

GENERAL ELECTRIC TEST REACTOR

ANNUAL REPORT NO. 24

LICENSE TR-1

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I. INTRODUCTION

This annual report, covering the period January 1, 1982 to December 31, 1982 for the General Electric Test Reactor (GETR), is submitted in fulfillment of the requirements of Section 3.D(4) of License TR-1 and 10CFR50.59(b).

II. OPERATING SUMMARY

On October 24, 1977, the General Electric Test Reactor was ordered to remain shut down, following a routine outage, pending further order from the Nuclear Regulatory Commission. The order was based on an interpretation of the geology of the Livermore Valley as shown on the U.S. Geological Survey (USGS) open file report number 77-689 and a preliminary evaluation of evidence of faulting in a trench dug at the Vallecitos Nuclear Center. The reactor was shut down on October 27, 1977 and has remained in this condition through December 31, 1982. The General Electric Co. is awaiting a ruling from the Atomic Safety and Licensing Appeals Board regarding the Order to Show Cause.

III. STATISTICS

1. Containment Building Evacuations and Isolations

Several containment building automatic isolations occurred during the year due to spurious (upscale) stack gas monitor trips. There were no personnel in the building at the times of the isolations. No other isolations occurred and no evacuations occurred.

2. Personnel (as of December 31, 1982)

Licensed Operators 4  
(All are Licensed Senior Reactor Operators)

3. As of May 31, 1982 all unirradiated GETR fuel elements, control rod fuel followers and fission capsules were shipped from GETR to Idaho National Engineering Laboratory (INEL) for storage.
4. As of October 31, 1982 all GETR irradiated fuel elements and control rod fuel followers were shipped to INEL for reprocessing.
5. As of October 31, 1982 all irradiated fission product capsules were transferred to Radioactive Products and Services (RP&S) at the Vallecitos Nuclear Center for processing (NRC License Number SNM-960).
6. All SNM has been transferred from GETR except for non-accountable amounts in detectors.

#### IV. REACTOR AND SYSTEMS COMPLIANCE TESTS

Performance tests were satisfactorily completed on the systems which involve containment building integrity. These performance tests were:

- o Containment Building Leak Test
- o The Vacuum Relief System Test
- o The Air Locks Leak Tests
- o The Containment Building Ventilation Isolation Valves Leak Test
- o Stack Monitor and Building Overpressure Trip Tests

#### V. MALFUNCTIONS OF CONTROL AND SAFETY SYSTEMS

On February 18, prior to depressurizing the containment building following the 1982 Containment Building Leak Test, the ventilation isolation valves were inadvertently opened for several seconds causing damage to the ventilation system supply and exhaust ducting. This incident was caused by operator error and was not due to the malfunctioning of any equipment. The Leak Test was rerun with satisfactory results and the ducting has been repaired.

The ventilation isolation valves were not significantly damaged by the letdown incident. The outboard isolation valves were replaced on May 13 with new valves because of long term wear on the old valves. This replacement was planned prior to the letdown incident. The "as found" and "post installation" leak tests on the valves showed a significant leak rate reduction with the new valves. (See Authorized Change #7).

#### VI. CHANGES AUTHORIZED BY MANAGER, ENGINEERING AND SUPPORT SERVICES

Pursuant to 10CFR50.59(a), the Facility Manager authorized changes during the report period. These changes were authorized in accordance with APED-5000-A, Paragraph 3.3.1. The changes completed in 1982 are listed below.

##### 1. Provision for Remote Alarms for Security

###### Description of Change

Sensors and wiring were installed on the control room doors, the fuel storage vault and the containment building air locks' outer doors. An auxiliary contact on the containment building pressure sensor alarm was connected. These trip functions were transmitted to an alarm panel at the Vallecitos Security building to provide for additional security during periods when personnel were not in the GETR control room.

###### Safety Analysis

The only safety related modification is the addition of pressure switches to air locks' seal air systems which could reduce the reliability of these systems. However, the lock seals are backed up by interlocks between the inner and outer doors so that a failure in one system prevents opening the other lock door. A complete leak test was performed and an inspection for proper installation methods was made.

2. Temporarily Unoccupied GETR Control Room

Description of Change

This change allows the GETR Control Room to be unoccupied for as long as 3 hour periods. When unoccupied, the Control Room is locked and necessary alarms are monitored by the VNC Security Force. Alarm information is transmitted to the Specialist-Facilities Protection from VNC security personnel by two-way FM radio.

Safety Analysis

An analysis of safety and security consequences was made and no hazard to employees or the public was found to exist. The consequences of previously analyzed accidents were not increased. All alarms are responded to in a sufficient manner and adequate time.

3. Resin Hold-Tank Bypass Line

Description of Change

A resin transfer line was installed to bypass the resin hold tank, permitting transfer of spent resins from the demineralizers directly to the shipping containers.

Safety Analysis

The design was in accordance with ANSI B31.1, the Power Piping Code. The new piping was pneumatically tested, and a relief valve was installed in the discharge piping to preclude overpressurization of the spent resin shipping containers.

4. Containment Building Ventilation Operation with Damaged Air Ducts

Description of Change

Temporary operation of the containment building ventilation system was approved while the inside air ducts were repaired.

