

August 1, 2017

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

SUBJECT: GE-HITACHI VALLECITOS NUCLEAR CENTER – U.S. NUCLEAR
REGULATORY COMMISSION ROUTINE INSPECTION REPORT
NO. 50-073/2017-201

Dear Mr. Feyrer:

From June 26 – 29, 2017, the U.S. Nuclear Regulatory Commission (NRC, the Commission) conducted an inspection at the GE-Hitachi Vallecitos Nuclear Center. The enclosed report documents the inspection results, which were discussed on June 29, 2017, with you and members of your staff.

This inspection was an examination of activities conducted under your license as they relate to public health and 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. Based on the results of this inspection, no findings of non-compliance 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 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. Ossy Font at (301) 415-2490 or by electronic mail at Ossy.Font@nrc.gov.

Sincerely,

/RA/

Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure:
As stated

cc: See next page

SUBJECT: GE-HITACHI VALLECITOS NUCLEAR CENTER – U.S. NUCLEAR
REGULATORY COMMISSION ROUTINE INSPECTION REPORT
NO. 50-073/2017-201 DATED: AUGUST 1, 2017

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GE-Hitachi Vallecitos Nuclear Center

Docket No. 50-073

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

Docket No. 50-073

License No. R-33

Report No. 50-073/2017-201

Licensee: GE-Hitachi Vallecitos Nuclear Center

Facility: General Electric Nuclear Test Reactor

Location: Sunol, CA

Dates: June 26 – 29, 2017

Inspectors: Ossy Font

Approved by: Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Enclosure

EXECUTIVE SUMMARY

GE-Hitachi Vallecitos Nuclear Center
Nuclear Test Reactor
NRC Inspection Report No. 50-073/2017-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the GE-Hitachi Vallecitos Nuclear Center's (the licensee's) Class II research reactor facility safety program including: (1) organization and staffing, (2) operations logs and records, (3) requalification training, (4) maintenance and surveillance, (5) emergency planning, (6) fuel handling, and follow-up of open items since the last U.S. Nuclear Regulatory Commission (NRC) inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety and were in compliance with NRC requirements.

Organization and Staffing

- Organizational structure and responsibilities were consistent with technical specification (TS) requirements.
- Shift staffing met the minimum requirements for current operations.

Operations Logs and Records

- Operation logs and records are maintained as required by the licensee's administrative procedures.

Requalification Training

- Operator requalification was conducted as required by the Requalification Program and TS requirements.

Maintenance and Surveillance

- Maintenance was being completed in accordance with TSs and procedural requirements.
- The program for surveillance and limiting condition for operations confirmation was implemented in accordance with TS requirements.

Emergency Planning

- The emergency preparedness program, drills, and training were being conducted in accordance with the Emergency Plan.

Fuel Handling

- The licensee did not conduct fuel movement and procedures would be developed if such operations are needed.

Follow-up of Open Items

- Violations 50-073/2016-202-01 and 50-073/2016-202-02 were closed.

REPORT DETAILS

Summary of Facility Status

The GE-Hitachi Vallecitos Nuclear Center's (the licensee's) 100 kilowatt research reactor was operated in support of neutron radiography, experiments, reactor operator training, and periodic equipment surveillances. During the inspection, the reactor was operated for radiography for the licensee's clientele.

1. **Organization and Staffing**

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

To ensure that the requirements of technical specification (TS) Sections 6.1, "Organization and Staffing," and 6.6.2, "Special Reports," were being met, the inspector reviewed:

- General Electric Nuclear Test Reactor (NTR) organizational structure and staffing
- Management change letter to the NRC, dated November 8, 2016
- Management change letter to the NRC, dated January 16, 2017
- Annual Report No. 56 for the GE-Hitachi NTR, dated June 24, 2016
- Annual Report No. 57 for the GE-Hitachi NTR, dated March 31, 2017
- Standard Operating Procedure (SOP) 6.0, "Operational Summary"
- NTR Daily Surveillance Check Sheets for the past two years

b. Observations and Findings

Since the previous U.S. Nuclear Regulatory Commission (NRC) inspection, there has been two changes in the organization at the GE-Hitachi NTR; specifically, a Level 3 and Level 2 management change. Mr. Matt Fayrer is the new Site Manager and Mr. Tom McConnell was appointed as NTR Facility Manager. Current NTR licensed staff consists of two licensed senior reactor operators (SROs). Three SRO licenses have been terminated, including the previous facility manager due to retirement. The reactor operations staffs' qualifications satisfied the training and experience requirements stipulated in the TS. The operations logs and associated records confirmed that shift staffing met the minimum requirements for duty personnel. Review of records and staffing procedures verified that management responsibilities were administered as required by TS.

c. Conclusion

The NTR organization and staffing was consistent with TS requirements. Shift staffing met the minimum requirements for current operations.

