

April 28, 2004

Mr. Scott Bump, Manager  
Vallecitos Nuclear Center  
General Electric Company  
6705 Vallecitos Road  
Sunol, CA 94586

SUBJECT: NRC INSPECTION REPORT NO. 50-73/2004-202

Dear Mr. Bump:

This letter refers to the inspection conducted on March 15 - 18, 2004, at your Nuclear Test Reactor facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. Based on the results of this inspection, no noncompliance of NRC requirements or safety concerns was identified. No response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>.

Should you have any questions concerning this inspection, please contact Mr. Thomas Dragoun in King of Prussia, PA at 610-337-5373.

Sincerely,

**/RA/**

Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-73  
License No.: R-33

Enclosure: NRC Inspection Report No. 50-73/2004-202

cc w/enclosure: Please see next page

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General Electric Company (NTR)

Docket No. 50-73

cc:

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California Department of Health  
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Radiological Health Section  
714 P Street, Room 498  
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U. S. NUCLEAR REGULATORY COMMISSION

Docket Nos: 50-73

License Nos: R-33

Report Nos: 50-73/2004-202

Licensee: General Electric Company

Facility: Nuclear Test Reactor (NTR)

Location: Sunol/Vallecitos, CA

Dates: March 15 - 18, 2004

Inspector: Thomas Dragoun

Approved by: Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program(RNRP)  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

**EXECUTIVE SUMMARY**  
Vallecitos Nuclear Center  
Report No: 50-73/2004-202

The primary focus of this routine, announced inspection was the on-site review of selected aspects of the licensee's Class II non-power research reactor operation including: organization and staffing; operations logs and records; procedures; operator requalification; surveillance and limiting conditions for operations; radiation protection; committees, audits, and reviews; and material control and accounting program.

**Organization and Staffing**

- The licensee's organization and staffing remain in compliance with the requirements specified in the Technical Specifications Section 6.1.

**Operations Logs and Records**

- Records were kept as required by the Technical Specifications and the licensee's administrative procedures.

**Procedures**

- The procedure control and implementation program satisfied Technical Specifications requirements.

**Operator Requalification**

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

**Surveillance and Limiting Conditions of Operation**

- TS change will be submitted to correct one surveillance requirement. Surveillance testing was conducted at the required intervals with satisfactory results.

**Radiation Protection Program**

- The radiation protection program satisfied NRC requirements

**Committees, Audits, and Reviews**

- The review and audit program satisfied Technical Specification requirements.

**Material Control and Accountability**

- Special Nuclear Materials were acceptably controlled and inventoried.

## REPORT DETAILS

### **Summary of Plant Status**

The licensee's one hundred kilowatt (100 kW) horizontal annular cylinder non-power reactor (NPR) continued normal, routine operations. During the inspection the reactor was operated daily to support training, surveillance, and contract service work. The inspector observed a reactor startup and shutdown, and the retrieval of an routine irradiation sample. The programs for physical security, industrial safety, radiation protection, and environmental protection are site-wide with the research reactor being one of the smaller operations.

### **1. Organizational Structure and Staffing**

#### a. Inspection Scope (Inspection Procedure [IP] 69001)

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Technical Specification (TS) Section 6.1, dated August 1997, were being met:

- organizational structure
- management responsibilities
- staff qualifications
- staffing requirements for safe operation of the research reactor facility
- Procedure 9.1, "Safety Responsibility & Authority" Revision 808, effective August 20, 1993

#### b. Observations and Findings

The inspector noted that some supervisors were "acting" in as many as three of the positions identified in the TS. The site manager indicated that the number of supervisory staff personnel was determined by the workload created by the level of business activity. When the business demand increases, so does the size of the supervisory staff. However, the safety responsibility for each position is a top priority clearly understood by the incumbent. Through discussions with the staff, the inspector confirmed this arrangement. The inspector also noted that the supervisory staff was "rotated" periodically. Discussions with the staff confirmed that this did not result in misunderstandings regarding safety responsibility. A review of training and experience of the staff indicated that the requirements of TS Section 6.1.4 were satisfied.