Safety Analysis

Potential problems with ventilation system in this mode were: 1) reduced flow through filters, 2) altered air flow patterns, 3) reduced total air flow, and 4) proper stack monitor trip point setting. The effects on all these parameters were evaluated and determined to not present any new or increased hazards to personnel.

5. GETR Reorganization

Description of Change

The GETR organization structure was changed to more effectively deal with the extended shutdown which began on October 27, 1977. Most recently the positions of Manager, Plant Engineering and Maintenance and the Manager, GETR Operations were eliminated. These functions and personnel have been incorporated in the Engineering and Support Services (E&SS) subsection, and the Manager-E&SS has the responsibility of Facility Manager.

Safety Analysis

The organization structure change transfers and combines responsibilities. Responsibilities are not eliminated. Administrative procedures and controls remain unchanged except to reflect the structure change. The requirements for review and approval of tests, procedure changes and facilities changes remain the same. The independent review and audit function was unaffected by the change.

6. Air Duct Radiation Monitors - Removal from Service

Description of Change

Air duct radiation monitors were removed from service.

Safety Analysis

The air duct radiation monitors serve as a backup to the stack monitor. A review of the potential sources of airborne radioactivity showed that stack release limits could not be exceeded during the current extended shutdown. It was concluded that a backup monitor was not needed for the duration of the extended shutdown.

7. Thirty-Six Inch Butterfly Valve Specification Change

Description of Change

The specification for the containment building ventilation isolation valves was changed to delete or modify certain tests and inspections which were previously required by the valve supplier.

Safety Analysis

The changed valve specification meets all requirements imposed by the facility Technical Specifications, Safety Analysis Report, and applicable codes or standards.

8. Reduced Night Lighting at the 200 Area

Description of Change

Night lighting was minimized to reduce energy consumption and to reflect the lesser activity during the extended shutdown of the reactor. Night lighting was retained in key areas such as the fire house, air lock entrances and Building 200 entrance.

Safety Analysis

Plant and personnel safety is not effected by this change.

9. Change of Job Title

Description of Change

Because of the standby condition of the GETR, operational activities consist mainly of corrective and preventative maintenance, and the size of the operating shifts has been reduced. To reflect this, the GETR Shift Supervisor title has been changed to the Specialist, Facilities Protection:

Safety Analysis

There is no safety significance as all activities required by License TR-1 and the regulations continue to be performed.

10. Replacement of GETR Analyst

Description of Change

Effective December 1, 1982 the position of GETR Analyst was eliminated. Effective that date a Specialist, Facilities Protection shall perform all required reviews, audits and other functions described for the GETR Analyst in APED 5000A and GETR SOP's.

Safety Analysis

Because of the continued shutdown status of the GETR, the scope of activities provided by the GETR Analyst have been significantly reduced. A Specialist-Facilities Protection who has been trained and licensed as a GETR Operator will be designated to perform all of the required review and audit responsibilities performed by the GETR Analyst.

VII. CHANGE IN ORGANIZATION

See Authorized Changes #'s 5, 9, and 10.

VIII. SIGNIFICANT CHANGES IN PROCEDURES

During 1982 the Standard Operating Procedures (SOPs) were revised and updated. All SOPs pertaining to reactor operation were deleted.

IX. RADIATION LEVELS AND SAMPLE RESULTS AT ON- AND OFF-SITE MONITORING STATIONS

The data below are from sample and dosimeter results accumulated during 1982. These data are for the entire VNC site and include the effects of operations other than the GETR. The type and locations of the samples are described in APED-5000-A.

1. Air Monitors (yearly average of all meteorological stations )

Alpha Concentration  
Maximum  $<2.5 \times 10^{-15}$   $\mu\text{Ci/cc}$   
Average  $<2.0 \times 10^{-15}$   $\mu\text{Ci/cc}$   
Beta Concentration  
Maximum  $<6.7 \times 10^{-14}$   $\mu\text{Ci/cc}$   
Average  $<2.5 \times 10^{-14}$   $\mu\text{Ci/cc}$

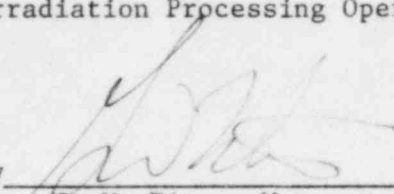
2. Gamma Radiation. The integrated yearly dose results for the year 1982 as determined from evaluation of site perimeter environmental monitoring dosimeters showed no dosimeter readings in excess of normal dosimeter background (i.e., the background shown on duplicate TLDs stored in non-radiation areas at the VNC and at the facilities of the TLD dosimeter processor).
3. Vegetation. No alpha, beta, or gamma activity attributable to activities at the GETR facility was found on or in vegetation in the vicinity of the site.
4. Water. There was no release of radioactivity in water or to the ground water greater than those limits specified in 10CFR20, Appendix B., Table II, Column 2.
5. Off-Site. Samples taken off the site indicate normal background for the area.

#### X. CONCLUSION

In our opinion, the overall experience of the GETR reflects a year of safe shutdown conditions.

GENERAL ELECTRIC COMPANY  
Irradiation Processing Operation

By

  
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G. W. Titus, Manager  
Engineering & Support Services