Operations Logs and Records

a. Inspection Scope (IP 69001)

To ensure that the requirements of TS Sections 3.0, "Limiting Conditions for Operation (LCO)," 4.0, "Surveillance Requirements," and 6.0, "Administrative Controls," were being met, the inspector reviewed:

- NTR Console Log Books for the past two years
- Annual Report No. 56 for the GE-Hitachi NTR, dated June 24, 2016
- Annual Report No. 57 for the GE-Hitachi NTR, dated March 31, 2017
- SOP 6.0, "Operational Summary"
- NTR Daily Surveillance Check Sheets for the past two years
- Control Room Data Sheets for the past two years

b. Observations and Findings

The inspector conducted observations of routine activities, including the startup checkout and reactor startup, and reviewed the NTR console log books, monthly and daily surveillance check sheets, and operation record forms. It was noted that the operators on duty were knowledgeable and proficient.

The inspector verified that the reactor operating characteristics and other procedurally required entries were logged appropriately and that the checklists were completed. A review of the licensee's logs and records indicated that the TS operational limits had not been exceeded and that the shift staffing met the minimum requirements.

c. Conclusion

Operational activities were consistent with applicable TS and procedural requirements.

2. Requalification Training

a. Inspection Scope (IP 69001)

To ensure that the requirements of the NRC-approved Operator Requalification Program and TS 6.1.4, "Selection and Training of Personnel," were being met, the inspector reviewed:

- Reactor Operator Requalification Program for the "General Electric Nuclear Test Reactor," dated June 1987
- NTR Operator Requalification Written and Operating Examination for the past two years
- Requalification Training Records for the past two years
- Medical examination records for the past two years
- NTR Console Log Books for the past two years
- NTR Daily Surveillance Check Sheets for the past two years

- Memorandum for “NTR 2017 Reactor Operator Requalification Program Administration,” dated March 27, 2017
- Memorandum for “Designation of NTR Requalification Program Administrator,” dated March 27, 2017

b. Observations and Findings

Current NRC-licensed staff consisted of two SROs. As of the date of the inspection, all the operators’ licenses were current. All operators were enrolled in the licensee’s NRC-approved requalification and training program and had completed the minimum required hours per quarter of operating the reactor. The inspector noted that operators were receiving the required biennial medical examinations.

The licensee’s requalification program included requirements for an annual operating test and a biennial written examination. The inspector verified that both examinations were administered at the specified frequency and that the level of difficulty was comparable to that of NRC-administered examinations.

The inspector confirmed that the requalification program was being administered in a manner that sufficiently maintains the qualifications and proficiency of all licensed operators.

Additional training for the use of personal protective equipment and on-site transfer of radioactive materials as a result of a violation identified during the previous inspection. This further discussed in the “Follow-Up of Open Items” section below.

c. Conclusion

Operator requalification was conducted as required by the Requalification Program and TS 6.1.4.

3. **Maintenance and Surveillance**

a. Inspection Scope (IP 69001)

To ensure that the requirements of TS Sections 3.0, “Limiting Conditions for Operation (LCO),” 4.0, “Surveillance Requirements,” 6.0, “Administrative Controls,” and maintenance procedures were being met, the inspector reviewed:

- NTR Console Log Books for the past two years
- NTR Surveillance Check Sheets for the past two years
- Annual Report No. 56 for the GE-Hitachi NTR, dated June 24, 2016
- Annual Report No. 57 for the GE-Hitachi NTR, dated March 31, 2017
- SOP 6.0, “Operational Summary”
- SOP 12.0, “Preventive Maintenance – NTR,”
- NTR Preventive Maintenance Index and Completion Records for the past two years

b. Observations and Findings

The inspector reviewed the corrective maintenance cards for minor issues for the past two years, with no issues identified. Major maintenance activities discussed in the annual reports were previously reviewed by the inspector. Routine and preventive maintenance were well controlled and documented in a tracking system. A review of the NTR Preventive Maintenance Log indicated that all maintenance activities were conducted consistent with applicable requirements and that any modifications had been properly evaluated in accordance with Title 10 of the *Code of Federal Regulations* 50.59, "Changes, tests and experiments." After all maintenance items were completed, system operational checks were performed to ensure the affected systems were operable before returning them to service.

