produced by the irradiation of atmospheric air was the most significant isotope noted. The inspector verified that the licensee reported the results of thermoluminescent dosimeters placed at locations around the facility as environmental radiation monitors. The inspector also met with the facility Radiation Safety Officer and discussed topics including the relationship between the NRC licenses.

c. Conclusion

The inspector determined that the radiation protection program implemented by the licensee satisfied the regulatory requirements.

**4. Design Changes**

a. Inspection Scope (IP 69001-02.08)

The inspector reviewed the following to verify compliance with 10 CFR 50.59, regarding design change control:

- NTR change authorization (CA) NTR CA-317, "Valmet Conductivity Probe/Meter Installation." dated December 14, 2020
- NTR CA-322, "Replacement of Primary System Valve TV-103," dated September 28, 2021
- NTR SOP 9.3, "Engineering Release," Revision 0
- engineering release 22-09, "Troubleshooting Safety Rod #4," dated August 31, 2022.
- SOP 3.2, "Safety Control Rods," Revision 0
- VSS-2.0, "Change Authorization," Revision 27

b. Observations and Findings

The inspector found that the licensee completed several 10 CFR 50.59 screens since the last inspection. The inspector verified that the 10 CFR 50.59 screen forms were used to determine whether a full evaluation of a change was needed. The inspector determined that all changes were reviewed and approved by the senior reactor operator/NTR Manager, Regulatory Compliance, VTSC, and the Vallecitos Nuclear Center Site Manager.

c. Conclusion

The inspector determined that the latest changes completed by the licensee were reviewed using the criteria specified in 10 CFR 50.59 and approved by the VTSC.

**5. Committees, Audits and Reviews**

a. Inspection Scope (IP 69001-02.09)

The inspector reviewed selected aspects of the documents below to verify that the licensee has an oversight committee that conducts reviews and audits as required in TS 6.4.

- VTSC meeting minutes from 2Q2021, 4Q2021, 1Q2022, and 3Q2022
- NTR audits performed 3Q2021, 1Q2022, and 2Q2022
- RP Audit 2021
- CR 3904

b. Observations and Findings

The inspector found that TS 6.2 requires that independent reviews shall be performed under a written charter or directive that describes subjects reviewed, responsibilities, authorities, records. Furthermore, the independent review should include proposed tests and experiments, procedure revision, proposed TS changes, any violations, and any unusual or operating occurrences.

The inspector reviewed the VTSC quarterly meeting minutes and found that the VTSC provided appropriate independent review as required by the TS. Additionally, the inspector verified that the licensee conducted quarterly audits of the NTR in accordance with licensee procedures.

c. Conclusion

The inspector determined that the licensee completed the review and audit program acceptably as required by the TS.

**6. Maintenance Logs and Records**

a. Inspection Scope (IP 69001-02.11)

To ensure that the maintenance requirements of TS 6.7.1.b were met, the inspector reviewed the following:

- SOP 9.15, "Preventative and Corrective Maintenance Program," Attachment 3
- ER 21-17, "Safety Control Rod Removal and Inspection," dated June 10, 2022
- NTR corrective maintenance card 21-02, "Safety Rod #4 Resistance/sheered roll pin"

- CR 38995
- NTR Memo M2022-006, "Response to URI of NRC Safety Inspection Report 2022-201"

b. Observations and Findings

From June 15, 2021, to June 16, 2021, the licensee performed corrective maintenance on safety control rod #4. The licensee disassembled and fully withdrew the rod. At the end of the workday, the licensee left the control rod disassembled and secured the facility, no longer manning the control room. The inspector questioned the licensee whether the reactor was secured in accordance with TS 1.2.20. This item was documented as (URI 05000073/2022201-01).

Subsequent to the inspection, the licensee provided a memo describing the work performed and also provided an evaluation of the shutdown margin with safety control rod #4 removed. The inspector determined that the licensee demonstrated the core had adequate shutdown margin with safety control rod #4 removed and since the reactor cell was secured, events that would impact that safety margin were very unlikely to occur. Furthermore, the inspector found that the licensee inserted an additional manual poison sheet into the core to further increase shutdown margin. The inspector found that the licensee implemented measures which maintained adequate shutdown margin such that the reactor was shut down, the console keylock was in OFF with the control key was in proper custody, and no work was in progress that would impact the shutdown margin. The inspector determined that URI 05000073/2022201-01 is closed.

c. Conclusion

The inspector concluded that the licensee secured the reactor in accordance with TSs.

**7. Transportation Activities**

a. Inspection Scope (IP 86740)

The inspector reviewed the following to verify compliance with regulatory and procedural requirements for shipping or transferring licensed material:

- GEH Vallecitos Safety Standards, Standard No. 7.5, "On-Site Transfers of Radioactive Material," Revision 9

b. Observations and Findings

The inspector noted that the licensee does not ship radioactive material. The inspector found that the irradiated material was held for decay until levels were below established limits, and the transfer forms indicated the material were surveyed prior to custodial change.

c. Conclusion

The inspector determined the licensee made shipments of radioactive material in accordance with the applicable regulatory and procedural requirements.

**8. Exit Interview**

The inspection scope and results were summarized on April 20, 2023, with members of licensee management. The licensee acknowledged the results and conclusions presented by the inspector and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee Personnel

H. Bunting - Radiation Protection Supervisor  
N. Deschine - Senior Reactor Operator  
J. Garcia – Radiation Monitoring Technician  
D. Heckman - Licensing Lead  
D. Lind - Senior Reactor Operator  
T. McConnell - NTR Manager  
J. Smiley - Environmental Health and Safety Manager

**INSPECTION PROCEDURES USED**

IP 69001            Class II Research and Test Reactors  
IP 86740            Inspection of Transportation Activities

**ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened

None

Discussed.

None

Closed

URI 05000073/2022201-01            Safety Control Rod #4 maintenance.