

March 14, 2007

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

SUBJECT: NRC INSPECTION REPORT NO. 50-243/2007-201

Dear Dr. Reese:

On February 26 - March 1, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Radiation Center TRIGA Mark-II Reactor facility. The enclosed report documents the inspection results, which were discussed on March 1, 2007, 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, and 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, Jr., 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

Enclosure: NRC Inspection Report No. 50-243/2007-201
cc w/encl: Please 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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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No: 50-243

License No: R-106

Report No: 50-243/2007-201

Licensee: Oregon State University

Facility: TRIGA Mark-II Reactor Facility

Location: Corvallis, OR

Dates: February 26 - March 1, 2007

Inspector: Craig Bassett

Approved by: Johnny H. Eads, Jr., 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. 50-243/2007-201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the licensee's Class II research reactor safety program including organizational structure and staffing, review and audit and design change functions, radiation protection, environmental protection, procedures, and transportation activities since the last NRC inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

Organizational Structure and Staffing

- The organizational structure and functions were consistent with Technical Specification requirements.

Review and Audit and Design Change Functions

- The review and audit program was being conducted acceptably by the Reactor Operations Committee as stipulated in Section 6.2 of the Technical Specifications.
- Changes made at the facility since the last NRC inspection had been evaluated using the licensee's 10 CFR 50.59 safety evaluation process and had been reviewed and approved by the Reactor Operations Committee as required.

Radiation Protection

- Periodic surveys were completed and documented as required by procedure.
- Postings and signs met regulatory requirements.
- Personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits.
- Radiation survey and monitoring equipment were being maintained and calibrated as required.
- Radiation protection training was acceptable.
- The Radiation Protection and ALARA Programs satisfied regulatory requirements.

Environmental Protection

- Effluent monitoring satisfied license and regulatory requirements and releases were within the specified regulatory and Technical Specification limits.
- The environmental protection program satisfied NRC requirements.

Procedures

- The procedural change and control program satisfied the applicable TS and procedure requirements.
- Activities were conducted in accordance with the applicable procedures as required.

Transportation of Radioactive Material

- The program for transportation of radioactive materials satisfied NRC requirements.

REPORT DETAILS

Summary of Plant Status

The Oregon State University (OSU) Radiation Center one point one megawatt (1.1 Mw) TRIGA Mark-II research and test reactor (RTR) continued normal, routine operations in support of sample irradiations, laboratory testing, reactor system testing, and surveillance. During the inspection, the licensee's RTR was operated several hours per day at varying power levels for chemistry tours, instruction, and sample irradiation.

1. Organizational Structure and Staffing

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

The inspector reviewed the following regarding the licensee's organizational structure and functions to ensure that the requirements of Section 6.1 of Technical Specifications (TS), Amendment No. 20, dated September 26, 2005, were being met:

- management responsibilities and administrative controls
- OSU Radiation Center facility organizational structure and staffing
- OSU TRIGA Reactor Annual Reports for the periods of July 1, 2004 through June 30, 2005, and July 1, 2005 through June 30, 2006
- administrative controls outlined in Oregon State TRIGA Reactor Operating Procedure (OSTROP) 6, "Administrative and Personnel Procedures," Revision (Rev.) 15, dated October 2006

b. Observations and Findings

The organizational structure and staffing with respect to the health physics organization had not changed since the last inspection in the area of radiation protection (refer to NRC Inspection Report No. 50-243/2005-201). Currently there is one Senior Health Physicist and one Health Physicist on staff at the licensee's RTR facility.

The organizational structure and staffing were consistent with the requirements of the TS. Qualifications of the staff met those recommended in ANSI Standard 15.4, "Standard for the Selection and Training of Personnel for Research Reactors." Review of records verified that management responsibilities were administered as required by the TS and applicable procedures.

c. Conclusions

The organizational structure and functions were consistent with the TS requirements.

