

February 19, 2008

Dr. Steven Reese, Director
Radiation Center and TRIGA Reactor
Oregon State University
Radiation Center, A100
Corvallis, OR 97331-5903

SUBJECT: NRC INSPECTION REPORT NO. 50-243/2008-201

Dear Dr. Reese:

On February 4-7, 2008, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at your Radiation Center TRIGA Mark-II Reactor Facility. The enclosed report documents the inspection results, which were discussed on February 7, 2008, with you, Dr. Todd Palmer, Chair of the Reactor Operations Committee, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the NRC's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified.

In accordance with Section 2.390, "Public inspections, exemptions, requests for withholding," of Title 10 of the Code of Federal Regulations, a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Craig Bassett at 404-358-6515.

Sincerely,

/RA/

Johnny H. Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No.: 50-243
License No.: R-106

Enclosures: NRC Inspection Report

cc w/encl: See next page

Oregon State University

Docket No. 50-243

cc:

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Corvallis, OR 97331

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

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Docket No.: 50-243
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ACCESSION NO.: ML080500290

TEMPLATE #: NRR-106

OFFICE	PRTB:RI	PRT:LA	PRTB:BC
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DATE	02/14/2008	02/19/2008	02/19/2008

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U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No: 50-243

License No: R-106

Report No: 50-243/2008-201

Licensee: Oregon State University

Facility: TRIGA Mark-II Reactor Facility

Location: Radiation Center
Oregon State University
Corvallis, Oregon

Dates: February 4-7, 2008

Inspector: Craig Bassett

Approved by: Johnny H. Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Oregon State University
TRIGA Mark-II Reactor Facility
Report No: 50-243/2008-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the licensee's 1.1 Megawatt Class II research and test reactor safety program including: organization and staffing, review and audit and design change functions, operator requalification, procedures, fuel movement, maintenance and surveillance, reactor operations, experiments, and emergency preparedness since the last NRC inspection of these areas. The licensee's programs were acceptably directed toward the protection of public and facility worker health and safety and were in compliance with NRC requirements.

Organization and Staffing

- The licensee's organization and staffing were in compliance with the requirements specified in the Technical Specifications Section 6.

Review and Audit Functions and Design Control

- Review, audit, and oversight functions required by Technical Specification Section 6.2 were acceptably completed by the Reactor Operations Committee.
- No modifications or changes had been initiated in the past two years, other than minor procedural changes, but the process of using the 10 CFR 50.59 criteria and having changes reviewed and approved by the ROC remained in place as required.

Reactor Operations

- Reactor operations were conducted in accordance with Technical Specification and applicable procedural requirements and guidance.

Operator Licenses, Requalification, and Medical Activities

- Operator requalification was conducted as required and the program was up-to-date and being acceptably maintained in accordance with the Operator Requalification Program.

Procedures

- Facility procedures were acceptable and satisfied Technical Specification Section 6 requirements for being revised by the licensee and reviewed and approved by the Reactor Operations Committee.
- Procedural compliance was observed and found to be acceptable.

Fuel Movement

- Fuel handling activities were conducted in accordance with facility procedures and fuel inspections were completed and documented as required by Technical Specification Section 4.4.

Maintenance and Surveillance

- Maintenance was being completed in accordance with Technical Specification and procedural requirements.
- The program for surveillance verifications and calibrations was being implemented in accordance with Technical Specification requirements.

Experiments

- The program for conducting and controlling experiments satisfied regulatory and Technical Specification requirements specified in Sections 3.8 and 4.3.

Emergency Preparedness

- 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 Emergency Support Agreements with offsite agencies which indicated 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 continued to operate the 1.1 megawatt TRIGA Mark-II research and test reactor in support of laboratory testing, reactor system testing, reactor surveillances, and sample irradiations. Observation of reactor operation and a review of applicable records indicated that the reactor was typically operated approximately six hours per day, five days per week. During this inspection, the reactor was started up and operated several hours per day at varying power levels for training and sample irradiation.

