

U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

Report No. 50-274/85-01

Docket No. 50-274

License No. R-113

Licensee: U.S. Geological Survey (USGS)
Denver Federal Center
Denver, Colorado 80255

Facility Name: Geological Survey TRIGA Reactor (GSTR) (1 Mwt)

Inspection Conducted: June 10--13, 1985

Inspectors:

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Safety Assessment Group

7-11-85
Date

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Inspection Summary

Inspection on June 10--13, 1985 [Report No. 50-274/85-01].

Areas Inspected: Routine, unannounced inspection of organization, logs, and records; review and audits; requalification training; procedures; surveillance activities; experiments; fuel-handling activities; radiation control; radwaste management; emergency planning; physical security; and nuclear materials safeguards. The inspection involved 44 inspector-hours onsite by two NRC contractor inspectors.

Results: No items of noncompliance or deviations were identified during this inspection.

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DETAILS

1. Persons Contacted

- *H. T. Millard, Jr., Reactor Administrator
- *P. G. Helfer, Acting Reactor Supervisor
- R. E. Perryman, Senior Reactor Operator
- W. L. Smith, Reactor Health Physicist

*Attended Exit Interview

2. General

This inspection, which began at 1 p.m. on June 10, 1985, was conducted to examine the overall operational program at the Geological Survey TRIGA Reactor (GSTR).

The facility operators are on an alternating 4-day (10-h/day) work week with the following schedule: Tuesday through Friday with subsequent two-day (Saturday and Sunday) weekend followed by a Monday through Thursday work week and a 4-day (Friday through Monday) weekend. The inspectors arrived on a "weekend Monday" but were able to contact Dr. H. T. Millard, the Reactor Administrator, and Mr. W. L. Smith, the Reactor Health Physicist. The facility was toured shortly after arrival, and its condition was found to be acceptable.

The GSTR has not been pulsed for several years; however, there are discussions concerning the potential of resuming pulsing operations in the not too distant future. In July 1985, the facility expects to install a new "Lazy Suzan" irradiation chamber having pneumatic sample transfer capabilities.

Mr. D. H. Rusling, the Reactor Supervisor, was on vacation and thus was not available during this inspection.

3. Organization, Logs, and Records

The facility organization was reviewed and verified to be consistent with the Technical Specifications. The minimum staffing requirements were verified to be present during reactor operation and fuel handling or refueling operations.

The reactor logs and records were reviewed to verify that

- a. required entries were made,
- b. significant problems or incidents were documented,
- c. the facility was being maintained properly, and
- d. records were available for inspection.

The inspectors noted that the maintenance log and the daily reactor operations log carried a few items that appeared "open" or in need of attention. The Acting Reactor Supervisor stated that these items indeed had been closed and/or corrected; however, the proper log entries had not been completed. He acknowledged that more detailed log entries would be appropriate and that this would be incorporated into their future logs and records.

No items of noncompliance or deviations were identified during this part of the inspection.

4. Reviews and Audits

The licensee's review and audit program records were examined by the inspectors to verify the following.

- a. Reviews of facility changes, operating and maintenance procedures, design changes, and unreviewed experiments had been conducted by a safety review committee as required by the Technical Specifications.
- b. The review committee and/or subcommittees were composed of qualified members, and quorum and frequency of meeting requirements had been met.

The Reactor Operations Committee (ROC) conducts an annual audit of all aspects of reactor operations.

No items of noncompliance or deviations were identified in this portion of the inspection.

5. Regualification Training

The inspectors reviewed procedures, logs, and training records and interviewed personnel to verify that the regualification training program was being carried out in conformance with the facility's approved plan and NRC regulations.

No items of noncompliance or deviations were identified in this section of the inspection.

6. Procedures

The inspectors reviewed the licensee's procedures to determine if procedures were issued, reviewed, changed or updated, and approved in accordance with Technical Specifications requirements.

This review also verified that

- a. procedure content was adequate to operate and maintain the facility safely,
- b. responsibilities were defined clearly, and
- c. required checklists and forms were used.

The inspectors noted that the startup, operation, and shutdown procedures in use were those from the reactor vendor's maintenance manual. After discussion with the operations personnel, it was agreed that it would be appropriate for these procedures to be reissued in the regular facility procedure format and be incorporated into the Reactor Operations Manual.

In all other aspects, the inspectors determined that the required procedures were available and that the contents of the procedures were adequate.

No items of noncompliance or deviations were identified in this portion of the inspection.

