

June 8, 2000

Dr. Stephen Binney, Director
Oregon State University
Radiation Center, A100
Corvallis, OR 97331-5903

SUBJECT: NRC INSPECTION REPORT NO. 50-243/00-201

Dear Dr. Binney:

This letter refers to the inspection conducted on May 22 through 25, 2000, at your Radiation Center TRIGA Mark-II 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 placed in the NRC Public Document Room.

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

Sincerely,

/RA/

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. 50-243
License No. R-106

Enclosure: NRC Inspection Report No. 50-243/00-201

cc w/encl: Please see next page

Oregon State University

Docket No. 50-243

cc:

Mayor of the City of Corvallis
Corvallis, OR 97331

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

M. W. Alsworth
Oregon Department of Energy
625 Marion Street, N.E.
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U. S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-243

License No: R-106

Report No: 50-243/00-201

Licensee: Oregon State University

Facility: TRIGA Mark-II Reactor Facility

Location: Radiation Center, Oregon State University
Corvallis, Oregon

Dates: May 22-25, 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

SUMMARY

This routine, announced inspection included onsite review of various aspects of the licensee's programs concerning the conduct of operations and emergency preparedness as they relate to the licensee's one and one-tenth megawatt (1.1Mw) 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 were in accordance with requirements specified in Technical Specifications (TS) Section 6.
- The Reactor Operations Committee was completing review and oversight functions required by TS Section 6.2. Title 10 Code of Federal Regulations Part 50 section 59 (10 CFR 50.59) changes have been reviewed and approved by the ROC as required and none was 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 6 requirements. Procedural compliance was noted to be acceptable.
- Reactor fuel movements were being made and documented in accordance with procedure and the fuel was being inspected on an as-needed basis as allowed by TS Section 4.4.
- The licensee was carrying out the program for surveillance and Limiting Conditions for Operation confirmations in accordance with TS requirements.
- The program for the control of experiments satisfied regulatory requirements and licensee commitments.

Emergency Preparedness

- The licensee's Emergency Response Plan was found acceptable by the NRC after the last major revision in January 2000.
- The Implementing Procedures were being updated as required and were acceptable to carry out the provisions of the Emergency Response Plan.
- Emergency response facilities and equipment were being maintained as required and responders were knowledgeable of proper actions to take in case of an emergency.
- The licensee maintained current Letters of Agreement with offsite agencies that show that support would be available in case of an emergency.

- Annual drills were being held and documentation was maintained concerning the follow-up critiques and subsequent corrective actions.
- Emergency preparedness training for staff and off-site personnel was being conducted as required.

Report Details

Summary of Plant Status

The licensee's 1.1 megawatt (MW) TRIGA Mark-II non-power reactor (NPR) continued normal, routine operations. Observation of reactor operation and a review of the applicable records indicated that the reactor was typically operated approximately six hours per day, five days per week, in support of laboratory testing, reactor system testing, reactor surveillances, and sample irradiations. During this inspection, the reactor was started up and operated several hours a day at varying power levels for training and sample irradiation.

1. Conduct of Operations

a. Organization, Operations, and Maintenance Activities (Inspection Procedure [IP] 69001)

1. Inspection Scope

To verify staffing, reporting, and record keeping requirements specified in Technical Specifications (TS) Section 6 were being met, the inspector reviewed:

- organization and staffing for the facility
- qualifications of recently appointed personnel
- administrative controls
- reactor console logs
- annual reports

2. Observations and Findings

The licensee's current operational organization consisted of the Radiation Center Director, Reactor Administrator, Reactor Supervisor, a Senior Reactor Operator, one Reactor Operator, Scientific Instrument Technician, Senior Health Physicist, and a Health Physicist. The licensee is in the process of trying to fill the position of Radiation Protection Technologist. The person who held that position recently left. This organization was consistent with that specified in the TS.

The Reactor Supervisor 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 reactor console logs showed that they were being maintained as required and problems were being documented acceptably. The annual reports summarized the required information and were issued at the frequency specified in the TS.

3. Conclusions

Staffing, reporting, and record keeping were in compliance with the requirements specified in TS Section 6.

b. Review, Audit, and Design Change Functions (IP 69001)

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 the TS, the inspector reviewed:

- Reactor Operations Committee meeting minutes
- audits and reviews
- design/facility changes made under 10 CFR 50.59

2. Observations and Findings

Minutes of the Reactor Operations Committee (ROC) showed that the committee has been meeting at the required frequency and that a quorum was present. The topics considered during the meetings were appropriate and as stipulated in TS Section 6.2. The ROC conducted audits and reviews as required. Problems noted during audits were discussed with the licensee and recommendations for improvement were made. The licensee then implemented improvements as necessary.

