

September 13, 2006

Dr. James N. Petersen  
Vice Provost for Research  
Washington State University  
Pullman, WA 99164-1030

SUBJECT: NRC INSPECTION REPORT NO. 50-027/2006-201

Dear Dr. Petersen:

On August 28-31, 2006, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at your Washington State University TRIGA research reactor located in the Nuclear Radiation Center. The enclosed report documents the inspection results, which were discussed on August 31, 2006, with you and 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 of Title 10 of the Code of Federal Regulations, "Public Inspections, Exemptions, Requests for Withholding," 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 Document 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 Eads, Branch Chief  
Research and Test Reactors Branch B  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Docket No.: 50-027  
License No.: R-76

Enclosures: NRC Inspection Report

cc w/encl: See next page

Washington State University

Docket No. 50-27

cc:

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Pullman, WA 99164-1300

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Test, Research, and Training  
Reactor Newsletter  
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Gainesville, FL 32611

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

Docket No: 50-027

License No: R-76

Report No: 50-027/2006-201

Licensee: Washington State University

Facility: Nuclear Radiation Center

Location: Pullman, WA

Dates: August 28-31, 2006

Inspector: Craig Bassett

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

## **EXECUTIVE SUMMARY**

Washington State University  
Nuclear Radiation Center  
Report No.: 50-027/2006-201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the licensee's Class II research reactor safety programs including: organizational structure and staffing, design control and review and audit functions, procedures, radiation protection, environmental protection, and transportation of radioactive materials since the last NRC inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety. No violations or deviations were noted.

### Organizational Structure and Staffing

- The organizational structure and responsibilities were consistent with Technical Specification Section 6 requirements.

### Review and Audit and Design Control Functions

- The review and audit program was being conducted acceptably by the Reactor Safeguards Committee.
- The latest change completed by the licensee was reviewed using the criteria specified in 10 CFR 50.59, determined to be acceptable, and approved in accordance with procedure.

### Procedures

- Facility procedural review, revision, control, and implementation satisfied Technical Specification requirements.

### Radiation Protection Program

- Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present.
- Postings met the regulatory requirements specified in 10 CFR Parts 19 and 20.
- Personnel dosimetry was being worn as required and doses were well within the licensee's procedural action levels and NRC's regulatory limits.
- Radiation monitoring equipment was generally being maintained and calibrated as required.
- Acceptable radiation protection training was being provided to staff personnel.
- The Radiation Protection Program being implemented by the licensee satisfied regulatory requirements.

Effluent and Environmental Monitoring

- Effluent monitoring satisfied license and regulatory requirements.
- Releases were within the specified regulatory and Technical Specification limits.

Transportation of Radioactive Materials

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

## **REPORT DETAILS**

### **Summary of Plant Status**

Washington State University's one megawatt research and test reactor continued to be operated in support of operator training, surveillance, and irradiation work for various experiments and organizations. During the inspection, the reactor was started up, operated, and shut down as required and in accordance with applicable procedures to support these ongoing activities.

### **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 Sections 6.1-6.3 of Technical Specifications (TS), Amendment No. 18, dated April 26, 2002, were being met:

- C staff qualifications
- C management responsibilities
- C Washington State University (WSU) Nuclear Radiation Center organizational structure and staffing
- C Annual Reports issued by the licensee for reporting periods: July 2004 - June 2005, and July 2005 - June 2006
- C WSU Nuclear Radiation Center Administrative Procedure Number (No.) 1, "Responsibilities and Authority of Reactor Operating Staff," (not dated)

#### **b. Observations and Findings**

The inspector noted that the Nuclear Radiation Center organizational structure and the responsibilities of the reactor staff had not changed since the last inspection but there had been a change in management. In May 2006, a new Facility Director had been appointed to fill the position left vacant when the former Facility Director retired in October 2005. The inspector noted that staffing levels had changed as well and licensed reactor staff consisted of the Reactor Supervisor, a Training Coordinator, an Engineering Technician, and a Reactor Technician. The Reactor Supervisor, Training Coordinator, and Reactor Technician were Senior Reactor Operators (SROs) while the Engineering Technician was a Reactor Operator. It was also noted that the new Facility Director and another Reactor Technician were in training to become qualified reactor operators.