The inspector observed that the reactor operations log did not name the person fulfilling the position specified in TS Section 6.1.3.1(b). The reactor supervisor stated that the small staff and close location of office space to the reactor results in a clear but unwritten identification of the "second person" required during reactor operations. However, the reactor operations manager stated that the recordkeeping practices and procedure will be revised to require the operators to record the name of the second person. This matter will be reviewed in a future inspection (Inspector Follow up Item 50-73/2004-202-02).

c. Conclusions

The licensee's organization and staffing remain in compliance with the requirements specified in TS Section 6.

**2. Operations Logs and Records**

a. InspectionScope (69001)

The inspector reviewed the following to ensure that selected records were maintained as required by TS Section 6.7:

- Administrative Procedure 9.16 "Record Collection and Retention" Revision 857, effective February 13, 1995
- Console log data from November 26, 2002 to August 26, 2003
- Standard Operating Procedure #64 "Daily Surveillance Check Sheet" Revision 432, dated January 18, 1985. Data for October 1 to December 18, 2003
- Standard Operating Procedure 6.6 "Startup - Shutdown Report" Revision 801, effective September 3, 1993
- Standard Operating Procedure 6.7 "Startup Summary" Revision 652, effective January 26, 1988
- Standard Operating Procedure 6.8 "Control Room Data Sheet" Revision 803, effective August 20, 1993. Data for October 1 to December 18, 2003

b. Observations and Findings

The inspector observed that records were kept as specified in the licensee's administrative procedures and reflect the routine nature of the reactor utilization. The inspector noted that there was no power level (watts) meter as part of the reactor control console indications. The reactor manager stated that the "percent power" readout was used with the data from the last calorimetric run to calculate the power. Also, tables were available for the operator to relate the in-core detector picoammeter readings to power level.

c. Conclusions

Records were kept as required by the TS and the licensee's administrative procedures.

**3. Procedures**

a. Inspection Scope (69001)

The inspector reviewed the following procedures to determine if the requirements of TS Section 6.3 were being met:

- Procedure 6.1 "Staffing Requirements" Revision 535, effective October 1, 1985
- Procedure 6.2 "Control Room Entry" Revision 569, effective January 31, 1986
- Procedure 6.3 "Reactor Log Books" Revision 746, effective February 14, 1992
- Procedure 6.4 "Daily Surveillance Check Sheet" Revision 432, January 18, 1985. Data for the period October 1 to December 18, 2003

- Procedure 6.5 "Monthly Surveillance Check Sheet" Revision 452, effective February 1, 1985
- Procedure 6.6 "Startup/Shutdown Report" Revision 801, effective September 3, 1993. This procedure was followed for the reactor startup observed by the inspector on March 17, 2003
- Procedure 6.7 "Startup Summary" Revision 652, effective January 26, 1988
- Procedure 6.8 "Control Room Data Sheet" Revision 803, effective August 20, 1993
- Procedure 6.9 "Scram Shutdown Report" Revision 810, effective August 25, 1993
- Procedure 6.10 "Shutdown Summary" Revision 536, effective October 1, 1985. This procedure was observed being followed to shut the reactor down on March 17, 2003

b. Observations and Findings

The procedures for the activities identified in the TS were available for use. Records indicated that the procedures and changes thereto were reviewed and approved by the level of management specified in the TS. Personnel were observed conducting activities in accordance with the applicable procedure.

c. Conclusions

The procedure control and implementation program satisfied TS requirements.

**4. Operator Requalification**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements in 10 CFR Part 55 and the Requalification Program for the General Electric Nuclear Test Reactor dated June 1987:

- status of operator licenses
- operator training and examination records
- operator physical examination records
- operator active duty status

b. Observations and Findings

The Requalification Program was being maintained up-to-date. Four operator licenses were verified to be current. Operator topical training only covered the emergency preparedness and the radiation protection programs and was consistent with the Requalification Program requirements. Written examinations were completed by the operators which did not use the NRC exam bank but were specific to the unique design of the NTR reactor. The performance evaluations of the operators were acceptably maintained by presenting five abnormal conditions or indications to each operator and evaluating his response. Physical examinations of the operators were conducted as required as well.



c. Conclusions

Operator requalification was conducted as required by the Requalification Program.