2. Review and Audit and Design Change Functions

a. Inspection Scope (IP 69001)

In order to ensure that the audits and reviews stipulated in the requirements of TS Section 6.2 were being completed and that facility changes were evaluated as required, the inspector reviewed the following:

- responses to safety reviews and audits conducted by the ROC
- Reactor Operations Committee meeting minutes and records from May 2005 to the present
- Reactor Operations Committee (ROC) safety review and audit records from May 2005 to the present
- OSTROP 6, "Administrative and Personnel Procedures," Rev. 15, dated October 2006
- changes reviewed using the licensee's safety evaluation process outlined in OSTROP 6, and documented on forms:
 - Figure 6.2, "OSU TRIGA Reactor (OSTR) 10 CFR 50.59 Evaluation Form"
 - "Oregon State TRIGA Reactor (OSTR) 10 CFR 50.59 Screen Form"

b. Observations and Findings

(1) Review and Audit Functions

ROC meeting minutes and associated records from May 2005 through the present were reviewed. The records showed that safety reviews and audits were conducted by various members of the ROC or other designated persons as required and at the TS required frequency. Topics of these reviews were consistent with TS requirements to provide guidance, direction, and oversight, and to ensure acceptable use of the reactor and appropriate implementation of the radiation protection program. The inspector noted that the safety reviews and audits and the associated findings were acceptably detailed and that the licensee responded and took corrective actions as needed.

(2) Design Change Functions

Through interviews with licensee personnel, the inspector determined that various changes had been initiated and/or completed at the facility since the last NRC inspection. The inspector reviewed OSU TRIGA Reactor (OSTR) 10 CFR 50.59 Evaluation Forms numbered 05-01 through 05-06 and Oregon State TRIGA Reactor (OSTR) 10 CFR 50.59 Screen Forms numbered 05-01 through 05-08 and 06-01 through 06-08. It was noted that no Evaluation Forms had been initiated or completed in 2006 or to date in 2007.

Review of these documents demonstrated that the facility changes had been evaluated using the licensee's 10 CFR 50.59 review process outlined in OSTROP 6. The forms had been completed as required and reviewed and signed by members and the Chairman of the ROC. It was also noted that none of the changes required NRC approval prior to implementation.

c. Conclusions

Review and oversight functions required by TS Section 6.2 were acceptably completed by the ROC. Changes made at the facility since the last NRC inspection had been evaluated using the 10 CFR 50.59 safety evaluation process and had been reviewed and approved by the ROC as required.

3. Radiation Protection

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with 10 CFR Parts 19 and 20 and licensee administrative requirements:

- OSU Radiation Center Radiation Protection Program
- As Low As Reasonably Achievable (ALARA) reviews
- radiological signs and posting in various areas of the facility
- dosimetry/exposure records for 2005 through January 2007
- maintenance and calibration of radiation monitoring equipment
- training records for Radiation Center staff, HP Monitors, and facility users
- Radiation Center TRIGA Mark-II Reactor Facility Radiation Protection Program
- occupational exposure records documented on forms entitled, "GDS Form 5: Occupational Exposure Record for a Monitoring Period" for licensee employees for 2005 (forms for 2006 were not yet available)
- various Health Physics (HP) Notebooks entitled:
 - HP Notebook - Surveys, Volume I, "Daily/Weekly/ Monthly/Neutron Generator/and Semi-Annual Floor Surveys"
 - HP Notebook - Surveys, Volume II, "Special Surveys"
 - HP Notebook - Surveys, Volume IV, "Work Surveillance Reports"
- routine periodic surveys documented on the following forms:
 - Form RCHPP-24A, "Daily Routine Radiation Survey Record," latest revision dated October 2004
 - Form RCHPP-24B, "Weekly Routine Radiation Survey Record," latest revision dated July 2005
 - Form RCHPP-24C, "Monthly Routine Radiation Survey Record," latest revision dated October 2004
 - Form RCHPP-24D, "Non-Routine (Special) Radiation Survey Record," latest revision dated January 2000
 - Form RCHPP-27, "Semi-Annual Floor Survey For Fixed and Removable Radiation Contamination - Part I Direct and Gross Floor Smear," latest revision dated December 1999
 - Form RCHPP-27, "Semi-Annual Floor Survey For Fixed and Removable Radiation Contamination - Part II Worksheet," latest revision dated January 2000
- calibration records documented on the following forms:
 - "Calibration Results for the Tracerlab Dual-Channel Reactor Facility Continuous Stack-Effluent Monitor"
 - "Calibration Results for the NMC AM-22BF Dual-Channel Reactor Top Continuous Air Monitor (CAM)"