Although the staff was of limited size, the organizational structure and staffing at the facility were as required by TS. Qualifications of the staff met TS and ANS 15.4, "Standard for the Selection and Training of Personnel for Research Reactors," requirements. Review of records verified that management responsibilities were administered as required by TS and applicable procedures.

#### **c. Conclusions**

The organizational structure and functions were consistent with TS Section 6 requirements.

## 2. Review and Audit and Design Control Functions

### a. Inspection Scope (IP 69001)

In order to verify that the licensee had established and conducted reviews and audits as required in TS Sections 6.5.4 and 6.5.5 and to verify compliance with 10 CFR 50.59, the inspector reviewed selected aspects of:

- C facility configuration and configuration control
- C recent facility design change and/or modifications
- C safety review and audit records for the past two years
- C Reactor Safeguards Committee (RSC) meeting minutes for 2004 to the present
- C Annual Reports issued by the licensee for reporting periods: July 2004 - June 2005, and July 2005 - June 2006
- C RSC Facility Records Quarterly Audits for 2004 to the present documenting reviews of operations records, summary records, and administrative records
- C WSU Nuclear Radiation Center Administrative Procedure No. 3, "Approval and Review of Facility Modifications and Special Tests or Experiments," (not dated) which included the following forms:
  - NRC Handout No. 10, "Guidelines From 50.59," dated April 1993
  - NRC Form No. 7, "Request for Review of Facility Modification," dated September 1991
  - NRC Form No. 8, "Appendix A - Evaluation to Determine if the Proposed Modification/Test Involves a Change in Technical Specifications or an Unreviewed Safety Question," dated September 1991
  - NRC Form No. 9, "Review of Request for Modification/Test," dated September 1991
  - NRC Form No. 10, "Request for Review of a Proposed Modification/Test," dated September 1991
  - NRC Form No. 11, "Review of a Proposed Modification/Test," dated September 1991

### b. Observations and Findings

#### (1) Review and Audit Functions

The inspector verified that RSC membership satisfied TS requirements and that the RSC had quarterly meetings as required. Review of the committee meeting minutes indicated that the RSC provided appropriate guidance and direction for reactor operations, and ensured suitable use and oversight of the reactor.

Since the last inspection all required audits of reactor facility activities and reviews of programs, procedures, equipment changes, and proposed tests or experiments, had been completed and documented. Additionally, the annual review of the Radiation Protection Program and the biennial reviews of the emergency and security plans had been conducted and acceptably documented.

#### (2) Design Change

Records and observations showed that changes made at the facility during 2004 to the present were acceptably reviewed in accordance with 10 CFR 50.59 and



applicable administrative controls. Prior to implementing the changes, the licensee submitted them to the RSC and they were reviewed, determined to be acceptable, and approved as required. None of the changes constituted a safety question or required a change to the TS.

The latest modification initiated by the licensee involved removal of the core temperature monitoring system and replacing it with a new Omega temperature indication and control system. The licensee's facility modification procedure was followed and an evaluation was completed as required. The licensee considered the criteria included in 10 CFR 50.59 and concluded that the change was an acceptable change under the regulations. Although not required by procedure, a review by the RSC was requested and conducted, and the RSC approved the change. The change review and approval process appeared to be acceptable.

c. Conclusions

The review and audit program was being conducted acceptably by the Reactor Safeguards Committee. The latest change completed by the licensee was reviewed using the criteria specified in 10 CFR 50.59, determined to be acceptable, and approved.

