

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-073/94-01
License No. R-33
Licensee: General Electric Company
Vallecitos Nuclear Center
P. O. Box 460
Pleasanton, California 94566
Facility Name: Nuclear Test Reactor Facility
Inspection Conducted: March 9, 10, and 16, 1994

Inspector: Phillip M. Qualls 3/30/94
Phillip M. Qualls Date Signed
Reactor Inspector
LeRoy R. Norderhaug 3/29/94
LeRoy R. Norderhaug Date Signed
Senior Material Control Analyst
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Safeguards, Emergency Preparedness
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Inspection Summary:

Areas Inspected: This routine, announced inspection of a Class II Research and Test Reactor included: reactor operations and transportation of radioactive materials. The inspection also included tours of the licensee's facility. Inspection procedures 30703, 40750, 92701 and 86740 were used.

Results: In the areas inspected, the licensee's programs appeared adequate to accomplish their objectives. No weakness were identified. One significant strength concerning the response to the loss of all power to the unit (see paragraph 2.c) was noted. No violations or deviations were identified.

DETAILS

1. Key Persons Contacted

Licensee:

- *C. Bassett, Senior Engineer
- *J. Cherb, Manager, Regulatory Compliance
- W. Kreutel, Reactor Operator (SRO)
- *J. Nixon, Safeguards Specialist
- *D. Smith, Manager, Nuclear Test Reactor (SRO)
- *G. Stimmell, Manager, Irradiation Processing Operation

* Denotes those in attendance at the exit interview.

In addition to the individuals noted above, the inspector met and held discussions with other members of the licensee's staff.

2. Class II Research and Test Reactor Operations (40750)

The licensee's program was reviewed for compliance with the requirements of 10 CFR Parts 19, 20, 50, 55, Technical Specifications, and licensee procedures. The inspection included a review of selected procedures and records, interviews with personnel and facility tours. The inspection also included observations made during a reactor shutdown and neutron radiography operations.

a. Reactor Operations

The Nuclear Test Reactor (NTR) activities consists primarily of neutron radiography of parts and components including explosives, and, occasionally, irradiated reactor fuel experiments. The reactor is typically operated daily during normal working hours at a reactor power level of about 100 kw. In 1993 the reactor was operated above critical about 521 hours with 247 startups. Total reactor plan operations equaled 1.428 MW days in 1993. The inspector observed a shutdown of the reactor. The operation was performed safely and efficiently.

b. Management and Organization

There had been no changes in management or organizational structure at the NTR facility since the last inspection of this area (50-73/93-01). At the time of this inspection, staffing at the NTR consisted of a facility manager that is also a licensed Senior Reactor Operator (SRO) and two operations specialists that are licensed SROs. The organization was observed to be consistent with Technical Specification 6.1.1. The current staff have been long term employees at the NTR facility.

c. Operations and Maintenance Records

A review of reactor operating logs such as startup and shutdown check lists and maintenance records for the period of June 1993 through February 1994, was conducted. The reactor operating logs, check lists and maintenance logs were adequately filled out and were consistent with facility operating procedures and the technical specifications. The inspectors concluded that reactor operations met the conditions prescribed in the technical specifications.

The inspector reviewed the records of the loss of all power to the facility which occurred on February 11, 1994, at about 1010 hours when the reactor was at 100 % power. The power outage lasted until 1850 hours. The inspector noted that the operators verified that the safety rods had shutdown the reactor by using portable monitors. The licensee kept a senior reactor operator at the facility until power was restored, the remaining control rods inserted, and the reactor properly secured.

Preventative maintenance activities had been factored into the facilities operating procedures. The inspectors concluded that the licensee was implementing an effective maintenance program.

d. Procedures

The inspection disclosed that the licensee maintains and follows reactor operating procedures as described in the technical specifications. The inspectors reviewed the licensee's operating procedures. The inspectors noted that the procedures are properly reviewed.

e. Requalification Training

The inspector reviewed records of SRO requalification examinations since the last inspection of this area (50-73/93-01). The review disclosed that biennial written examinations for SROs were being administered in accordance with the requirements of 10 CFR Part 55, Subpart C.

In addition to SRO training, the NTR staff are trained in handling explosives and other hazardous materials related to the activities performed at the facility.

f. Surveillances

Records for selected surveillances prescribed in Technical Specification, Section 4.0 were examined. The examination included surveillances for scram trip tests, alarm trip tests, drop-out current tests, reactivity calculations, rod worth determinations, temperature coefficient verifications, thermal power verifications and various channel calibrations.

The inspector determined that the licensee's surveillance program met or exceeded the requirements prescribed in the technical specifications.

g. Experiments

Based on a review of records and discussions with facility personnel, the inspector determined that adequate reviews were being conducted for all irradiation type experiments to ensure that they did not represent an unreviewed safety question and reactivity limits would not be exceeded.

