

December 11, 2000

Mr. Stephen Frantz, Director
Reed Reactor Facility
Reed College
3203 S.E. Woodstock Boulevard
Portland, OR 97202-8199

SUBJECT: NRC INSPECTION REPORT NO. 50-288/2000-201

Dear Mr. Frantz:

This letter refers to the inspection conducted on November 27-30, 2000, at your TRIGA Mark-I Reactor Facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Various aspects of your safety program were inspected including selective examinations of procedures and representative records, and interviews with personnel. Based on the results of this inspection, no significant safety issues were identified.

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/NRC/ADAMS/index.html>.

Should you have any questions concerning this inspection, please contact Mr. Craig Bassett at (404) 562-4712.

Sincerely,

/RA by Marvin Mendonca Acting for/

Ledyard B. Marsh, Chief
Events Assessment, Generic Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-288
License No. R-112

Enclosure: NRC Inspection Report No. 50-288/2000-201

cc w/encl: Please see next page

Reed College

Docket No. 50-288

cc:

Mayor of City of Portland
1220 Southwest 5th Avenue
Portland, OR 97204

Reed College
ATTN: Dr. Peter Steinberger
Dean of the Faculty
3203 S.E. Woodstock Boulevard
Portland, OR 97202-8199

Reed College
ATTN: Dr. Steven S. Koblik
President
3203 S.E. Woodstock Boulevard
Portland, OR 97202-8199

Oregon Department of Energy
ATTN: David Stewart-Smith, Director
Division of Radiation Control
625 Marion Street, N.E.
Salem, OR 97310

Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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U. S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-288

License No: R-112

Report No: 50-288/2000-201

Licensee: Reed College

Facility: Reed College Reactor Facility

Location: 3203 S.E. Woodstock Boulevard
Portland, Oregon

Dates: November 27-30, 2000

Inspector: Craig Bassett

Approved by: Ledyard B. Marsh, Chief
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection included onsite review of various aspects of the licensee's programs concerning conduct of operations and emergency preparedness as they relate to the licensee's Class 2 non-power research reactor. The licensee's programs were directed toward the protection of public health and safety and were in compliance with NRC requirements. No safety concerns or violations of regulatory requirements were identified.

Conduct of Operations

- Staffing, reporting, and record keeping met requirements specified in Technical Specifications (TS) Section I. Maintenance was being completed as required.
- Review and oversight functions required by TS Sections I.2 - I.4 were acceptably completed by the Reactor Operations Committee. 10 CFR 50.59 changes had been reviewed and approved by the Committee as required and none were determined to constitute an unreviewed safety question.
- The requalification/training program was up-to-date and acceptably maintained. Medical examinations were being completed as required.
- Facility procedures and document reviews satisfied TS Section I.5 requirements. Procedural compliance was acceptable.
- Reactor fuel movements and inspections were made and documented in accordance with procedure. One-fifth of the fuel elements were being inspected on a biennial basis as allowed by TS Section E.3.
- The program for surveillance and calibration of equipment was being implemented in accordance with TS requirements.
- The program for the control of experiments satisfied regulatory requirements and licensee commitments.

Emergency Preparedness

- The emergency preparedness program was conducted in accordance with the Emergency Plan.

Report Details

Summary of Plant Status

The licensee's two hundred and fifty kilowatt (250 kW) TRIGA Mark-I non-power reactor (NPR) continued normal, routine operations. A review of the applicable records indicated that the reactor is typically operated in support of undergraduate instruction, laboratory experiments, reactor system testing, reactor surveillances, and operator training. During this inspection, the reactor was started up and operated one day at varying power levels for training purposes.

1. Conduct of Operations (IP 69001)

a. Organization, Operations, and Maintenance Activities

(1) Inspection Scope

To verify staffing, reporting, and record keeping requirements specified in Technical Specifications (TS) Section I.1 were being met, the inspector reviewed:

- organization and staffing for the Reed Reactor Facility
- administrative controls and management responsibilities
- the reactor console and maintenance logs

(2) Observations and Findings

Through discussions with licensee representatives the inspector determined that management responsibilities and the organization at the Reed Reactor Facility (RRF) had not changed since the previous NRC inspection in December 1999 (Inspection Report No. 50-288/99-201). The inspector determined that the Facility Director retained direct control and overall responsibility for management of the facility as specified in the TS. The Facility Director reported to the President of Reed College through the Dean of the Faculty.

The licensee's current operational organization consisted of the Facility Director, a Reactor Supervisor, and a Contract Health Physicist. At the time of the inspection, the Facility Director was also filling the position of Radiation Safety Officer (RSO) and no one occupied the position of Associate Director. Of these individuals, the Facility Director and Reactor Supervisor were Senior Reactor Operators (SROs). In addition, there were five other SROs and twenty Reactor Operators (ROs) qualified to operate the facility NPR. The positions of Facility Director, Associate Director, and Radiation Safety Officer are full-time positions while all the others are part-time. This organization was consistent with that specified in the TS.