### 3. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify that the licensee was complying with the requirements of TS Sections 6.5.4 and 6.8:

- C selected administrative and standard operating procedures
- C related logs and records documenting procedure implementation
- C records documenting procedure changes and temporary changes
- C administrative controls as outlined in WSU Nuclear Radiation Center Administrative Procedure No. 2, "Approval, Revision, and Review of Standard Operating Procedures," (not dated)

The inspector also observed the use and implementation of procedures by licensee personnel.

b. Observations and Findings

Procedures were available for those tasks and items required by the TS and facility directives. Written changes were reviewed and approved by the RSC as required. The Standard Operating Procedures (SOPs) were reviewed biennially as required by TS Section 6.5.4 with the last review being completed August 25, 2005 and changes to the SOPs reviewed and approved by the RSC on November 17, 2005.

Training of personnel on procedures and the applicable changes was acceptable. Through observation of reactor surveillance and maintenance operations, the inspector verified that personnel conducted TS activities in accordance with applicable procedures. Records showed that procedures for potential malfunctions (e.g., radioactive releases, contaminations, and reactor equipment problems) had been

developed and were implemented as required.

c. Conclusions

Procedural review, revision, control, and implementation satisfied TS requirements.

**4. Radiation Protection Program**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Parts 19 and 20, TS Sections 3.7, 5.4, and 6.8, and procedural requirements:

- C Preventative Maintenance Checklists for 2005 and 2006
- C Radiation Monitor Calibration Schedule Forms for 2005 and 2006
- C Nuclear Radiation Center dosimetry records for 2004 through May of 2006
- C radiation and contamination survey records documented on the appropriate forms
- C calibration and periodic check records for radiation monitoring instruments documented on the applicable forms
- C WSU Nuclear Radiation Center SOP No. 10, "Standard Procedure for Health Physics Surveys," last revised August 25, 2005
- C WSU Nuclear Radiation Center SOP No. 17, "Standard Procedure for Checkout and Calibration of the Area Radiation Monitors," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 22, "Standard Procedure for Portable Survey Instrumentation Check and Calibration," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 26, "Standard Procedure for RM-14 Check and Calibration," last revised December 4, 2003
- C WSU Nuclear Radiation Center Administrative Procedure, "Radiation Protection Program" last reviewed March 2006
- C Washington State University Radiation Protection Program Manual dated March 15, 1994
- C ALARA Policy as outlined the "Radiation Protection Program"

The inspector also toured the facility to note any changes that may have been made and observed the use of dosimetry and radiation monitoring equipment. Licensee personnel were interviewed and radiological signs and postings were observed as well.

b. Observations and Findings

(1) Surveys

The inspector reviewed weekly general area radiation and contamination surveys and semiannual neutron surveys of the Pool Room and the Beam Room from 2005 to the present. The surveys had been completed by licensee personnel as required by WSU Nuclear Radiation Center SOP No. 10. The results were generally documented on the appropriate forms and evaluated as required, and corrective actions taken when readings or results exceeded set action levels.

During the inspection, the inspector observed a licensee representative conduct a radiation and contamination survey in various areas of the facility. The inspector

also conducted a radiation survey of the Pool Room, the Heat Exchanger/Pump Room, and Radiochemistry Laboratory, and compared the readings detected with those found by the licensee. The results were comparable and no anomalies were noted.

(2) Postings and Notices

The inspector reviewed the postings at the entrances to various controlled areas including the Control Room, the Pool Room, the Beam Room, and various laboratories in the Nuclear Radiation Center. The postings were acceptable and copies of current survey maps posted at the entrances to the areas indicated the radiation and contamination hazards present. Other postings also showed the industrial hygiene hazards present in the areas. The facility's radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility. Copies of current notices to workers required by 10 CFR Part 19 were posted on various bulletin boards throughout the facility including in the stairway leading to the Control Room, in the Reactor Shop area, and in the Conference Room as well.

(3) Dosimetry

The licensee used a National Voluntary Laboratory Accreditation Program accredited vendor (Landauer) to process the optically stimulated luminescence (OSL) whole body dosimeters and extremity thermoluminescent dosimeters (TLDs) supplied to staff personnel. Through direct observation, the inspector determined that dosimetry was acceptably used by facility personnel and exit frisking practices were in accordance with radiation protection requirements.