1. Organizational Structure and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69001)

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Section 6 of the Technical Specifications (TS), Amendment No. 20, dated September 26, 2005, were being met:

- Oregon State University (OSU) Radiation Center facility organizational structure and staffing
- selected portions of the Reactor Console Logbooks for the past two years which indicated staffing levels during routine reactor operations
- OSU TRIGA Reactor Annual Reports for the period from July 1, 2005 through June 30, 2006, and the period from July 1, 2006 through June 30, 2007
- Oregon State University TRIGA Reactor Operating Procedure (OSTROP) 6, "Administrative and Personnel Procedures," Revision (Rev.) 15, reprinted October 2006, which outlined various administrative controls
- American National Standard ANSI/ANS 15.4-1977 (N380), "Selection and Training of Personnel for Research Reactors," dated 1977

b. Observations and Findings

The inspector noted that the Director of the Radiation Center (RC) reported to the President of the University through the Vice President for Research. Formerly the RC Director had reported through the Vice Provost for Research. The RC organizational structure and the responsibilities of the reactor staff had not changed since the last inspection.

Staffing levels remained consistent with those noted during the last inspection of this facility with one exception. Since the last inspection, the former Reactor Administrator had left the university to take another job and a former Senior Reactor Operator had accepted the Reactor Administrator position. The current reactor operations organization consisted of the Director of the Radiation Center, the Reactor Administrator, the Reactor Supervisor, and a Scientific Instrument Technician. It was noted that all these individuals were qualified Senior Reactor Operators (SROs). This organization was consistent with that specified in the TS.

The inspector reviewed the qualifications of the reactor staff. All personnel satisfied the training and experience requirements stated in ANSI/ANS 15.4, "Standard for the Selection and Training of Personnel for Research Reactors," as stipulated in the TS.

A review of the Reactor Console Logbooks and associated records confirmed that shift staffing met the minimum requirements for duty and on-call personnel.

c. Conclusions

Organizational structure and staffing were in compliance with the requirements specified in TS Section 6.

2. Review and Audit, and Design Change Functions

a. Inspection Scope (IP 69001)

In order to verify that the licensee had established and conducted reviews and audits as required by TS Section 6.2 and to determine whether modifications to the facility were consistent with 10 CFR 50.59, the inspector reviewed:

- 50.59 Screen Logbook
- 50.59 Evaluation Logbook
- responses to the safety audits and reviews
- design change functions outlined in OSTROP 6
- safety audit and review records for the past two years
- Reactor Operations Committee meeting minutes from November 2006 to the present
- OSU TRIGA Reactor Annual Reports for the period from July 1, 2005 through June 30, 2006, and the period from July 1, 2006 through June 30, 2007
- design/facility change evaluations conducted under and documented in accordance with OSTROP 6, Figure 6.2 entitled, "OSU TRIGA Reactor (OSTR) Changes, Tests, and Experiments Evaluated Under the Provisions of 10 CFR 50.59," Numbers (Nos.) 05-01 through 05-06
- design/facility change screens conducted under and documented in accordance with OSTROP 6, Figure 6.1 entitled, "Oregon State TRIGA Reactor (OSTR) 10 CFR 50.59 Screen Form," Nos. 07-01 through 07-05
- OSTROP 6, "Administrative and Personnel Procedures," Rev. 15, reprinted October 2006, which also contained the Charter of the Reactor Operations Committee and its responsibilities

b. Observations and Findings

(1) Review and Audit Functions

The inspector reviewed the Reactor Operations Committee (ROC) meeting minutes from November 2006 to the present. These meeting minutes showed that the committee met at least semiannually as required by the TS with a quorum being present. The inspector also noted that the ROC had considered the types of topics outlined by the TS Section 6.2. Review of the committee meeting minutes also indicated that the ROC provided appropriate guidance and direction for reactor operations, and ensured suitable use and oversight of the reactor.