During the 2014 inspection, the inspector opened Inspector Follow-up Item (IFI) IFI 50-073/2015-201-01 due to formalize a temporary instruction that was created to replace two pico-amp meter ion-chambers, leaving only one operational, because current procedures only allowed for the replacement of one at a time. Through discussion with the NRC project manager (PM) and licensee management, it was determined that the temporary procedure used should become a permanent procedure in order to avoid a similar situation in the future. The licensee determined that, due to the rarity of the test procedure and its infrequency, that when the temporary procedure is needed, the regulatory management team would review it against the current regulatory environment. In discussion with licensee management and the PM, the inspector agreed with the approach and closed IFI 50-073/2015-201-01.

Daily, weekly, monthly and other periodic checks, tests, and verifications for TS required limiting conditions for operation (LCOs) were being completed as required. The inspector performed a random sampling of the required surveillances and verified that all of the recorded results were within the TS and procedurally prescribed parameters. The records and logs were noted to be complete and were being maintained as required.

c. Conclusion

Maintenance was being completed in accordance with TSs and procedural requirements.

The program for surveillance and LCOs confirmation was implemented in accordance with TS Section 4.0 requirements.

4. **Emergency Planning**

a. Inspection Scope (IP 69001)

To ensure that the requirements of the Emergency Plan (E-Plan) were being met, the inspector reviewed:

- "GE Hitachi Vallecitos Nuclear Center (VNC) Integrated Contingency Plan," dated October 2015

- VNC Reactor and Radiological – Radiological E-Plan, reviewed November 2013
- SOP 8.0, “Emergency Procedures”
- Memorandum of understanding with ValleyCare Medical Center, Alameda County Sheriff’s Office, and Paramedics Plus
- VNC Biennial Exercise and Building Evacuation Drills for the past two years
- Various VNC Emergency Training Records
- NTR Surveillance Check Sheet for the past two years

b. Observations and Findings

The E-Plan currently in use was being properly maintained by the licensee. The inspector noted that the E-Plan was applicable to the VNC campus and the NTR has implemented specific procedures. These procedures were readily available in the NTR control room and offices.

The inspector reviewed records for the monthly alarm testing and the semi-annual emergency equipment cabinet inventory check and found that they were being completed as required. The inspector also reviewed the most recent audit from June 2015 and found it appropriate.

Training for the facility operators, staff, and members of the VNC having emergency response duties included completion of an initial training program and the performance of annual review and an examination. Several staffers have completed respirator program training as well which included annual fit test, medical, and equipment checks. The inspector noted through records and interviews with licensee personnel that the training and examination was completed satisfactorily.

The inspector also noted that off-site first responders participated in on-site orientation and training. Participants included Paramedics Plus Alameda, the Alameda County Sheriff’s Office, and the Cal Fire department.

Through the review of drill scenarios and record reviews, the inspector determined that key emergency response personnel can respond to an emergency condition as required. The annually emergency evacuation drill was conducted as required by the E-Plan. The biennial comprehensive emergency drill, which involved State and local officials, was also completed. The lessons learned were discussed at the end of the drill.

The inspector met with the Fire Chief and discussed their response during an emergency and security events, contamination control and transport of individuals, and training and drill participation. The inspector noted that fire department appeared well trained and prepared to respond to an emergency at the VNC.

Additionally, the inspector met with the representatives from the sheriff’s office that had participated in the biennial drill and discussed event response, training, and lessons learned. The inspector found that their participation and feedback

was beneficial and they are well prepared to respond to an emergency or security event at the VNC.

c. Conclusion

The emergency preparedness program, drills, and training were being conducted in accordance with the E-Plan.