An examination of the records for the past two years, through May 2006, showed that all whole body exposures, measured by OSL dosimeters, were within NRC limits and within licensee action levels. Extremity monitoring, accomplished through the use of finger ring TLDs, also generally showed low doses to the hands of staff members. The highest annual whole body exposure received by a single individual for 2004 was 165 millirem deep dose equivalent (DDE). The highest annual extremity exposure for 2004 was 1050 millirem shallow dose equivalent (SDE). The highest annual whole body exposure received by a single individual in 2005 was 120 millirem DDE. The highest annual extremity exposure for 2005 was 260 millirem SDE.

(4) Radiation Monitoring Equipment

(A) General Instrument Calibration

The inspector noted that, in the past, the calibration of portable survey meters, friskers, fixed radiation detectors, and air monitoring instruments was typically completed by licensee personnel. However, the licensee had relinquished control of various monitoring devices to the WSU Radiation Safety Office (RSO) in October 2005. Those instruments were calibrated by the WSU RSO after that date. The calibration records of selected portable survey meters, friskers, fixed radiation detectors, and air monitoring equipment in use at the facility were reviewed. Calibrations were completed

according procedure using NIST traceable calibration sources. Calibration frequency generally met the requirements established in the applicable manuals and records were being maintained as required except as noted below.

(B) Instrument Out of Calibration

During the inspection, it was noted that one instrument was out of calibration. An Eberline E-120 had been calibrated on July 27, 2005, but not calibrated since. When the various instruments had been reassigned, a number of the instruments and responsibility for their maintenance and calibration was retained by the reactor staff and the other instruments were the responsibility of the RSO. In that process, this instrument had apparently been overlooked. The licensee immediately removed the instrument from service and replaced it with one that had been calibrated as required. Arrangements were made to have of Eberline E-120 calibrated.

In reviewing the situation further, the inspector noted that the instrument had been kept in an Emergency Kit and had not available for general use at the facility. The licensee was informed that failure to calibrate an instrument annually as required by procedure was a violation. However, since this instrument had not been actively used at the facility, it was determined that this failure constitutes a non-repetitive violation of minor significance and is being treated as a Non-Cited Violation (NCV), consistent with Section IV of the NRC Enforcement Policy (NCV 50-027/2006-201-01).

(5) Radiation Protection Program

The licensee's Radiation Protection Program was established in the WSU Nuclear Radiation Center Administrative Procedure of the same name which was last reviewed in March 2006. The program was further explained in the campus document entitled, "WSU Radiation Protection Program Manual," dated March 15, 1994. The program required that all personnel who had unescorted access to work in a radiation area or with radioactive material receive training in radiation protection, policies, procedures, requirements, and facilities prior to entry. As noted previously, the program was being reviewed annually as required.

(6) ALARA Policy

The ALARA Policy was also outlined and established in the WSU Nuclear Radiation Center Administrative Procedure, "Radiation Protection Program." The ALARA program provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

(7) Radiation Protection Training

The inspector reviewed documentation of the training given to new employees by the WSU Radiation Safety Office entitled, "Radiation Safety Course." The content of the course given was acceptable and the training program generally satisfied requirements in 10 CFR 19.12.

## (8) Facility Tours

The inspector toured the Control Room, Pool Room, Heat Exchanger/Pump Room, Beam Room, and selected support laboratories and offices. Control of radioactive material and control of access to radiation and high radiation areas were acceptable. As noted earlier, the postings and signs for these areas were appropriate.

### c. Conclusions

The inspector determined that the Radiation Protection Program being implemented by the licensee satisfied regulatory requirements because: 1) surveys were being completed and documented acceptably; 2) postings met regulatory requirements; 3) personnel dosimetry was being worn as required and doses were well within the NRC's regulatory limits; 4) radiation monitoring equipment was generally being maintained and calibrated as required; and, 5) acceptable radiation protection training was being provided.

