



GE Nuclear Energy

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March 28, 2001

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

**Subject: Annual Report for 2000
 General Electric Nuclear Test Reactor**

Reference: License R-33, Docket 50-73

Gentlemen:

Enclosed are three signed copies of Annual Report No. 41 for the General Electric Nuclear Test Reactor. If you have any questions, please contact the undersigned at 925-862-4455.

Sincerely,

Chris Hamilton
Senior Licensing Engineer

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Enclosures

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GE Nuclear Energy

*Vallecitos Nuclear Center
General Electric Company
Sunol, California*

**GENERAL ELECTRIC
NUCLEAR TEST REACTOR**

**ANNUAL REPORT NO. 41
FOR THE YEAR 2000**

**LICENSE R-33
DOCKET 50-73**

MARCH 2001

General Electric Nuclear Test Reactor

Annual Report No. 41

This report summarizes the operation, changes, tests, experiments, and major maintenance at the General Electric Nuclear Test Reactor (NTR), which were authorized pursuant to License R-33, Docket 50-73, and 10CFR50, Section 50.59, for the period of January 1, 2000 through December 31, 2000.

I. General

Specific information about the operation of the NTR during the reporting period is presented as follows:

1. The reactor was operated at or above critical for 726.63 hours and 250 startups were made. Total operation equaled 2.956 MWd in 2000.
2. The average radiation exposure to NTR Operations personnel was 0.943 Rem.
3. There was one reactor scram.
4. There were no occurrences during 2000 that required notification of the NRC.
5. During June 26-29, 2000 there was one NRC inspection. The inspection resulted in one violation - in 1999, an individual who was regularly assigned to work in the NTR received only three bioassays (whole body counts), and not four as required by procedure. Corrective steps were taken and full compliance was achieved on October 27, 2000. No other violations of NRC requirements were issued.

II. Organization

There were seven changes to the organization or personnel in the organization during the reporting period. The details of the changes are described as follows:

1. Dennis Smith, NTR SRO and a certified NDT-III resigned as a GE company employee. He was subsequently retained as a part-time contractor providing Quality Assurance (QA) consulting, RO examination tutoring, and NDT training services.
2. Edward Ehrlich NTR Manager and Licensed SRO, was certified NDT-I.
3. Mr. Tim Peterson Specialist, NTR, completed his Vallecitos Nuclear Center and NTR radiological controls training and has been qualified as a radiation worker. He was also receiving formal NTR RO training in preparation for the NRC RO licensing examination, and is also receiving informal NDT certification training. Mr. Peterson is also assisting in Neutron Radiography under the direction and supervision of certified Level I and III NDT personnel.
4. Mr. Tim Keefhaver, a contract employee performing Neutron Radiography, resigned from the NTR staff and accepted a permanent position with General Electric Nuclear Energy.
5. Mr. Ron Snyder, NTR SRO and Certified NDT-II, retired from the General Electric Company.
6. Mr. Art Raya was added to the NTR staff as a contract employee to perform NDT neutron radiography tasks under the direction and supervision of the licensed SRO staff and certified Level I and III NDT personnel. Mr. Raya is receiving VNC and NTR radiological controls training for his qualification as a radiation worker and is receiving NDT and safety training.
7. Mr. Joe Maggio was added to the NTR staff as a contract employee to perform NDT neutron radiography tasks under the direction and supervision of the licensed SRO staff and certified Level I and III NDT personnel. Mr. Maggio is receiving VNC and NTR radiological controls training for his qualification as a radiation worker and is receiving NDT and safety training.

III. Facility Changes, Tests, Experiments, and Procedure Changes Approved by the Facility Manager

In accordance with written procedures, facility changes, tests, experiments, and procedure changes can only be approved by the Facility Manager. Specific information about the reporting period is presented as follows:

A. Facility Changes

Pursuant to 10CFR50.59(a), there were no facility changes in 2000 requiring Facility Manager approval.

B. Tests

Pursuant to 10CFR50.59(a), there were no special tests performed during 2000 requiring Facility Manager approval.