It was noted that ROC members completed quarterly audits of reactor operations and related records, as well as, annual reviews of the radiation protection,

emergency preparedness, and security programs. The inspector noted that the audits and the resulting findings were acceptable and the audits were generally completed within the time frame stipulated by the TS. If the findings contained recommendations for possible changes, the licensee responded and took corrective actions as necessary.

(2) Design Control

The inspector reviewed recent 10 CFR 50.59 screen and evaluation forms and interviewed licensee personnel concerning facility changes. As a result, the inspector determined that only screenings had been conducted at the facility since the last NRC operations inspection and these dealt with changes to procedures. No evaluations had been conducted in the past two years because no substantive changes or modifications had been initiated. However, the inspector verified that the process for conducting evaluations of modifications and changes to the facility remained in place in OSTROP 6 and would be used as needed in the future.

c. Conclusions

Review, audit, and oversight functions required by TS Section 6.2 were acceptably completed by the ROC. No modifications or changes to the facility, other than procedural changes, had been initiated in the past two years but the process of using the 10 CFR 50.59 criteria and having changes reviewed and approved by the ROC remained in place as required.

3. Operations

a. Inspection Scope (IP 69001)

The inspector reviewed selected portions and/or aspects of:

- staffing during routine reactor operations
- selected portions of the Supervisor Log #12 - #14
- Licensed Operator Time Log Sheets for the past two years
- selected OSU TRIGA Reactor Daily Power Log Sheets for the past six months
- operations records documented in the Reactor Console Logbook, Nos. 144 - 148
- observation of startup, operations, and shutdown activities on February 5, 6, and 7, 2008
- start-up activities documented on OSTROP 2 forms entitled "OSU TRIGA Reactor Startup Checklists," from July 2007 through January 2008
- shut down activities documented on OSTROP 3 forms entitled "Reactor Shutdown Checklists," from July 2007 through January 2008
- selected records of console instrumentation readings documented on Control Room Log Sheets for the past six months
- OSU TRIGA Reactor Annual Reports for the period from July 1, 2005 through June 30, 2006, and the period from July 1, 2006 through June 30, 2007
- OSTROP 2, "Reactor Startup Checklist Procedures," Rev. 11, reprinted January 10, 2008
- OSTROP 3, "Reactor Shutdown Checklist Procedures," Rev. 9, reprinted January 10, 2008

- OSTROP 4, "Reactor Operation Procedures," Rev. 6 reprinted January 10, 2008
- OSTROP 5, "Procedure for Maintaining Reactor Operational Records," Rev. 8, reprinted January 10, 2008
- OSTROP 25, "Reporting Requirements," Rev. 3, reprinted December 2000
- OSTROP 27, "Procedures to Follow in the Event of a Commercial Electrical Power Failure," Rev. 3, reprinted December 2005

b. Observations and Findings

The inspector conducted observations of the reactor staff on February 5 and 6, 2008, and reviewed Reactor Console Logbooks and associated records. The inspector noted that the licensed reactor operators were knowledgeable and competent. Observation of operational activities also confirmed that reactor operations, including start-ups, routine operations, and shutdowns, were carried out in accordance with written procedures and TS requirements. Adherence to procedures was acceptable.

These observations and reviews also confirmed that shift staffing during reactor operation met the TS requirements for duty and on-call personnel. The inspector noted that the logs were being maintained as required by procedure and the records and associated forms provided an acceptable indication of operational activities. The logs indicated that the recorded operational conditions were within the limits specified in the license and TS. The Reactor Console Logbooks, as well as other supplemental records, also documented abnormal events that occurred and measures that had been taken to track and resolve the events.

c. Conclusions

Reactor operations were being completed in accordance with TS and procedural requirements.