## 5. Effluent and Environmental Monitoring

### a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.7-3.9, 3.12, 5.6, and 6.10:

- C Preventative Maintenance Checklists for 2005 and 2006
- C Radiation Monitor Calibration Schedule Forms for 2005 and 2006
- C Annual Reports issued by the licensee for reporting periods: July 2004 - June 2005, and July 2005 - June 2006
- C airborne release records documented in the Average Monthly Concentration of Ar-41 Released section of the Reactor Operations Summary Log for the period from 2004 to the present
- C liquid release records also documented in the Reactor Operations Summary Log and calculated on the appropriate forms in the Liquid Waste Tank Release Data Log for the period from 2004 to the present
- C WSU Monthly Console Auxiliary Equipment Maintenance Checklist for 2006
- C WSU Monthly Reactor Auxiliary Equipment Maintenance Checklist for 2006
- C WSU Nuclear Radiation Center SOP No. 11, "Standard Procedure for Analysis of Liquid Waste Samples," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 17, "Standard Procedure for Ar-41 Monitor Checkout and Calibration," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 20, "Standard Procedure for Environmental Monitoring," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 21, "Standard Procedure for TLD Environmental Monitoring Program," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 25, "Standard Procedure for Continuous Air Monitor Check and Calibration," last revised December 4, 2003
- C WSU Nuclear Radiation Center SOP No. 28, "Standard Procedure for Continuous Air Monitor Filter Analysis," last revised September 29, 2005

b. Observation and Findings

The inspector reviewed the calibration records of the area and stack monitoring systems. These systems had been calibrated annually according to procedure. The monthly setpoint verification, alarm check, and operability records for the monitoring equipment were also reviewed. Corrective actions, including recalibration, were completed if the setpoint values were exceeded.

The inspector also reviewed the records documenting liquid and airborne releases to the environment for the past two years. The inspector determined that gaseous release activity continued to be calculated as required by procedure and the results were adequately documented. The releases were determined to be within the annual dose constraints of 10 CFR 20.1101 (d), 10 CFR Part 20 Appendix B concentrations, and TS limits. Liquid release activity was calculated as required and releases were approved by the Reactor Supervisor or an SRO after analyses indicated that they met regulatory requirements for discharge into the sanitary sewer. Through observation of the facility, the inspector did not identify any new potential release paths.

On-site and off-site environmental gamma radiation monitoring was completed using TLDs in accordance with the applicable procedures. The data indicated that there were no measurable doses above any regulatory limits. These results and those above were acceptably reported in the Reactor Operations Annual Report for 2004-2005 and 2005-2006.

c. Conclusions

Effluent monitoring satisfied license and regulatory requirements and releases were within the specified regulatory and TS limits.

## 6. **Transportation**

a. Inspection Scope (IP 86740)

The inspector reviewed the following to verify compliance with procedural requirements for transferring licensed material:

- C records of radioactive material shipments for June 2005 and to the present
- C WSU Nuclear Radiation Center SOP No. 31, "Standard Procedure for Off-Site Shipment of Radioactive Material," last revised October 30, 1995
- C WSU Nuclear Radiation Center SOP No. 33, "Standard Procedure for Receiving and Opening Packages Containing Licensed Materials," last revised December 4, 2003

b. Observations and Findings

Through records review and 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. Although a few minor discrepancies were noted, the radioactive material shipment records reviewed by the inspector had generally been completed in accordance with Department of Transportation and NRC requirements. No problems of any safety significance were noted.

c. Conclusions

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

## 7. Follow-up on Previously Identified Issues

a. Inspection Scope

The inspector reviewed the actions taken by the licensee following identification of two violations (VIOs) during an inspection in June 2004, and documented in NRC Inspection Report No. 50-027/2004-201, dated June 28, 2004.

b. Observations and Findings

- (1) VIO 50-027/2004-201-01 - Failure to include the applicable Transport Index (TI) on the shipping papers of shipments of radioactive material packages labeled as Yellow II.