- "Calibration Results for the Area Radiation Monitoring Systems Located Throughout the TRIGA Reactor Facility and in the Pneumatic Transfer (PT) Rabbit Laboratory"
- Calibration Results for various portable instruments generated by the Scientific Instrument Technician
- Radiation Center Health Physics Procedure (RCHPP) Number (No.) 1, "Guidelines for the Radiation Protection Program at the OSU Radiation Center," Rev. 7, dated April 2006
- RCHPP No. 18, "Maintenance and Calibration Procedures for Radiation Protection Instrumentation (Including Operator Training Manual and Operating Procedures for the Radiation Center Gamma Instrument Calibration Facility)," Rev. 9, dated October 2006
- RCHPP No. 20, "Radiation Survey Procedures for the Release of Items for Unrestricted Use," Rev. 3, dated July 2001
- RCHPP No. 24, "Procedures for Performing Routine (Daily, Weekly, Monthly, and Annual) Radiation Surveys and Non-Routine (Special) Radiation Surveys," Rev. 10, dated October 2004
- RCHPP No. 27, "Procedure for Performing the Semi-Annual Floor Survey for Fixed and Removable Radioactive Contamination," Rev. 5, dated March 2002
- RCHPP No. 34, "Orientation and Training Program for the OSU Radiation Center," Rev. 17, dated August 2005
- RCHPP No. 37, "Dosimetry," Rev. 3, dated December 2006

b. Observations and Findings

(1) Surveys

Selected daily, weekly, monthly, semiannual, and annual radiation and/or contamination surveys were reviewed by the inspector. The surveys had been completed by Health Physics (HP) staff members or students who had received the appropriate training. Any contamination detected in concentrations above established action levels was noted and the area was decontaminated. Results of the surveys were acceptably documented.

During the inspection the inspector accompanied a licensee representative during completion of a Weekly Radiation and Contamination Survey. Areas surveyed at the facility included the Reactor Bay and associated laboratories, and the Heat Exchanger Room. The techniques used during the survey were adequate and the survey was conducted and documented in accordance with the guidance specified by procedure.

The inspector conducted a radiation survey along with the licensee representative. The radiation levels noted by the inspector were comparable to those found by the licensee and no anomalies were noted.

(2) Postings and Notices

Radiological signs were typically posted at the entrances to controlled areas. Other postings also showed the industrial hygiene hazards that were present in

the areas as well. Caution signs, postings, and controls for radiation areas were as required in 10 CFR Part 20, Subpart J. The inspector noted that licensee personnel observed the signs and postings and the precautions for access to radiation areas.

Copies of current notices to workers were posted in appropriate areas in the facility. The copies of NRC Form-3, "Notice to Employees," noted at the facility were the latest issue and were posted in various areas throughout the facility as required by 10 CFR Part 19.11. These locations included on the main bulletin board in the hallway by the front office, in the corridor leading to the Reactor Building, and in the Reactor Control Room.

(3) Dosimetry

The inspector determined that the licensee used pocket ion chambers and thermoluminescent dosimeters (TLD) for whole body monitoring of beta and gamma radiation exposure, as well as track-etch/albedo neutron dosimeters to measure neutron radiation. The licensee also used TLD finger rings for extremity monitoring. The dosimetry was supplied and processed by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited vendor, Global Dosimetry Solutions, Inc. An examination of the TLD results indicating radiological exposures at the facility for the past two years showed that the highest occupational doses, as well as doses to the public, were within 10 CFR Part 20 limitations. The records showed that the highest annual whole body exposure received by a single reactor staff member for 2005 was 232 millirem (mr) deep dose equivalent (DDE) and 394 mr shallow dose equivalent (SDE). The highest annual extremity exposure for that year was 845 mr SDE. The records also showed that the highest annual whole body exposure received by a single staff member for 2006 was 68 mr DDE and 69 mr SDE. The highest annual extremity exposure for 2006 was 353 mr SDE.

Through direct observation the inspector determined that dosimetry was acceptably used by facility personnel and exit frisking practices were in accordance with facility radiation protection requirements.