**5. Surveillance and Limiting Conditions for Operations**

a. Inspection Scope (69001)

The inspector reviewed the following regarding conduct of surveillance on safety systems as specified by TS Section 4.0:

- Procedure 6.4 "Daily Surveillance Check Sheet" Revision 432, January 18, 1985. Data for the period October 1 to December 18, 2003
- Procedure 6.5 "Monthly Surveillance Check Sheet" Revision 452, effective February 1, 1985
- Experiment Approval Forms dated October 31 to December 18, 2003
- operational logs and records

b. Observations and Findings

Essentially all surveillances are scheduled, performed, and the results recorded in accordance with procedures 6.4 and 6.5, except for experiments. A review of check sheets and recorded data indicated the surveillances were conducted at the TS specified intervals and the results were satisfactory. However, the inspector noted that TS Section 4.4.3.2 refers to surveillance on the reactor cell and ventilation system to demonstrate compliance with the limiting conditions for operation specified in TS Section 3.4.3.5. The current TS labeled "NEDC 327, Class 1, August 1997" did not contain a TS Section 3.4.3.5. The licensee management acknowledged this finding and indicated that a revision will be submitted to correct this error. The licensee's initial evaluation was that a typographical error was made. This matter will be reviewed in a future inspection (Inspector Follow up Item 50-73/2004-202-01).

c. Conclusions

A TS change will be submitted to correct one surveillance requirement. Surveillances were conducted at the required intervals with satisfactory results.

**6. Radiation Safety Program**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Part 20 and TS Section 6.3 requirements and procedural requirements:

- Policy Standard 5.2, "Radiation Exposure Limits" Revision 9, dated December 1993, updated May, 1995
- Policy Standard 5.3.3 "Respiratory Protection" reviewed March 2004
- Check-off Form NEO 325 revised May 1983

- Procedure 3060, "Radiation Survey Records and Reorting" Revision 7, dated June 1994. Data for daily, twice weekly, weekly, and monthly surveys from October 1, 2003 to March 16, 2004
- Procedure 3550 "Building 105/NTR Work Routines" Revision 8, dated September 1998
- Calibration Procedure 3.3.1 "Facilities Maintenance" Revision 1 dated July 1995
- Inventory report "Building 105 Radiation Instruments" dated March 18, 2004
- personnel exposure records for 2003 and 2004 to date

b. Observations and Findings

The radiation protection program had not changed since the last inspection. The licensee reviewed the radiation protection program at least annually in accordance with 10 CFR 20.1101(c). The review included selected areas and no major weaknesses were reported. The licensee showed that the air emissions or radioactive material to the environment met the 10 millirem constraint specified in 10 CFR 20.1101(d).

NRC Form 3, "Notice to Employees," was posted in accordance with 10 CFR 19.11. Caution signs, postings and controls to radiation areas were as required in 10 CFR 20, Subpart J. Licensee personnel observed the indicated precautions for access the radiation areas.

Use of dosimeters and exit frisking practices were in accordance with radiation protection requirements. The licensee used a National Voluntary Laboratory Accreditation Program (NVLAP)-accredited vendor to process dosimetry. Radiological exposure records showed that occupational doses and doses to the public were within 10 CFR Part 20 limitations. Training records showed that personnel were acceptably trained in radiation protection practices.

Radiation monitoring and survey activities were as required. Equipment used for these activities were maintained, calibrated and used acceptably.