4. **Operator Licenses, Requalification, and Medical Activities**

a. Inspection Scope (IP 69001)

The inspector reviewed the following in order to determine that operator training and requalification activities were conducted as required and that medical requirements were met:

- OSU Operator Time Log
- medical examination records
- biennial written examination records
- effective dates of current operator licenses
- OSU TRIGA Reactor (Operator) Initial Licensing Program
- operator training records documented in the Operator Requalification Manual
- TRIGA Reactor Operator Requalification Exam Results forms for 2006 and 2007
- operations records documented in the Reactor Console Logbook, Nos. 144 – 148
- Memorandum from T. Keller to T. Palmer and S. Reese dated December 20, 2007, discussing the 2007 Operator Requalification Program

- “Requalification Program for Licensed Operators of the Oregon State TRIGA Reactor,” Rev. 1, reprinted September 30, 2004
- logs and records of reactivity manipulations maintained in the Operator Time Log and associated manual
- active duty status and OSTR Annual Requalification Operating Test results documented in the Operator Time Log and associated manual
- OSTROP 16, “Annual Surveillance and Maintenance Procedures,” Rev. 12, reprinted December 2005 and related log sheets

b. Observations and Findings

At the time of the inspection, there were four qualified SROs working at the facility. The inspector verified that all the operators’ licenses were current. It was noted that one operator’s license was due to expire in May 2008 but the licensee was preparing a license renewal application to be forwarded to the NRC in March.

A review of the logs and records showed that training had been conducted in the areas outlined in the licensee’s requalification and training program such that all the material was covered within a two-year period. It was noted that lectures had been given as stipulated, that training reviews had been documented, and that written examinations had been completed. An annual operating test had been conducted for each SRO by the Reactor Supervisor as required by the program as well. It was also verified that each operator had completed the required number of hours of reactor operations each calendar quarter as required. Records of these reactor manipulations, other operational activities, and/or Reactor Supervisor activities were being maintained, as were records of the Annual Operations Tests. The program was up-to-date and training was current.

The inspector verified that medical examinations were being completed biennially for each operator as required. This was accomplished through records review and through a visit with the medical doctor who performs the majority of the various operators’ physical examinations. The doctor was knowledgeable of and complying with the requirements specified in ANSI Standard ANS 15.4-1988, “Selection and Training of Personnel for Research Reactors.”

c. Conclusions

The requalification and training program was up-to-date and acceptably maintained.

5. Procedures

a. Inspection Scope (IP 69001)

To determine whether facility procedures were being audited annually and met the requirements outlined in TS Section 6.5, the inspector reviewed:

- selected operating procedures
- procedural reviews and updates documented in ROC meeting minutes.
- OSTROP 5, “Procedure for Maintaining Reactor Operational Records,” Rev. 8, reprinted January 10, 2008

- OSTROP 6, "Administrative and Personnel Procedures," Rev. 15, reprinted October 2006

b. Observations and Findings

The licensee's procedures were found to be acceptable for the facility's current operating status and staffing level. It was noted that the procedures specified the responsibilities of the various members of the staff. The inspector determined that the procedures were being audited and reviewed annually as required and revised as needed.

Changes to procedures were screened according to OSTROP 6. If the changes did not result in a change to the intent of the procedure, they were routed to all licensed SROs, the Senior Health Physicist (HP), the Reactor Administrator, and the Director who signed and dated the change indicating review and concurrence. Substantive changes to procedures, checklists, and forms were required to undergo a 50.59 Evaluation. They were then presented to the ROC for review and approval as required by TS.

The operations observed by the inspector during this inspection were completed in accordance with the applicable procedures.

c. Conclusions

Facility procedures were being reviewed and audited annually as required by TS Section 6 and procedure revisions were reviewed and approved by the ROC. Procedural compliance was acceptable.

6. Fuel Movement

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify adherence to fuel handling, positioning, and inspection requirements specified in TS Sections 4.4 and 5.2:

- fuel handling equipment and instrumentation
- selected portions of the Reactor Supervisor Log Nos. #12 & 14
- operations records documented in the Reactor Console Logbook, Nos. 144 - 148
- fuel handling and examination records for the past two years documented on "Oregon State University TRIGA Mark II Research Reactor Fuel Element History File" cards maintained in the FLIP Fuel Element History Logbook and on "Fuel Element Transfer Sheet" forms
- OSTROP 11, "Fuel Element Handling Procedures," Rev. 5, reprinted December 2005
- OSTROP 16, "Annual Surveillance and Maintenance Procedures," Rev. 12, reprinted December 2005 and related log sheets
- OSTROP 20, "Special Nuclear Material Control and Accounting Procedures," Rev. 6, reprinted July 2004

b. Observations and Findings

The inspector noted that the licensee was operating with FLIP Core No.10. It was also noted that the reactor could be operated in different configurations depending upon what equipment was installed in the B-1 position of the core. The actual configuration was tracked in the Reactor Console Logbook via colored markers used to mark the edge of each applicable logbook page.