Through review of applicable records and interviews with licensee personnel, the inspector determined that all changes that had been initiated or completed at the facility since the last NRC operations inspection have undergone a review by the licensee staff who then wrote proposals outlining the changes. These were presented to the ROC for review and approval 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 Section 6.2 were acceptably completed by the ROC. 10 CFR 50.59 changes have 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 (IP 69001)

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 records
- medical examination records

2. Observations and Findings

At the time of the inspection, four qualified senior reactor operators (SROs) and one reactor operator (RO) were working at the facility. All the operators' licenses were current.

A review of the logs and records showed that training has been conducted in the areas outlined in the licensee's requalification and training program. It was noted that lectures have been given as stipulated and that training reviews and examinations have been documented. Records of quarterly reactor manipulations, other operations activities, and Reactor Supervisor activities were being maintained, as were records of the Annual Operations Tests.

Operators were receiving the required medical examinations at the frequency specified.

3. Conclusions

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

d. Procedures (IP 69001)

1. Inspection Scope

To determine whether facility procedures met the requirements outlined in TS Section 6.5, the inspector reviewed:

- operating procedures
- administrative procedures
- procedural reviews and updates

2. Observations and Findings

Operating procedures were acceptable for the facility and the current staffing level and specify the responsibilities of the various members of the staff. The procedures were being reviewed annually and updated as needed. The operations observed during this inspection were completed in accordance with the applicable procedures.

3. Conclusions

Facility procedures and document reviews satisfied TS Section 6 requirements. Procedural compliance was acceptable.

e. Fuel Movement (IP 69001)

1. Inspection Scope

In order to verify adherence to fuel handling and inspection requirements, the inspector reviewed:

- fuel handling procedures
- fuel inspection procedures
- applicable logs and records

2. Observations and Findings

The inspector determined that the licensee was maintaining the required records of the various fuel movements that were completed and verified that the movements were conducted in compliance with procedure. The reactor fuel was being inspected upon initial receipt and on an as-needed basis as allowed by TS Section 4.4. The procedures used were acceptable and the radiological controls that were established during such movements were acceptable.

3. Conclusions

Reactor fuel movements were made and documented in accordance with procedure and the fuel was being inspected on an as-needed basis as allowed by TS Section 4.4.

f. Surveillance (IP 69001)

1. Inspection Scope

To determine that surveillances and Limiting Conditions for Operations (LCOs) verifications were being completed as required by TS Section 4.0, the inspector reviewed:

- selected surveillance procedures
- selected surveillance data and records
- Limiting Conditions for Operations

2. Observations and Findings

The inspector noted that selected monthly, quarterly, semiannual, and annual checks, tests, verifications, or calibrations for TS-required surveillances and LCOs verifications were being completed as stipulated. The surveillances and LCOs verifications 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 LCOs confirmations was being carried out in accordance with TS requirements.

g. Experiments (IP 69001)

1. Inspection Scope

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

- experiment review and approval by the ROC
- potential hazards identification
- control of irradiated items

2. Observations and Findings

The inspector noted that all the experiments conducted were well-established procedures that have been in place for many years. No new experiments had been initiated, reviewed, or approved since the last inspection. Experiments were completed under the cognizance of the Chief Reactor Supervisor as required. The results of the experiments were documented in the reactor operations log book.

The inspector observed the removal of a set of experiment samples from the reactor. It was noted that licensee personnel followed procedure and established protocol. Engineering controls were used to limit exposure to radiation to the extent practicable. Contamination controls were used effectively.

3. Conclusions

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

2. Emergency Preparedness

a. Changes to the Emergency Response Plan (IP 69001)

1. Inspection Scope

To determine compliance with the requirements of 10 CFR 50.54(q) and the licensee's Emergency Response Plan, the inspector reviewed:

- the Emergency Response Plan and Implementing Procedures
- ROC meeting minutes
- recent revisions and updates
- applicable letters and documents concerning the Emergency Response Plan

2. Observations and Findings

The licensee submitted a revised Emergency Response Plan to the NRC in January 2000. The NRC reviewed the changes and found that they were acceptable to implement the requirements of 10 CFR Part 50, Appendix E. The inspector also noted that the plan was reviewed annually by the ROC as required by the TS.

3. Conclusions

The licensee's Emergency Response Plan was found to be acceptable by the NRC after the last major revision in January 2000.

b. Emergency Response Plan Implementing Procedures (IP 69001)

1. Inspection Scope

In order to verify the adequacy of the licensee's Emergency Response Plan Implementing Procedures, the inspector reviewed:

- the Emergency Response Plan and Implementing Procedures
- ROC meeting minutes
- recent revisions and updates of the procedures

2. Observations and Findings

The licensee had reviewed and revised the Implementing Procedures as required. The procedures had also been updated in January 2000 and were acceptable to implement the provisions stipulated in the E-Plan.

