



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

May 4, 2022

Mr. Matthew Feyrer, Site Manager
GE Hitachi Nuclear Energy
6705 Vallecitos Road
Sunol, CA 94586

SUBJECT: GE-HITACHI NUCLEAR ENERGY AMERICAS LLC – U.S. NUCLEAR
REGULATORY COMMISSION ROUTINE SAFETY INSPECTION REPORT
NO. 05000073/2022201

Dear Mr. Feyrer:

From February 28 – March 3, 2022, 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 March 3, 2022, 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 various activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified. No response to this letter is required.

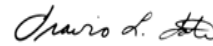
In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly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

M. Feyrer

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Should you have any questions concerning this inspection, please contact Mr. Kevin Roche at (301) 415-1554, or by electronic mail at Kevin.Roche@nrc.gov.

Sincerely,



Signed by Tate, Travis
on 05/04/22

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: See next page

GE-Hitachi Nuclear Energy

Docket No. 50-073

cc:

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Test, Research and Training
Reactor Newsletter
Attention: Ms. Amber Johnson
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University of Maryland
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College Park, MD 20742-2115

SUBJECT: GE-HITACHI NUCLEAR ENERGY AMERICAS LLC – U.S. NUCLEAR REGULATORY COMMISSION ROUTINE SAFETY INSPECTION REPORT NO. 05000073/2022201 DATED: MAY 4, 2022

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

Docket No.: 50-073

License No.: R-33

Report No.: 05000073/2022201

Licensee: GE-Hitachi Nuclear Energy Americas, LLC

Facility: Nuclear Test Reactor

Location: Vallecitos Nuclear Center, Sunol, CA

Dates: February 28 – March 3, 2022

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. 05000073/2022201

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) organization and staffing; (2) operations logs and records; (3) requalification training; (4) surveillance and limiting conditions for operation (LCO); (5) emergency planning; (6) maintenance logs and records; and (7) fuel handling logs and records. The U.S. Nuclear Regulatory Commission (NRC) staff determined that the licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

Organization and Staffing

- The GEH organization and staffing were consistent with technical specification (TS) requirements.

Operations Logs and Records

- The operation logs and records were maintained in accordance with facility procedures and TSs.

Requalification Training

- The requalification program was conducted consistently with the regulations, TSs and the facility requalification plan.

Surveillance and Limiting Conditions for Operation

- The TS LCO and surveillance requirements were met.

Emergency Planning

- Vallecitos Nuclear Center (VNC) Reactor Facilities Radiological Emergency Preparedness Plan (REPP), oversight, drills, and training were implemented as required by facility procedures and regulations.

Maintenance Logs and Records

- The licensee-maintained records of principal maintenance activities in compliance with TS requirements and facility procedures.

Fuel Handling Logs and Records

- The licensee conducted and documented fuel handling activities in accordance with TS requirements and facility procedures.

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. Organization and Staffing

a. Inspection Scope (Inspection Procedure (IP) 69001-02.01)

To ensure that the requirements of TSs 6.1 and 6.6.2 were met, the inspector reviewed the following:

- nuclear test reactor (NTR) organizational structure and staffing chart
- Annual Report No. 61 for the GE-Hitachi NTR, dated March 29, 2021
- standard operating procedure (SOP) 6.1 "Staffing Requirements," Revision 0
- operations logs and associated records
- records and staffing procedures

b. Observations and Findings

The inspector found that there were no changes to the organizational structure since the previous NRC inspection. The inspector confirmed that, with the exception described in Section 6 below, shift staffing met the minimum requirements for duty personnel. The inspector also verified that management responsibilities were administered as required by the TS.

c. Conclusion

Except for the condition in Section 6 below, the inspector determined the NTR organization and staffing were consistent with the requirements in TSs 6.1 and 6.6.2.

2. Operations Logs and Records

a. Inspection Scope (IP 69001-02.02)

To ensure that the requirements of TSs 3.0, 4.0, and 6.0 were met, the inspector reviewed the following:

- SOP 6.3 "Reactor Log Books," Revision 0
- SOP 6.7 "Startup Summary," Revision 0
- SOP 6.10 "Shutdown Summary," Revision 0
- NTR console logbooks since the last inspection

- scram report 21-05
- scram report 21-04
- engineering release (ER) 21-09, Revision 1

b. Observations and Findings

The inspector observed that logbook entries were maintained in accordance with approved procedures. The inspector determined that logs and records are maintained as required by the licensee's administrative procedures. The inspector verified that records also showed that operational conditions and parameters were consistent with the license and TS requirements.

c. Conclusion

The inspector determined the licensee's logbook records and record keeping programs were maintained as required by NTR administrative procedures and met the retention requirements of the TSs.

3. **Requalification Training**

a. Inspection Scope (IP 69001-02.04)

To ensure that the requalification training requirements of TSs 6.1.4, 6.2.4, 6.7.2, and Title 10 of the *Code of Federal Regulations* (10 CFR) 55.53, "Conditions of licenses," paragraphs (e) and (h), were met, the inspector reviewed the following:

- "Requalification Program for General Electric Nuclear Test Reactor," dated December 2021
- SOP 9.14 "Reactor Operator Requalification Program," Revision 2
- 2021 master requalification files
- individual training records
- medical examination records
- annual operating tests for 2021

b. Observations and Findings

The inspector verified that training in the areas required by the requalification plan were performed throughout the training cycle. The inspector verified that written, operations, and emergency preparedness exams were completed during the training cycle, as required by the requalification plan. The inspector verified that a sample of licensed operators performed the required quarterly hours of reactor operations. Further, the inspector verified by record review that all active operators completed a biennial medical examination.

c. Conclusion

The inspector determined that the NTR requalification program was conducted as required by NRC regulations, NTR TSs, and procedures.

4. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001-02.05)

To ensure that the requirements of TSs 3.0 and 4.0, were met, the inspector reviewed the following:

- daily startup and shutdown checklists, 2021 – present
- NTR preventative maintenance records, 2021 – present
- monthly surveillance check sheets, 2021 – present
- NTR console logbooks, 2021 – present
- completed SOP 12.8, “Reactor Cell Door,” dated July 7, 2021, and September 29, 2021
- SOP 12.12, “Primary Coolant Flow Transmitter,” Revision 0
- SOP 6.8, “Control Room Data Sheet,” Revision 1

b. Observations and Findings

The inspector selected a sample of the TS-required surveillances to verify implementation and determined that the frequency and outcome met TS requirements. During the inspection, the inspector observed the performance of the daily startup checklist that support power operations to ensure certain LCOs are met. The inspector verified surveillance results were retained as required by TS 6.7.1 and licensee’s procedural requirements.

c. Conclusion

The inspector determined that NTR operations followed the LCOs and surveillance requirements as stated in the TSs.

5. Emergency Planning

a. Inspection Scope (IP 69001-02.10)

To ensure that the emergency preparedness requirements of 10 CFR 50.34, “Contents of applications; technical information,” Appendix E, and TS 6.4.1 were met, the inspector reviewed the following:

- VNC reactor facilities REPP, dated February 2020
- VNC reactor facilities REPP, dated June 2021
- SOP 8.2 “Non-Reactor Emergencies,” Revision 1
- SOP 8.3 “Abnormal Operation,” Revision 0
- toured the central alarm station (CAS) and reviewed communications equipment
- reviewed the availability of procedures in the CAS and ensured they were up to date
- drill records from October 2021
- reviewed the training records for emergency response personnel from 2021

b. Observations and Findings

The inspector verified the GEH REPP and implementing procedures were current, approved by management, and readily available in several locations for use as required by the REPP. The inspector compared the June 2021 and the February 2020 versions of the GEH REPP and found that the changes did not reduce the effectiveness of the plan.

The inspector confirmed through document review that the licensee continues to maintain current memorandums of understanding with the Alameda Fire Department, Alameda County Sheriff, Falck Emergency Medical Services Ambulance Transport Provider, and the Hospital Committee for the Livermore-Pleasanton Areas, to support both onsite and offsite emergency response. The inspector verified training for reactor staff was completed annually, as required by the REPP. Additionally, the facility is required to perform a biennial emergency drill in accordance with REPP. The inspector verified that emergency drills for calendar year 2021 were conducted resulting in evacuations of the facility and participation of offsite organizations. In addition, the inspector found that the facility considered actual events (e.g. medical emergencies) and incorporated lessons learned into emergency planning.

c. Conclusion

The inspector concluded that the emergency preparedness program was conducted in accordance with the REPP.

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 preventative maintenance records 2020 – present
- Console logbooks
- NTR corrective maintenance cards:
 - 21-02, "Safety Rod #4 Resistance/sheered roll pin"

b. Observations and Findings

(1) Observations

The inspector determined that the selected significant maintenance items reviewed were documented and resolved as required by the licensee's

administrative procedures. Additionally, the inspector verified by document review that maintenance records were retained for at least 5 years as required by TS 6.7.1.

(2) Minimum staffing

TS 1.2.20 states:

The reactor is considered secured under either of the following two conditions:

1. The core contains insufficient fissile material to attain criticality under optimum conditions of moderation and reflection.
2. That overall condition where all the following conditions are satisfied:
 - a. Reactor is shut down.
 - b. Console keylock switch is OFF and the console key is in proper custody.
 - c. No work is in progress involving in-core components, installed rod drives, or experiments in an experimental facility.

TS 6.1.3.1 states:

The minimum staffing when the reactor is not secured shall be composed of:

- a. A licensed operator in the control room.
- b. A second person present at the site familiar with NTR Emergency Procedures and capable of carrying out facility written procedures.
- c. A licensed Senior Reactor Operator shall be present at the NTR Facility or readily available on call.

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 is an unresolved item (URI 05000073/2022201-01) and will be addressed in a subsequent inspection report.

c. Conclusion

The inspector determined that the licensee-maintained records documenting maintenance activities in compliance with TS requirements and NTR procedures.

7. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001-02.12)

To ensure that fuel integrity was maintained, the inspector interviewed licensee personnel and reviewed:

- Annual Report No. 61 for the GE-Hitachi NTR, dated March 29, 2021
- NTR console logbooks since the last inspection

b. Observations and Findings

The inspector verified that the licensee did not conduct fuel movements and fuel inspection is not required by the TS. In the event fuel handling is required, the licensee indicated that they would develop procedures to conduct such operations. The inspector found that fuel integrity is verified via the primary chemistry surveillance. The inspector did not identify any issues with the results.

c. Conclusion

The inspector determined that the licensee conducted and documented fuel handling activities in accordance with TS requirements and licensee procedures.

8. Exit Interview

The inspector reviewed the inspection results with members of licensee management at the conclusion of the inspection on March 3, 2022. 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

S. Cavanaugh - Security Specialist
N. Deschine - SRO
D. Heckman - Reg Affairs/Licensing Lead
T. McConnell - NTR Manager
G. Rose - SRO
J. Smiley - Environmental Health and Safety Manager
J. Tucker - Emergency Planning manager

INSPECTION PROCEDURES USED

IP 69001 Class II Research and Test Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and

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

Closed

Discussed