7. Surveillance Activities

The inspectors reviewed procedures, surveillance test schedules, and test records and discussed the surveillance program with responsible personnel to verify that

- a. when necessary, procedures were available and adequate to perform the tests,
- b. tests were completed within the required time schedule, and
- c. test records were available.

No items of noncompliance or deviations were identified during this part of the inspection.

8. Experiments

A total of 15 Class I experiments and 2 Class II experiments have been approved since the last inspection. One of the Class II experiments involved irradiation of samples in dry ice positioned in the Lazy Susan. The second Class II experiment was to investigate neutron radiography using a neutron beam from the central thimble.

It was determined that reactivity limits have not been exceeded during any irradiation.

No item of noncompliance or deviations were identified during this portion of the inspection.

9. Fuel Handling Activities

The facility fuel handling program was reviewed by the inspectors. The review included verifying approved procedures for fuel handling and their technical adequacy in the areas of radiation protection, criticality safety, and Technical Specifications. The inspector determined by records review and discussions with personnel that fuel-handling operations and startup tests were carried out in conformance with the licensee's procedures. The only fuel handling activities have been the fuel element inspections conducted in January 1985.

No items of noncompliance or deviations were identified in this part of the inspection.

10. Transportation (Fuel Shipping)

There have been no fuel shipments since the last operational inspection.

11. Radiation Control

The inspectors reviewed records, interviewed personnel, and made observations and independent surveys to verify that radiation controls were being carried out in accordance with the license and NRC regulations. The areas covered were

- a. posting and labeling of restricted areas and radioactive materials,
- b. control of irradiated samples,
- c. calibration of radiation-detection instruments,
- d. required periodic radiation and contamination surveys, and
- f. personnel training.

No items of noncompliance or deviations were identified during this portion of the inspection.

12. Radwaste Management

No liquid radioactive waste has been generated at this facility. A limited quantity of solid radioactive waste in the form of wipes, gloves, and so on is collected and transferred periodically to the USGS Byproduct License. Argon-41 releases have been within license limits.

No items of noncompliance or deviations were identified during this part of the inspection.

13. Environmental Monitoring

This licensee's environmental sampling program is described in Sec. 8.8 of the Operations Manual. Soil and water samples are collected within a 4-mile radius of the facility every 2 yr. Samples evaluated in 1982 and 1984 appear to have the same general levels of radioactivity as those collected at earlier times.

No items of noncompliance or deviations were identified during this part of the inspection.

14. Emergency Planning

The Emergency Plan for the GSTR was approved by the NRC on June 1, 1984. The licensee had implemented the proposed plan when submitted. The inspectors determined that commitments made in the plan, such as an annual review and update, drills, procedures, training, emergency equipment; and testing of alarms, had been conducted.

No items of noncompliance or deviations were identified during this portion of the inspection.

15. Physical Security

The inspectors reviewed the implementation of the licensee's physical security program through visual examination, review of records, and discussions with appropriate facility personnel. The review indicated that the physical security plan was well implemented; responsibilities and response requirements were defined clearly; and appropriate test procedures were being used.

No items of noncompliance or deviations were identified in this part of the inspection.

16. Nuclear Materials Safeguards

The inspectors reviewed the accountability procedures and practices and materials status reports for the past 2 yr. The procedures, practices, and records were found to be well implemented; responsibilities and response requirements were defined clearly and understood; and appropriate test procedures were being used.

No items of noncompliance or deviations were found in this section of the inspection.

17. Licensee Event Followup

The February 27--28, 1984, meeting of the Reactor Operations Committee discussed a stuck graphite moderator element. This was caused by two blisters in the Al cladding, which broke and rolled down to the bottom of the blisters, forming a ridge. The graphite element was worked loose and removed without further incident. Other graphite elements were examined, but no blisters were found.

The licensee informed the NRC IV and SSPB by letter dated June 20, 1984, of a possible error in their power calibration. The problem was found to be in the log channel CIC, which is not part of the safety scram system. The power level scrams were checked and found to be functioning correctly.

On July 13, 1984, a telephone report of an unexpected elevation of airborne radioactive concentration in the reactor room was made to NRC IV and to the NRC Headquarters duty officer. A letter dated July 30, 1984, explained the cause to be from irradiation of samples of coal that had been confirmed to have contained low levels of uranium.

No items of noncompliance or deviations were found during this portion of the inspection.

18. Exit Interview

The inspectors, accompanied by Mr. H. J. Pettengill of the NRC IV Uranium Recovery Field Office (URFO), met with the licensee representatives (listed in paragraph 1) at the conclusion of the inspection on June 13, 1985, and summarized the scope and findings of the inspection as indicated in the previous paragraphs.