The Facility Director maintained a schedule for reactor operations and tracked the completion of maintenance and surveillance activities. This practice kept the staff aware of upcoming activities and helped ensure good administrative control over operational aspects of the facility.

A review of the RRF reactor console and maintenance logs showed that they were being maintained as required and problems, if any, were being documented. This review also confirmed that maintenance was being conducted consistent with the TS and applicable procedures.

(3) Conclusions

Staffing, reporting, and record keeping met the requirements specified in TS Section I. Maintenance was being completed as required.

b. Review, Audit, and Design Change Functions

(1) Inspection Scope

In order to verify that the licensee had established and conducted reviews and audits as required and to determine whether modifications to the facility were consistent with 10 CFR 50.59 and TS Sections I.2 - I.4, the inspector reviewed:

- Reactor Operations Committee meeting minutes
- Radiation Safety Committee meeting minutes
- Reactor Safety Committee meeting minutes
- completed audits and reviews
- design changes reviewed under 10 CFR 50.59

(2) Observations and Findings

The inspector reviewed the Reactor Operations Committee's (ROC's) and the Radiation Safety Committee's (RSC's) meeting minutes from September 1999 to the present. These meeting minutes showed that the ROC and the RSC had met at the required frequency and had considered the types of topics outlined by the TS.

The inspector noted that, since the last NRC inspection, audits had been completed by the ROC and the RSC in those areas outlined in the TS. The audits were designed so that all major aspects of the licensee's operations and safety programs were reviewed every year. Standard Operating Procedures were reviewed every two years while other major facility documents, such as the facility license and Technical Specifications, were reviewed every four years. The inspector noted that the audits and the resulting findings were detailed and that the licensee responded and took corrective actions as needed.

Through review of applicable records and interviews with licensee personnel, the inspector determined that each design change (10 CFR 50.59 review) that had been initiated and/or completed at the RRF since the last NRC operations inspection had undergone a review by the ROC as required. Following the review, the changes were approved in accordance with procedure. It was noted that none of the changes were determined to constitute an unreviewed safety question.

(3) Conclusions

Review and oversight functions required by TS Sections I.2 - I.4 were acceptably completed by the ROC. 10 CFR 50.59 changes had been reviewed and approved by the ROC as required and none were determined to constitute an unreviewed safety question.

c. Operator Licenses, Requalification, and Medical Activities

(1) Inspection Scope

To determine that operator requalification activities and training were conducted as required and that medical requirements were met, the inspector reviewed:

- active license status
- logs and records of reactivity manipulations
- written examinations
- training lectures and records
- medical examination records

(2) Observations and Findings

As noted above, there are currently seven qualified SROs and twenty ROs at the RRF. All of the operators' licenses were current but one was scheduled to expire in February of 2001. The licensee was aware of this situation and was taking steps to have the license renewed.

A review of the logs and records showed that generally training had been conducted in accordance with the licensee's requalification and training program. It was noted that only four of the required five lectures had been given during the 1999-2000 school year. However, the licensee had recognized the problem and had developed a schedule in advance of the current school year to ensure that at least five lectures would be given during the year. This failure constitutes a violation of minor significance and is not subject to formal enforcement action. Otherwise the training had been conducted as stipulated and the training reviews and examinations had been documented as required. Records of quarterly reactor operations, reactivity manipulations, other operations activities, and Reactor Supervisor activities were being maintained. Records indicating the completion of the annual operations tests and supervisory observations were also maintained. The inspector noted that operators were receiving the required medical examinations at the frequency specified by the program as well.

(3) Conclusions

The requalification/training program was up-to-date and acceptably maintained. Medical examinations were being completed as required.

d. Procedures and Procedural Compliance

(1) Inspection Scope

To determine whether facility procedures met the requirements outlined in TS Section I.5, the inspector reviewed:

- selected Standard Operating Procedures
- selected administrative procedures
- procedural reviews and updates

(2) Observations and Findings

RRF Standard Operating Procedures (SOPs) were found to be acceptable for the current facility status and staffing level. The SOPs specified the responsibilities of the various members of the staff. The procedures were being audited/reviewed biennially and updated as needed. It was also noted that revisions to procedures were routinely presented to the ROC and/or the RSC for review and approval. The inspector verified that the latest revisions to various SOPs had been through this review and approval process as required.

The inspector observed various activities during this inspection including a reactor start up, steady state operation, and shut down. It was noted that the operations were completed in accordance with the applicable procedures.