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 procedures used for fuel movement and inspection were acceptable, as were the precautions that were required to be established during fuel movements and inspections. Fuel element locations were being tracked by log book and on a Fuel Status Board maintained in the Reactor Control Room.

The reactor fuel was being inspected upon initial receipt and on an as needed basis as required by TS Section 4.4. It was also noted that the specific elements located in the B-ring and those adjacent to the transient rod were inspected annually as a quality control measure because occasional swelling of those elements had been noted in the past due to reactor operation.

In May 2007, during an inspection of those fuel elements noted above and in accordance with OSTROP 16.18, the licensee noted that an element in the D-5 position would not pass through the upper grid plate due to swelling. Reactor operations were suspended pending replacement authorization. After a review and approval by the ROC, the element in D-5 was removed and placed in storage and a fuel element from storage was moved to the D-5 position. All the other fuel elements were inspected and checked for swelling but no other problems were noted. After a core excess was calculated, it was determined that no rod recalibration was needed and reactor operations were resumed.

c. Conclusions

Reactor fuel movements were made and documented in accordance with procedure. The fuel was being inspected as stipulated by TS Section 4.4.

7. **Maintenance and Surveillance**

a. Inspection Scope (IP 69001)

To determine that surveillance requirements and Limiting Conditions for Operation (LCO) verifications were being completed as required by TS Sections 3 and 4 and that maintenance activities were conducted when required, the inspector reviewed:

- selected portions of the Supervisor Log #12 - #14
- operations records documented in the Reactor Console Logbook, Nos. 144 - 148
- selected surveillance and calibration test data sheets and records maintained in the Surveillance and Maintenance Records Notebook

- OSU TRIGA Reactor Annual Reports for the period from July 1, 2005 through June 30, 2006, and the period from July 1, 2006 through June 30, 2007
- OSTROP 8, "Reactor Power Calibration Procedures," Rev. 6, reprinted October 2005
- OSTROP 9, "Control Rod Calibration Procedures," Rev. 10, reprinted December 2005
- OSTROP 12, "Control Rod Maintenance, Removal, and Replacement Procedures," Rev. 4, reprinted March 2006
- OSTROP 13, "Monthly Surveillance and Maintenance Procedures," Rev. 12, reprinted October 2005 and related log sheets
- OSTROP 14, "Quarterly Surveillance and Maintenance Procedures," Rev. 10, reprinted October 2005 and related log sheets
- OSTROP 15, "Semi-Annual Surveillance and Maintenance Procedures," Rev. 14, reprinted December 2005 and related log sheets
- OSTROP 16, "Annual Surveillance and Maintenance Procedures," Rev. 12, reprinted December 2005 and related log sheets
- OSTROP 19, "Equipment Maintenance and Calibration Procedures," Rev. 1, reprinted July 2004

b. Observations and Findings

The inspector noted that selected monthly, quarterly, semiannual, and annual checks, tests, verifications, and/or calibrations for TS-required surveillances and LCO verifications were being completed as stipulated. All the surveillances and LCO verifications reviewed were 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.

The maintenance logs and records indicated that problems were addressed and preventive maintenance operations completed as required by procedure. Records showed that routine maintenance activities were conducted at the required frequency and in accordance with the TS and/or the applicable procedure. Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and TS requirements.