(4) Radiation Monitoring Equipment

Examination of selected radiation monitoring equipment indicated that the instruments had the acceptable up-to-date calibration sticker attached. The instrument calibration records indicated the calibration of portable survey meters was typically completed by licensee staff personnel. However, some instruments were shipped to vendors for calibration. The inspector verified that the instruments were calibrated annually which met procedural requirements and calibration records were maintained as required. Area Radiation Monitors and stack monitors were also being calibrated annually as required. These monitors were typically calibrated by licensee staff personnel as well.

(5) Work Surveillance Report Program

The inspector determined that Work Surveillance Reports (WSRs) had been written and used during 2004 and 2005 but none had been issued in 2006 or to date in 2007. (WSRs are similar to Radiation Work Permits but are used by the licensee mainly in situations involving non routine maintenance or other work being performed at the facility on highly contaminated structures, systems, or components [SSCs] or work on SSCs with elevated radiation levels.) The inspector verified that, if WSRs were needed, they would be prepared in accordance with the requirements specified on the WSR form, including work controls, protective clothing requirements, and dose tracking and limits.

(6) Radiation Protection Training

The inspector reviewed the radiation worker (or rad worker) training given to Radiation Center staff members, to those who are not on staff but who are authorized to use the experimental facilities of the reactor, and to student assistants working as part-time HP Monitors. The training program was outlined in RCHPP 34. It included initial rad worker training for those new to the facility and refresher training for faculty and staff every three years thereafter. The appropriate training was required to be completed before a person was allowed unescorted access to various restricted areas of the Radiation Center. The type of initial training given was based upon the position and/or duties of the person. Initial training was divided into the following categories: General Orientation, Radiation/Radioactive Material User Orientation, Reactor Bay Unescorted Access Orientation, Student Orientation, Visitor Orientation, and/or Radiation Center Non-Resident Worker Orientation. Refresher training was divided into two categories, training for Non-Radioactive Material Users and training for Radioactive Material Users.

The last rad worker refresher training for staff members had been completed in 2004. The inspector noted that the next refresher training is scheduled for September 2007. Training records showed that personnel were acceptably trained in radiation protection practices. The training program was acceptable.

(7) Facility Tours

The inspector toured the Reactor Bay, the Heat Exchanger Room, and selected support laboratories with licensee representatives on various occasions. The inspector noted that facility radioactive material storage areas were properly posted. No unmarked radioactive material was noted. Radiation Areas and Radioactive Material Storage Areas were posted as required.

(8) Radiation Protection Program

The licensee's Radiation Protection and ALARA programs were established and described in the RCHPP No. 1 and through associated HP procedures that had been reviewed and approved. The programs contained instructions concerning

organization, training, monitoring, personnel responsibilities, audits, record keeping, reports, and maintaining doses ALARA. The programs, as established, appeared to be acceptable. The ALARA program provided guidance for keeping doses as low as reasonably achievable which was consistent with the guidance in 10 CFR Part 20.

The licensee did not require or have a respiratory protection program or planned special exposure program.

c. Conclusions

The inspector determined that the Radiation Protection and ALARA Programs, as implemented by the licensee, satisfied regulatory requirements because: 1) surveys were completed and documented acceptably to permit evaluation of the radiation hazards present; 2) postings met regulatory requirements; 3) personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits; 4) radiation survey and monitoring equipment were being maintained and calibrated as required; and 5) the radiation protection training program was acceptable.

4. Environmental Protection

a. Inspection Scope (IP 69001)

To determine that the licensee was complying with the requirement of the regulations and TS Section 6.7.e, the inspector reviewed selected aspects of:

- OSU Radiation Safety Radioactive Waste Tag forms for 2005 and 2006
- OSU Radiation Center and TRIGA Reactor Annual Reports for the periods of July 1, 2004 through June 30, 2005, and July 1, 2005 through June 30, 2006
- environmental monitoring release records documented in various notebooks including:
 - HP Notebook - Environmental Monitoring, Volume I, "Airborne Gamma Emitters TLD Reports/Ion Chamber, TE and FE Results"
 - HP Notebook - Environmental Monitoring, Volume II, "Soil, Water, and Vegetation Data"
 - HP Notebook - Environmental Monitoring, Volume III, "Solid and Liquid Waste, Hold-up Tank"
 - HP Notebook - Environmental Monitoring, Volume IV, "Gaseous Waste Discharge Summary"
- selected forms documenting environmental data and analysis' results completed in 2005 and 2006 including:
 - "Environmental Soil, Water, and Vegetation Sample Report"
 - "Monthly TRIGA Reactor Gaseous Waste Discharges and Analysis"
- records of waste transferred from the reactor facility's NRC license to the State license for the past two years documented on forms issued by the OSU Radiation Safety Office and entitled:
 - "Oregon State University, Radiation Safety Radioactive Waste Tag"
 - "Solid Waste"