C. Experiments

Pursuant to 10CFR50.59(a), there were no new experiments in 2000 requiring Facility Manager approval.

D. Procedure Changes

Pursuant to 10CFR50.59(a), there were minor procedural changes to incorporate editorial or typographical corrections and technical data changes to reflect the removal of one and replacement, in the same poison sheet location, by a different manual poison sheet. These editorial, typographical and technical data procedure changes during 2000 were made with Facility Manager approval. Details of the changes are presented below:

1. The manual poison sheet change was performed in accordance with an existing NTR SOPs and an Engineering Release procedure approved by the Facility Manager and Manager Regulatory Compliance. Following the manual poison sheet change, an assessment of the NTR Control Rod Worths was made in accordance with NTR SOP 3.7.
2. An Engineering Release procedure was approved by the Facility Manager and Manager of Regulatory Compliance for a weighted mechanical pull test procedures for a single 1.4S FCDC Assembly which is a device that is commonly-handled and neutron radiographed in accordance with NTR SOPs.

IV. Major Preventative or Corrective Maintenance

There were no major preventive or corrective maintenance activities performed during the reporting period. Preventative maintenance was performed on the south shield wall of the reactor, which is constructed of lead bricks. Due to settling, some spaces developed between the some of the lead bricks and a re-compacting was therefore performed. This maintenance was performed in accordance with an Engineering Release Procedures form approved by the Facility Manager. The area dose rates were unaffected by either the settling or re-compacting.

V. Unscheduled Shutdowns

During the reporting period, there were no unscheduled manual shutdowns. There was one reactor scram caused by a transient utility power low-voltage condition or interruption.

VI. Radiation Levels and Sample Results at On-Site and Off-Site Monitoring Stations

The data below are from sample and dosimeter results accumulated during the reporting period. Except for the NTR stack data, these data are for the entire VNC site and include the effects of operations other than the NTR.

A. NTR Stack

Total airborne releases (stack emissions) for 2000 are as follows:

Alpha Particulate, $9.64\text{E-}08$ Ci (predominantly radon-thoron daughter products)
Beta-Gamma Particulate, $6.72\text{E-}7$ Ci
Iodine-131, $1.04\text{E-}5$ Ci
Noble Gases, $2.53\text{E+}2$ Ci

Noble gas activities recorded from the NTR stack integrate both background readings and the actual releases. Background readings may account for as much as 50% of the indicated release.

B. Air Monitors (Yearly average of all meteorological stations.)

Four environmental air monitoring stations are positioned approximately 90 degrees apart around the operating facilities of the site. Each station is equipped with a membrane filter, which is changed weekly and analyzed for gross alpha and gross beta-gamma.

Alpha Concentration:

Maximum, $5.02\text{E-}14$ $\mu\text{Ci/cc}$ (predominantly radon-thoron daughter products)
Average, $2.78\text{E-}15$ $\mu\text{Ci/cc}$

Beta Concentration:

Maximum, $2.78\text{E-}15$ $\mu\text{Ci/cc}$
Average, $1.87\text{E-}14$ $\mu\text{Ci/cc}$

C. Gamma Radiation

The yearly dose results for the year 2000 as determined from evaluation of site perimeter TLD environmental monitoring dosimeters showed no departure from normal stable backgrounds.

D. Vegetation

No alpha, beta or gamma activity attributable to activities at the NTR facility was found on or in vegetation in the vicinity of the site.

E. Water

There was no release of radioactivity in water or to groundwater greater than the limits specified in 10CFR20, Appendix B, Table 2, Column 2.

F. Off-Site

The results of samples collected from off-site locations indicate normal background for the regional area.

VII. Radiation Exposure

The highest annual dose to NTR Operations personnel was 1.443 Rem and the lowest was 0.270 Rem. The average radiation exposure to personnel was 0.943 Rem per person.

VIII. Conclusion

The General Electric Company concludes that the overall operating experience of the NTR reflects another year of safe and efficient operations. There were no reportable events.

GENERAL ELECTRIC COMPANY
Vallecitos and Morris Operations



E.H. Ehrlich, Manager
Nuclear Test Reactor