The Reactor Supervisor maintained a schedule for reactor operations and tracked the completion of maintenance and surveillance activities. This practice ensured that the staff was aware of upcoming activities and helped ensure good administrative control over operational aspects of the facility.

c. Conclusions

The program for surveillance and LCO confirmations was being carried out in accordance with TS and procedural requirements. Maintenance was also being completed as required.

8. Experiments

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify that experiments were being conducted within approved guidelines specified in TS Sections 3.8 and 4.3:

- Irradiation Request (IR) Index #3
- OSU Radiation Center TRIGA User's Certification Form
- potential hazards identification and control of irradiated items
- documentation of experiment review and approval by the ROC
- selected Irradiation Request Standard Information Forms for the past year
- General Limitations of Experiments Performed Using the OSU TRIGA Reactor
- selected OSU TRIGA Reactor Irradiation Request Information Sheet forms for the past year
- operations records documented in the Reactor Console Logbook, Nos. 144 - 148
- selected Irradiation Request Pneumatic Transfer Sample Information Forms for the past year
- OSU Approved Experiments including the following:
 - No. A-1, "Normal TRIGA Operations," Rev. 1, dated July 1992
 - No. B-3, "Irradiation of Materials in the Standard OSTR Irradiation Facilities," Rev. 4, dated December 1999
 - No. B-31, "TRIGA Flux Mapping," Rev. 1, dated December 1988
 - No. B-33, "Irradiation of Combustible Liquids in the Rotating Rack," Rev. 0, dated May 2003
- OSU TRIGA Reactor Annual Reports for the period from July 1, 2005 through June 30, 2006, and the period from July 1, 2006 through June 30, 2007
- OSTROP 10, "Operating Procedures for Reactor Experimental Facilities," Rev. 13, reprinted July 2006
- OSTROP 18, "Procedures for the Approval and Use of Reactor Experiments," Rev. 8, reprinted March 2005

b. Observations and Findings

The licensee had three types of experiments at the facility based generally on the reactivity, amount of shielding required, and the amounts of radioisotopes produced. Class A experiments were those that involved small changes in reactivity, required no external shielding, and/or produced limited amounts of radioisotopes. Class B experiments involved larger changes in reactivity, required external shielding, and/or produced larger amounts of radioisotopes. Class C experiments were special experiments involving unusual experimental setups, the irradiation of special materials such as explosives, unusual fuel element arrangements, large in-core experimental facilities, etc. There were currently eight Class B and one Class A experiments that were considered active. The inspector verified that all the active experiments had been reviewed and approved by the ROC as required.

Most of the experiments conducted at the facility were well-established procedures that have been in place for many years. Nevertheless, it was noted that one new

experiment had been initiated in 2007. It dealt with irradiation of enriched uranium materials in the licensee's Neutron Radiography Facility with the intention of collecting fission product gases. The inspector verified that it had been approved by the Reactor Supervisor, the Senior HP, and finally by the ROC as required. However, the experiment had not yet been initiated pending completion of a 50.59 Evaluation.

A review of the records maintained by the licensee indicated that all experiments were completed under the cognizance of the Reactor Supervisor as required. The results of the experiments were documented in the reactor operations log book. Irradiation Request forms, required for reactor use, were also reviewed. The forms were being completed as required. The forms documented the individual users, the required approvals and licenses, the length of the irradiations, the expected resulting radionuclides that would be produced, and the ultimate disposition of the material following the irradiations.

c. Conclusions

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

9. Emergency Preparedness

a. Inspection Scope (IP 69001)

To verify proper implementation of the licensee's Emergency Preparedness Program, the inspector reviewed selected aspects of:

- emergency response facilities, supplies, equipment, and instrumentation
- training and emergency drill records for the past two years
- offsite support as documented in Emergency Support Agreements.
- Oregon State University TRIGA Reactor (OSAR) Emergency Response Plan and Emergency Response Implementing Procedures (ERIP), dated May 17, 1984, and last revised December 2007, Rev. 3, including:
 - ERIP 0, "Emergency Procedures for Emergency Response Personnel - Class 0 Emergency - Personnel and Operational Events," dated December 2007
 - ERIP 1, "Emergency Procedures for Emergency Response Personnel - Class 1 Emergency - Notification of Unusual Events," dated December 2007
 - ERIP 2, "Emergency Procedures for Emergency Response Personnel - Class 2 Emergency - Alert," dated December 2007
 - ERIP 3, "OSTROP Emergency Operation Procedures (OSTROP 1.0)," dated December 2007
 - ERIP 4, "RCHPP - 34 - Orientation and Training Programs for the OSU Radiation Center," dated December 2007
 - ERIP 5, "Radiation Center Complex Evacuation Procedures," dated December 2007
 - ERIP 6, "Emergency Procedures to Follow on Receipt of a Bomb Threat," dated December 2007
 - ERIP 7, "Emergency Activation and Notification Procedures," dated December 2007

- ERIP 8, "News Release Policy and Guidelines," dated December 2007
- OSTROP 1, "Emergency Operating Procedures," Rev. 9, reprinted January 10, 2008

b. Observations and Findings

The Emergency Plan (E-Plan) in use at the facility was the same as the version approved by the NRC and was last revised December 2007. The E-Plan was audited and reviewed annually by the ROC as required. Implementing procedures were also reviewed annually and revised by the licensee as needed to implement the E-Plan effectively. It was also noted that emergency response equipment at the Radiation Center was being maintained and inventoried at the frequencies required in the E-Plan.

Through records review and through interviews with licensee personnel, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Emergency response facilities and equipment were being maintained as required. An Emergency Support Agreement with the Good Samaritan Hospital in Corvallis, to treat potential victims of a radiological event, had been updated and maintained as necessary. Agreements were also being maintained with the City of Corvallis Fire and Police Departments as required. Communications capabilities were acceptable with these support groups and were tested periodically, generally daily. Personnel from these off-site support organizations visited the facility periodically and were familiar with the facility and what would be required during a response.

The inspector visited the Good Samaritan Regional Medical Center and observed the equipment staged in that location for response to an emergency at the Radiation Center. From this observation and as a result of reviewing the licensee's records documenting drills and training, the inspector verified that medical support personnel were well trained, properly equipped, and knowledgeable of the actions to take in case of an emergency at the reactor facility. The inspector determined that the licensee was maintaining a good working relationship with this support group.

Emergency preparedness and response training for staff and specific support group personnel was being completed annually as required. Evacuation drills had been conducted each year as well. The licensee was also conducting drills annually as stipulated in the E-Plan in order to test communications procedures and check on the response of facility personnel to simulated radiological, industrial, or security problems. The inspector verified that every two years the drills were structured to involve, and require the participation of, off-site support agencies and personnel. Critiques were conducted following the drills to discuss and identify any strengths and/or weaknesses noted.

c. 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. Emergency Support Agreements were being maintained with appropriate offsite agencies. 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.

11. Exit Interview

The inspection scope and results were summarized on February 7, 2008, 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 of these program areas.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

T. Keller	Reactor Administrator
S. Reese	Director, OSU Radiation Center
S. Smith	Scientific Instrument Technician
G. Wachs	Reactor Supervisor

Other Personnel

M. Bamberger	Assistant Manager, Emergency Preparedness Program, Good Samaritan Regional Center
C. Boos	Manager, Emergency Department, Good Samaritan Regional Medical Center
W. Ferguson	Medical Doctor, Occupational Health Specialist
T. Palmer	Chairman, Reactor Operations Committee

INSPECTION PROCEDURE USED

IP 69001	Class II Non-Power Reactors
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ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
ERIP	Emergency Response Implementing Procedure
HP	Health Physicist
IP	Inspection Procedure
LCO	Limiting Conditions for Operation
NRC	Nuclear Regulatory Commission
OSU	Oregon State University
OSTR	Oregon State University TRIGA Reactor
OSTROP	Oregon State University TRIGA Reactor Operating Procedure
RC	Radiation Center
Rev.	Revision
ROC	Reactor Operations Committee
SRO	Senior reactor operator
TS	Technical Specifications