- RCHPP No. 1, "Guidelines for the Radiation Protection Program at the OSU Radiation Center," Rev. 7, dated April 2006
- RCHPP No. 8, "Water Analysis," Rev. 4, dated October 2006
- RCHPP No. 13, "Procedures for Collection and Biological Analysis of Environmental Soil, Water, and Vegetation Samples," Rev. 5, January 2007
- RCHPP No. 15, "Operating Procedures for the Environmental Thermoluminescent Dosimetry (TLD) Program," Rev. 4, February 2004
- RCHPP No. 31, "Procedure for Sampling and Pumping the Liquid Waste Hold-up Tank," Rev. 4, dated March 2006
- RCHPP No. 32, "Stack Gas Effluent Analysis," Rev. 2, dated June 2000

b. Observations and Findings

Soil, water, and vegetation environmental samples were collected, prepared, and analyzed annually in accordance with procedural requirements. On-site and off-site gamma radiation monitoring was completed using the reactor stack effluent monitor and various environmental monitoring station TLDs as required by the applicable procedures as well. Data indicated that there were no measurable doses above natural background radiation.

The inspector determined that gaseous releases continued to be monitored as required, were calculated according to procedure, and were acceptably documented in the annual reports. The airborne concentrations of the gaseous releases were within the concentrations stipulated in 10 CFR Part 20, Appendix B, Table 2. Also, the dose rate to the public, as a result of the gaseous releases, was well below the dose constraint specified in 10 CFR 20.1101 (d) of 10 millirem per year (mr/yr). This was acceptably demonstrated by the licensee through COMPLY code calculations. These calculations indicated an effective dose equivalent to the public of 1.0 mr/yr for the year 2005 and 1.1 mr/yr for the year 2006. The principles of ALARA were acceptably implemented to minimize radioactive releases. Monitoring equipment was acceptably maintained and calibrated. Records were current and acceptably maintained. Observation of the facility by the inspector indicated no new potential release paths.

The program for the monitoring, storage, or transferring of radioactive liquid and solid waste was consistent with applicable procedural requirements. There were no radioactive liquid waste releases from the reactor facility in 2005 or 2006. Solid radioactive waste was transferred to the OSU Waste Processing Facility under the State of Oregon broad-scope license (ORE-90005) for processing and disposal. This process was acceptably documented on the appropriate OSU Radiation Safety Office forms in accordance with the requirements of RCHPP 1.

c. Conclusions

Effluent releases were within the specified regulatory and Technical Specification limits. The environmental protection program satisfied NRC requirements.

5. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with TS Section 6.2.d:

- procedural implementation
- selected RCHPP procedures
- records of changes to RCHPP procedures
- records of ROC review and approval of procedures documented in the ROC meeting minutes for 2005 and 2006

b. Observations and Findings

Administrative controls of changes and the associated review and approval processes were as stipulated by procedure. The inspector verified that procedure changes were being reviewed and approved by the ROC as required by TS 6.2.d. Training of personnel on procedures and changes was acceptable. The inspector verified that licensee personnel conducted activities in accordance with applicable procedures. Records showed that procedures for potential malfunctions (e.g., radioactive material ingestion and contaminations) were available for implementation as needed.

c. Conclusions

The procedural change and control program satisfied the applicable TS and procedure requirements. Activities were conducted in accordance with the applicable procedures as required.