5. **Fuel Handling**

a. Inspection Scope (IP 69001)

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

- NTR Console Log Books for the past two years
- Annual Report No. 56 for the GE-Hitachi NTR, dated June 24, 2016
- Annual Report No. 57 for the GE-Hitachi NTR, dated March 31, 2017
- SOP 12.15, "Primary Chemistry," Revision (Rev.) 1023, dated June 6, 2016

b. Observations and Findings

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

c. Conclusion

The licensee did not conduct fuel movement and procedures would be developed if such operations are needed.

6. **Follow-up of Open Items**

a. Inspection Scope (IP 92702)

To follow-up on recent violations (VIOs), the inspector reviewed:

- GE-Hitachi letter to the NRC, "Reply to a Notice of Violation," dated February 1, 2017
- SOP 7.13, "Reactor Cell Entry," Rev. 1041, dated June 28, 2017
- NTR Letter, "Authorizing Individuals are Authorized Personnel," dated June 20, 2017
- Training records
- SOP 7.6, "Protective Clothing," Retired
- VNC Vallecitos Safety Standards (VSS) 5.3.5, "Personal Protective Equipment (PPE)," Rev. 0, dated December 6, 2016
- VNC VSS 8.1, "Radiological Training," Rev. 10, dated February 17, 2017
- VNC VSS 5.5, "Radiation Work Permits," Rev. 13, dated November 2015

b. Observations and Findings

The inspector identified two violations 50-073/2016-202-01 and 50-073/2016-202-02 during the previous inspection. The licensee submitted a reply to the notice of violation on February 1, 2017. The inspector followed-up with the corrective actions listed by the licensee.

Violation 50-073/2016-202-01 consisted of a failure to secure the reactor since as required by the TS and licensee procedures by giving a non-licensed operator access to the key safe. The corrective actions included immediately changing the combination of the key lock box. Additionally, the cell entry and console key are located in different locked boxes. SOP 7.13 was updated to limit cell entry control to a licensed operator or a qualified radiation monitor technician as designated by the NTR manager. Staff training was given regarding control of console key and the violation. The inspector found these corrective action appropriate and closed violation 50-073/2016-202-01.

Violation 50-073/2016-202-02 consisted of a failure to implement the radiation safety procedures required by the TS. The corrective actions included retiring SOP 7.6 and requiring the NTR to follow VNC VSS 5.3.5, along with training on protective clothing requirements and demonstrations. Additional training covered VNC VSS 5.5, and radiation work permits and what to do in case of an alarm. The inspector found these corrective actions appropriate and closed violation 50-073/2016-202-02.

c. Conclusion

Violations 50-073/2016-202-01 and 50-073/2016-202-02 were closed.

7. **Exit Meeting Summary**

The inspector reviewed the inspection results with members of licensee management and NTR staff at the conclusion of the inspection on June 29, 2017. The licensee acknowledged the inspection findings.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Fayrer	VNC Manager
M. Leik	Environmental Health and Safety Manager
T. McConnell	NTR Manager
J. Ayala	Radiation Protection Supervisor
S. Murray	Licensing Manager
D. Hart	Environmental Health and Safety General Manager
S. Cavanaugh	Security Manager

INSPECTION PROCEDURES USED

IP 69001 Class II Research and Test Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

IFI 50-073/2015-201-01	Incorporation of the temporary procedure to replace multiple pico-amp meters into the permanent procedures.
VIO 50-073/2016-202-01	Failure to secure the reactor as required by the TS and licensee procedures by giving a non-licensed operator access to the key safe.
VIO 50-073/2016-202-02	Failure to implement the radiation safety procedures required by the TS.

Discussed

None

LIST OF ACRONYMS USED

E-Plan	Emergency Plan
IFI	Inspector Follow-up Item
IP	Inspection Procedure
LCOs	Limiting Conditions for Operation
NRC	U.S. Nuclear Regulatory Commission
NTR	Nuclear Test Reactor
PM	Project Manager
REV.	Revision
SOP	Standard Operating Procedure
SRO	Senior Reactor Operator
TS	Technical Specification
VIO	Violation
VNC	Vallecitos Nuclear Center
VSS	Vallecitos Safety Standards