During the inspection in June 2004, the inspector reviewed various shipping papers prepared by the licensee for the period from June 2002 to June 2004. The inspector noted certain discrepancies with the shipping papers prepared for various shipments of packaged radioactive material labeled as Radioactive Yellow II. On various occasions, when the licensee had prepared shipping papers for specific individuals and had not used a common carrier such as FedEx for example, the shipping papers did not contain all the required information. (In those instances when a common carrier was used, the licensee generated additional shipping papers, usually as required by the carrier.) When the licensee used only the internally generated documents as the formal shipping papers and used them to accompany the shipment, no TI was listed. A one meter radiation level reading, listed in millirem per hour (mrem/hr), was entered on the shipping papers but nothing was listed indicating the TI and no dimensionless number was given.

The inspector reviewed the corrective actions the licensee had taken. The licensee had revised the template used to generate the shipping papers. The template included a specific area or space that required an entry for the TI. This reminded those preparing the paperwork to make an entry in that space. In reviewing the shipping paperwork since 2004, no such errors were noted. This VIO is considered closed.

- (2) VIO 50-027/2004-201-02 - Failure to assign the appropriate Transport Index to packages of radioactive material with radiation level readings of 0.06 mrem/hr or

greater at 1 meter and failure to designate the shipments as Yellow II and to affix the proper label to packages of radioactive material based on the TI (which was the highest category required).

During the inspection in June 2004, the inspector also noted various discrepancies when certain packages of radioactive material were shipped and a White I label was applied to the package. On various occasions radiation readings, taken one meter from the external surface of the radioactive material package being shipped, yielded results of 0.06 mrem/hr or greater. This would have yielded a TI of 0.1, using the "rounded up to the next tenth" rule stated in 49 CFR 173.403 and with a TI of 0.1 or greater a Yellow II label for the package as stipulated by 49 CFR 172.403 would be required.

The inspector reviewed this issue during this inspection. It was noted that the licensee had changed the algorithm used to generate the appropriate TI and subsequently used to assign the appropriate label. In reviewing the shipping paperwork since 2004, no instances were noted of an improper TI or label when the algorithm was used. This VIO is considered closed.

c. Conclusions

The licensee had taken adequate corrective actions and two previously identified violations were closed.

**8. Exit Interview**

The inspection scope and results were summarized on August 31, 2006, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.



## **PARTIAL LIST OF PERSONS CONTACTED**

### **Licensee Personnel**

E. Corwin	Reactor Supervisor
K. Fox	Training Coordinator, Security Manager, and Emergency Director
M. Innes	Reactor Operator Trainee
D. King	Senior Reactor Operator
J. Petersen	Vice Provost for Research
D. Wall	Director, Nuclear Radiation Center

### **Other Personnel**

J. Elliston	Chair, Reactor Safeguards Committee
S. Eckberg	Director, WSU Radiation Safety Office

## **INSPECTION PROCEDURES USED**

IP 69001	Class II Research and Test Reactors
IP 86740	Inspection of Transportation Activities

## **ITEMS OPENED, CLOSED, AND DISCUSSED**

### **Opened**

50-027/2004-201-01	NCV	Failure to calibrate an instrument annually as required by procedure.
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### **Closed**

50-027/2004-201-01	VIO	Failure to include the applicable TI on the shipping papers of shipments of radioactive material packages labeled as Yellow II.
50-027/2004-201-02	VIO	Failure to assign the appropriate Transport Index to packages of radioactive material with radiation level readings of 0.06 mrem/hr or greater at 1 meter and failure to designate the shipments as Yellow II and to affix the proper label to packages of radioactive material based on the TI (which was the highest category required).
50-027/2004-201-01	NCV	Failure to calibrate an instrument annually as required by procedure.

## **PARTIAL LIST OF ACRONYMS USED**

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
DDE	Deep dose equivalent
IP	Inspection Procedure
mrem/hr	millirem per hour
NCV	Non-cited violation
NRC	Nuclear Regulatory Commission
OSL	Optically stimulated luminescence (dosimeter)

RSC	Reactor Safeguards Committee
RSO	Radiation Safety Office
SDE	Shallow dose equivalent
SOP	Standard Operating Procedure
SRO	Senior Reactor Operator
TI	Transport Index
TLD	Thermoluminescent dosimeter
TS	Technical Specifications
VIO	Violation
WSU	Washington State University