6. Transportation

a. Inspection Scope (IP 86740)

To verify compliance with regulatory and procedural requirements for the transfer or shipment of licensed radioactive material, the inspector reviewed the following:

- selected records of various types of radioactive material shipments in 2006
- radioactive waste release records documented in HP Notebook - Environmental Monitoring, Volume III, "Solid and Liquid Waste, Hold-up Tank"
- training records of staff members responsible for shipping licensed radioactive material
- records of waste transferred from the reactor facility's NRC license to the State license for the past two years documented on forms issued by the OSU Radiation Safety Office and entitled:
 - "Oregon State University, Radiation Safety Radioactive Waste Tag"
 - "Solid Waste"
- radioactive material transfer records documented in various notebooks including:

- HP Notebook - Radioactive Material Transfer, Volume I, "Procedure - RCHPP6, General Shipping Forms, Training Records, and Audit Records"
- HP Notebook - Radioactive Material Transfer, Volume II, "Shipping Container Tests"
- HP Notebook - Radioactive Material Transfer, Volume III, "Radioactive Material Transfer Records"
- HP Notebook - Radioactive Material Transfer, Volume IV, "Shipment Analysis"
- RCHPP No. 1, "Guidelines for the Radiation Protection Program at the OSU Radiation Center," Rev. 7, dated April 2006
- RCHPP No. 5, "Procedures for Receipt Radiation Surveys and Unpacking of Packages Containing Radioactive Material," Rev. 4, dated June 2003
- RCHPP No. 6, "OSU Procedures for Transfer, Packaging, and Transport of Radioactive Materials Other Than Radioactive Waste," Rev. 12, dated February 2007
- RCHPP No. 11, "Procedures for Testing and Certification of OSU Radioactive Materials Shipping Containers," Rev. 4, dated April 2006

b. Observations and Findings

As noted above, records showed that radioactive waste was transferred to the OSU Radiation Safety Office for packaging, shipment, and disposal in accordance with licensee requirements and the applicable procedures. This program for radioactive material transfer was consistent with the requirements specified in RCHPP No. 1.

The transport of other radioactive material was also reviewed. Through records reviews and various discussions with licensee personnel, the inspector determined that the licensee had shipped various types of radioactive material since the previous inspection in this area. The records indicated that the radioisotope types and quantities were calculated and dose rates measured as required. The records also indicated that the shipping containers were appropriate and had been labeled as required. All radioactive material shipment records reviewed by the inspector had been completed in accordance with Department of Transportation and NRC regulatory requirements.

The inspector verified that the licensee maintained copies of the recipients' licenses to possess radioactive material as required and that the licenses were verified to be current prior to initiating a shipment.

On Thursday, March 1, during this inspection, the inspector observed the preparation of a sample of radioactive material for shipment. The material was properly packaged and surveyed and placed in the appropriate shipping container. Then the applicable labels were filled out with the required information and attached to the shipping container. The shipping paperwork was completed in accordance with the regulatory requirements. No problems or deficiencies were noted.

The training of the staff members responsible for shipping the material was reviewed. Training had been conducted annually according to licensee procedure which exceeded the requirements specified in the regulations.

c. Conclusions

The program for transportation of radioactive materials satisfied NRC requirements.

7. Exit Interview

The inspection scope and results were summarized on March 1, 2007, with licensee representatives. The inspector discussed the findings for each area reviewed. No dissenting comments were received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

J. Darrough, Health Physicist
M. Hartman, Reactor Administrator
T. Keller, Senior Reactor Operator
S. Menn, Senior Health Physicist
S. Reese, Director, Radiation Center
S. Smith, Scientific Instrument Technician
G. Wachs, Reactor Supervisor

Other Personnel

T. Palmer, Chairman, Reactor Operations Committee

INSPECTION PROCEDURES USED

IP 69001 Class II Non-Power Reactors
IP 86740 Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

ALARA As Low As Reasonably Achievable
CFR Code of Federal Regulations
DDE Deep dose equivalent
HP Health Physics
IP Inspection Procedure
mr millirem
mr/yr millirem per year
NRC Nuclear Regulatory Commission
NVLAP National Voluntary Laboratory Accreditation Program
OSU Oregon State University
OSTROP Oregon State University TRIGA Reactor Operating Procedure
RCHPP Radiation Center Health Physics Procedure

Rev.	Revision
ROC	Reactor Operations Committee
RTR	Research and Training Reactor
SSCs	Structures, Systems, and Components
SDE	Shallow dose equivalent
TLD	Thermoluminescent dosimeter
TS	Technical Specifications
WSR	Work Surveillance Report