Irradiated and radiographed items were accounted for until they had decayed to an acceptable level for release.

h. Radiation Protection

Personnel exposure records from January 1, 1993, through February 28, 1994, were reviewed.

Personnel monitoring devices, beta/gamma film and neutron albedo dosimeters, were processed monthly by a NVLAP accredited contract vendor. The inspector verified that forms NRC-4 and NRC-5, or equivalent were maintained in accordance with NRC requirements and licensee procedures. The 1993 reports indicate that the neutron exposures remain substantially less than fifteen percent of the total dose (neutron plus beta-gamma) dose. The inspector noted that no individual had exceeded the limits of either 10 CFR 20.101(a) or (b). In 1993 the average exposure of the operators was 1.2 rem with an individual high dose of 1.3 rem. This is a significant reduction from 1992, with an average exposure of 1.92 rem and a highest individual dose of 2.46. Although the licensee's ALARA Program continues to evaluate operational changes to further reduce exposures, the '92 to '93 reduction noted was also related to reduced reactor duty time.

The reactor cell air activity was evaluated daily with a continuous air monitor prior to entries for reactor startup checks. Appropriately located fixed air samplers within the facility were changed and counted weekly. Air sample data indicated that air activity in the work areas was within NRC limits at the facility.

Daily and weekly routine contamination surveys were being performed in accordance with the licensee's procedures, and indicated that contamination levels were being maintained at a minimum.

During facility tours, the inspector made an independent radiation survey. The inspector observed that radiation areas and high radiation areas were posted as required by 10 CFR Part 20. Licensee controls for high radiation areas were also observed to be consistent with 10 CFR Part 20 requirements.

i. Audit

The inspector reviewed selected quarterly audits performed by the Regulatory Compliance Group during the period since the last inspection. The audits were conducted to ensure that the NTR facility was being operated in accordance with the requirements of the technical specifications and facility procedures. The audits appeared to be broad in scope and were designed to cover all technical specification requirements during a two year audit period. Of the audit findings identified, none appeared to represent a significant safety problem. All audit findings appeared to be effectively corrected. The inspector concluded that the audit program met or exceeded the requirements of the technical specifications.

j. Emergency Planning

The inspector reviewed records of emergency drills, including participation of off-site organizations, and held discussions with cognizant licensee representatives to determine the licensee's compliance with the Emergency Plan.

Based on the review of records and discussions with licensee personnel, the inspector noted that (1) initial and periodic radiological, fire protection, first aid and hazardous materials training was being adequately provided to emergency response personnel; (2) periodic drills were being conducted and critiqued to ensure personnel were familiar with their assigned responsibilities; (3) adequate instruction and participation from outside support organizations was evident; and (4) adequate instructions were being provided to unescorted visitors to familiarize them with the sites emergency signals and assembly areas. The inspector also noted that emergency response equipment appeared to be properly maintained.

k. Annual Reports

The licensee's annual report for 1993 was reviewed in draft. This report when complete will be submitted in accordance with Technical Specification 6.5.1. The draft report summarized plant operations, changes, tests, experiments, and major maintenance at the NTR. The reports also included a summary of radiation levels and sample results from on-site and off-site monitoring stations, and personnel exposures.

The licensee's performance appeared to be fully satisfactory and their program seemed capable of meeting its safety objectives. No violations or deviations were identified.

3. Transportation of Radioactive Materials (86740)

The inspector reviewed the licensee's program for compliance with the requirements of 10 CFR Part 20 and 49 CFR Parts 171 through 189.

The inspector noted that most of the off-site shipments consisted of radiographed items, after adequate decay time. Shipments of radioactive materials or contaminated waste are handled under the authority of the facility's State of California license.

The licensee's program appeared capable of meeting its safety objectives. No violations or deviations were identified.

4. Followup of Previously Identified Items (92701)

(50-G73/93-001-01) CLOSED Rod Withdrawal Time Test

This item was most recently discussed in NRC Inspection Report No. 50-073/93-001 dated June 18, 1993, as follows:

"Discussion of the validity of assuming that the withdrawal and insertion rate would be the same for the reversible motor drive, prompted the licensee to agree to amend their (Procedure 12.1 "Fine Control Rod Drive" and Procedure 12.2 "Coarse Control Rod Drive") to measure the withdrawal time while withdrawing the control rods."

During the course of this inspection, the inspector noted that in June of 1993 the licensee amended the test procedures to time the rod withdrawal. (This item is CLOSED.)

5. Exit Interview

The inspectors met with the licensee representatives, denoted in paragraph one at the conclusion of the inspection on March 10 and with Mr. Cherb on March 16, 1994. The scope and findings of the inspection were summarized. No significant weaknesses were identified. The inspector noted, as a strength, the conservative response of the facility staff during the February 11, 1994, loss of all power occurrence. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during the inspection.