The licensee maintained a respiratory protection program. However, the inspector noted that some elements and practices were old. For example, irritant smoke was used during the respirator fit test, references were made to ANSI Z88.2 - 1980, and masks were somewhat dated in that they had no powered air purifiers (PAPR). The licensee stated that this matter would be reviewed.

c. Conclusions

The radiation protection program satisfied NRC requirements

**7. Committees, Audits, and Reviews**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews stipulated in TS Section 6.2 were being completed:

- Vallecitos Technological Safety Council (VTSC) composition

- Council meeting minutes for October 28, June 25, and April 3, 2003, June 21 and March 20, 2002, and September 28, 2001
- Audit Report "Regulatory Compliance Review of Bioassay Program" dated April 8, 2003
- Audit Report "Regulatory Compliance Review - Posting Notices to Workers" dated March 21, 2003
- Audit Report "Regulatory Compliance Review - Area Classification and Posting" dated November 8, 2002
- Audit Report "Regulatory Compliance Review of Radioactive Waste Handling Activities" dated September 24, 2002
- Audit Report "Regulatory Compliance Review - Radiation Protection of Visitors" dated June 5, 2002
- Audit Report "Regulatory Compliance Review - Calibration and Maintenance of Radiation Instruments " dated April 30, 2002
- Nuclear Safety Procedure 6000, "Requirements for Reviewing Nuclear Safety Programs at Vallecitos Nuclear Center" dated November 1994

b. Observations and Findings

Records showed that the independent safety reviews were conducted in accordance with the TS and licensee administrative requirements. Reviews by the VTSC were consistent with Technical Specification requirements to provide guidance, direction, and oversight, and to ensure acceptable use of the reactor.

The inspector noted that the safety reviews and audits and the associated findings were acceptably detailed and that the licensee responded and took corrective actions as needed.

The safety review and audit personnel qualifications satisfied the Charter - Vallecitos Technological Safety Council Revision 7, dated August 1994. Technical Specification requirements and licensee administrative controls. Further, the number of personnel involved in the safety reviews and audits also satisfied Technical Specification and licensee procedural requirements.

c. Conclusions

The review and audit program satisfied Technical Specification requirements.

**8. Control and Accountability of Special Nuclear Material**

a. Inspection Scope (IP 85102)

The inspector reviewed:

- NRC Bulletin 2003-04: Rebaselining of Data in the Nuclear Materials Management and Safeguards System, dated October 8, 2003
- Material Balance Reports (DOE/NRC Form-742 and 742c) and Material Transaction Reports (DOE/NRC Form- 741) for the reporting period March 30 to October 1, 2003

b. Observations and Findings

For many years NRC licensees and Department of Energy (DOE) facilities were required to report holdings of special nuclear material twice each year to the Nuclear Materials Management and Safeguards System (NMMSS). The NMMSS program was maintained by a contractor funded by NRC and DOE. An audit by DOE found irregularities in the data maintained by NMMSS. In response to these irregularities, NRC licensee's were requested to make a one time report of the SNM inventory to NMMSS to baseline the program data. The VNC completed the report in a timely and accurate manner.

c. Conclusions

Special Nuclear Materials were acceptably controlled and inventoried.

**9. Exit Interview**

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on March 18, 2004. The licensee acknowledged the findings presented.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee

C. Bassett, Manager, Facilities and Quality Assurance  
S. Bump, Manager, Vallecitos Nuclear Center  
E. Ehrlich, Manager, Nuclear Test Reactor  
W. Kreutel, Senior Reactor Operator  
H. Stuart, Specialist, Radiological Engineering  
D. Turner, Manager, Regulatory Compliance and EHS

## **INSPECTION PROCEDURES USED**

IP 69001	CLASS II NON-POWER REACTORS
IP 85102	MATERIAL CONTROL AND ACCOUNTING

## **ITEMS OPENED, CLOSED, AND DISCUSSED**

### Opened

50-73/2004-202-01	IFI	Review and correct the reference to TS Section 3.4.3.5 by Section 4.4.3.2.
50-73/2004-202-02	IFI	Record the name of the "second person" required for reactor operations.

## **LIST OF ACRONYMS USED**

CFR	Code of Federal Regulations
DOE	Department of Energy
NMMSS	Nuclear Materials Management and Safeguards System
NRC	Nuclear Regulatory Commission
RP	Radiation Protection
SNM	Special Nuclear Material
TS	Technical Specifications