3. Conclusions

The Implementing Procedures were being updated as required and were acceptable to implement the provisions of the Emergency Response Plan.

c. Emergency Preparedness Program Implementation (IP 69001)

1. Inspection Scope

To determine the adequacy of the licensee's Emergency Preparedness Program, the inspector reviewed:

- equipment and facilities
- instrumentation
- supplies on hand
- emergency response personnel training

2. Observations and Findings

The licensee's facilities and equipment set aside for emergency response were being maintained as required in the Emergency Response Plan. The inspector also visited the Corvallis City Fire Department and the Good Samaritan Hospital and verified that the supplies and facilities at these support sites were as described in the licensee's Emergency Response 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.

3. Conclusions

Emergency response facilities and equipment were being maintained as required and responders were knowledgeable of proper actions to take in case of an emergency.

d. Offsite Support (IP 69001)

1. Inspection Scope

To verify the adequacy of the offsite support that would be provided to the licensee in case of an emergency, the inspector reviewed:

- the Emergency Response Plan and Implementing Procedures
- Letters of Agreement
- communications capabilities

2. Observations and Findings

Updated Letters of Agreement were on file indicating that various state and local agencies were available to respond in case of an emergency. An agreement also had been established with the Good Samaritan Hospital in case a contaminated injured person required medical treatment. Communications capabilities with these agencies were acceptable and had been tested on a periodic basis.

As noted above, the inspector visited the Corvallis City Fire Department and the Good Samaritan Hospital. The working relationship between the licensee and these support organizations appeared acceptable.

3. Conclusions

The licensee maintained current Letters of Agreement with offsite agencies that indicated that support would be available in case of an emergency.

e. Emergency Preparedness Exercises and Drills (IP 69001)

1. Inspection Scope

To determine that the licensee was conducting the exercises and drills as specified in the Emergency Response Plan, the inspector reviewed:

- recent drill scenarios
- the critiques of drill performance by emergency responders
- other associated documentation of recent drills

2. Observations and Findings

Through records review and discussions with licensee personnel, the inspector noted that drills had been conducted annually as required by the Emergency Response Plan. Critiques were being held following the drills to discuss the positive and negative aspects of the exercise and to develop possible solutions to any problems identified. These were documented and corrective actions taken as necessary.

3. Conclusions

Annual drills were held and documented as required.

f. Emergency Preparedness Training (IP 69001)

1. Inspection Scope

In order to verify the adequacy of the licensee's emergency training, the inspector reviewed:

- the Emergency Response Plan
- training records

2. Observations and Findings

Emergency Preparedness and Response training for licensee and off-site personnel was being completed and documented as required. The inspector verified that annual training was provided for facility personnel and periodic training was provided for off-site responders.

3. Conclusions

Training for facility and off-site personnel was being conducted as required.

3. Follow-up on Previously Identified Items

a. Inspection Scope

The inspector reviewed the licensee's actions taken in response to previously identified Inspector Follow-up Items (IFIs).

b. Observation and Findings

(1) (Closed) IFI 50-243/98-201-01 - During a previous inspection it was noted that no documentation of the drill held in 1997 was readily available. It had been documented very briefly in the Reactor Console Log but the actual scenario, drill notes, and critique of the drill were not available. The licensee stated that the former Reactor Administrator had stored the material on the hard drive of his computer but was not able to retrieve it at the moment. During this inspection the inspector reviewed the documentation of the 1997 drill and the critique held following the drill. It was noted that the drill had been conducted and the scenario was appropriate. This item is considered closed.

(2) (Closed) IFI 50-243/98-201-02 - During the previous inspection it was also noted that specific off-site personnel were to be involved in and receive regular training at fixed intervals but the specific periodicity was not given. The last records of any training for off-site personnel was that conducted prior to the 1996 annual drill. During this inspection, the inspector reviewed the records of recent training provided to facility and off-site personnel. The training was found to be acceptable. This item is considered closed.

c. Conclusions

Two IFIs were closed.

4. Exit Interview

The inspection scope and results were summarized on May 25, 2000, with licensee representatives. 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

S. Binney, Director, Radiation Center
A. Hall, Reactor Supervisor
J. Higginbotham, Chairman of Reactor Operations Committee
S. Reese, Reactor Administrator
G. Wachs, Senior Reactor Operator

Corvallis City Fire Department

D. VanPelt, Fire Chief

INSPECTION PROCEDURE USED

IP 69001 Class II Non-Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-243/98-201-01	IFI	Review the results of the 1997 drill and verify that the appropriate degree of difficulty was included in the drill.
50-243/98-201-02	IFI	Review the issue of documenting training for off-site personnel concerning emergency preparedness.

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
IFI	Inspector Follow-up Item
IP	Inspection Procedure
LCO	Limiting Condition for Operations
MW	Megawatt
NPR	Non-Power Reactor
NRC	Nuclear Regulatory Commission
OSU	Oregon State University
RO	Reactor operator
ROC	Reactor Operations Committee
SRO	Senior reactor operator
TS	Technical Specifications
TRTR	Test, Research, and Training Reactor