(3) Conclusions

Facility procedures and document reviews satisfied TS Section I.5 requirements. Procedural compliance was acceptable.

e. Fuel Movement

(1) Inspection Scope

In order to verify adherence to fuel handling and inspection requirements specified in TS Section E.3, the inspector reviewed:

- the fuel handling and inspection SOP
- the reactor console and maintenance logs
- applicable fuel movement records

(2) Observations and Findings

The inspector determined that the licensee was maintaining the required records of the various fuel movements that had been completed and verified that the movements were conducted in compliance with procedure. The reactor fuel was being inspected upon initial receipt and one-fifth of the fuel elements were being inspected biennially as allowed by TS Section E.3. The procedure used for fuel

inspection was acceptable and the radiological control requirements specified for these operations were adequate.

(3) Conclusions

Reactor fuel movements and inspections were completed and documented in accordance with procedure and the fuel was being inspected as specified by TS Section E.3.

f. Surveillance

(1) Inspection Scope

To determine that surveillance activities and calibrations were being completed as required by TS Sections D - G, the inspector reviewed:

- selected surveillance procedures
- selected surveillance data and records
- calibration procedures and records

(2) Observations and Findings

The inspector determined that selected weekly, bimonthly, semiannual, and annual checks, tests, and/or calibrations for TS-required surveillances and calibrations were completed as stipulated. The surveillances and calibrations reviewed were generally completed on schedule and in accordance with licensee procedures. All the recorded results were within the TS and procedurally prescribed parameters. The records and logs reviewed were accurate, complete, and being maintained as required.

(3) Conclusions

The program for surveillance and calibration of equipment was being carried out in accordance with TS requirements.

g. Experiments

(1) Inspection Scope

In order to verify that experiments were being conducted within approved guidelines, the inspector reviewed:

- selected Standard Operating Procedures
- selected administrative procedures
- selected Routine, Modified Routine, and Special Experiments
- experiment review and approval by the ROC
- selected Irradiation Request Forms

(2) Observations and Findings

The inspector noted that all the experiments conducted as of the date of the inspection were well-established procedures that had been in place for several years. The experiments that were conducted were completed under the cognizance of the Facility Director and the Reactor Supervisor as required. The results of the experiments were documented in the reactor operations log book.

Two new experiments had been proposed for future implementation dealing with prompt gamma neutron activation analysis. This project and the experiments had been reviewed by the ROC and were approved pending completion of a 50.59 review. These actions and this project will be reviewed during the next NRC inspection in the area of operations.

(3) Conclusions

The license's program for the control of experiments satisfied regulatory requirements and licensee commitments.

2. Emergency Preparedness (IP 69001)

a. Scope

The inspector reviewed selected aspects of:

- the Emergency Plan and implementing procedures
- emergency response facilities, supplies, equipment and instrumentation
- training records
- offsite support
- emergency drills and exercises

b. Observations and Findings

The Emergency Plan (E-Plan) in use at the reactor and emergency facilities was the same as the version most recently approved by the NRC. The E-Plan was being audited and reviewed as required. Implementing procedures were reviewed and revised as needed to discharge the E-Plan effectively. Facilities, supplies, instrumentation, and equipment were being maintained, controlled, and inventoried as required in the E-Plan. Through records review and interviews with licensee personnel, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Agreements with outside response organizations were being maintained and had been updated as required. Communications capabilities were acceptable with these support groups and had been tested as stipulated in the E-Plan.

Emergency drills had been conducted as required by the E-Plan. Off-site support organization participation was also as required by the E-Plan. Critiques were held following the drills to discuss the strengths and weaknesses identified during the exercise and to develop possible solutions to any problems identified. The results of

these critiques were documented. Emergency preparedness and response training for off-site and reactor staff personnel was conducted and documented as stipulated by the E-Plan.

c. Conclusions

The emergency preparedness program was conducted in accordance with the Emergency Plan.

3. Exit Interview

The inspection scope and results were summarized on November 30, 2000, with a licensee representative and a member of the ROC. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Richter, Reactor Supervisor, RRF
S. Frantz, Facility Director, RRF
M. Parrott, Reactor Health Physicist, RRF

Other Personnel

J. Brosing, Member, Reactor Operations Committee

INSPECTION PROCEDURE USED

IP 69001 Class II Non-Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
E-Plan	Emergency Plan
IP	Inspection Procedure
kW	Kilowatt
NPR	Non-Power Reactor
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RO	Reactor operator
ROC	Reactor Operations Committee
RRF	Reed Reactor Facility
RSC	Radiation Safety Committee
RSO	Radiation Safety Officer
SOP	Standard Operating Procedure
SRO	Senior reactor operator
TS	Technical Specifications