

May 29, 2003

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

SUBJECT: NRC INSPECTION REPORT NO. 50-027/2003-201, NOTICE OF VIOLATION  
AND NOTICE OF DEVIATION

Dear Dr. Petersen:

This refers to the inspection conducted on May 5-8, 2003, at your Washington State University TRIGA research reactor in the Nuclear Radiation Center. The enclosed report presents the results of that inspection.

Various aspects of your reactor operations and security programs were inspected, including selective examinations of procedures and representative records, interviews with personnel, and observations of the facility. Based on the results of this inspection, the NRC has identified two violations of NRC requirements and a deviation from a commitment made to the NRC. The violations are cited in the enclosed Notice of Violation and the deviation is cited in the enclosed Notice of Deviation. The circumstances surrounding the violations and deviation are described in detail in the subject inspection report. The violations are of concern because they would have been prevented if you had followed your Emergency Plan.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notices when preparing your response. The NRC will use your response in accordance with its policies to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>.

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

Sincerely,

*/RA/*

William D. Beckner, Program Director  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

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

Enclosures: 1. Notice of Violation  
2. Notice of Deviation  
3. NRC Inspection Report No. 50-027/2003-201

cc w/enclosures: Please see next page

Washington State University

Docket No. 50-27

cc:

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Chair, Reactor Safeguards Committee  
Washington State University  
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Test, Research, and Training Reactors  
Newsletter  
University of Florida  
202 Nuclear Sciences Center  
Gainesville, FL 32611

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Washington State University  
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NOTICE OF VIOLATION

Washington State University  
Nuclear Radiation Center

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

During an NRC inspection conducted on May 5-8, 2003, two violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violations are listed below:

Section 6.8(3) of the Technical Specifications requires that the licensee have written operating procedures for emergency situations including provisions for building evacuation, earthquake, radiation emergencies, fire or explosion, personal injury, civil disorder, and bomb threat.

- A. Section 3.1.12 of the Emergency Plan requires that an annual training program, including principles of radiation safety and contamination control, be conducted for the emergency room staff of the (Pullman Memorial) hospital.

Section 10.1 of the Emergency Plan requires that, among other support groups, Memorial Hospital emergency room personnel be trained on an annual basis in radiation safety and Nuclear Radiation Center emergency procedures.

Contrary to the above, during 2001, 2002, and to-date in 2003, the Nuclear Radiation Center had not provided training in radiation safety and Nuclear Radiation Center emergency procedures for Pullman Memorial Hospital emergency room personnel.

This is a Severity Level IV violation (Supplement VIII).

- B. Section 8.4 of the Emergency Plan requires that written agreements with respect to arrangements for hospital, medical, and other emergency services shall be updated on a biennial basis.

The agreement between the licensee and the hospital, entitled "Emergency Service Agreement in the Event of a Radiological Incident at the Washington State University (WSU) Nuclear Radiation Center," in effect from April 1, 2000 through March 31, 2002, and the one currently in effect, states that Pullman Memorial Hospital has been provided with a copy of the WSU Nuclear Radiation Center Emergency Plan and the associated implementing procedures. The agreement further states that Pullman Memorial Hospital agrees to participate in annual training sessions for the individuals who will provide the support services as well as an annual drill exercise.

Contrary to the above, during an interview on May 8, 2003, representatives of the Pullman Memorial Hospital stated that they had not been provided with a copy of the WSU Nuclear Radiation Center Emergency Plan and the associated implementing procedures. Also, during the years 2001, 2002, and to-date in 2003, no annual drill exercises have been conducted by the WSU Nuclear Radiation Center with the Pullman Memorial Hospital.

This is a Severity Level IV violation (Supplement VIII).

Pursuant to the provisions of 10 CFR 2.201, the Washington State University is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the responsible inspector, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated at Rockville, Maryland  
this 29<sup>th</sup> day of May 2003.

NOTICE OF DEVIATION

Washington State University  
Nuclear Radiation Center

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

During an NRC inspection conducted on May 5-8, 2003, a deviation from your commitment to the NRC to revise your Emergency Plan was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the deviation is listed below:

Following an inspection in May 2002, the licensee made a commitment to the NRC to revise the Nuclear Radiation Center Emergency Plan to reflect actual training practices at the facility. The revision was to reflect the practice of providing training for support personnel (i.e., police, fire department and hospital personnel) on a triennial rather than on an annual basis.

Contrary to the above, during a review on May 8, 2003, it was noted that no revision of the training requirements or practices had been made of the Emergency Plan in use by the Nuclear Radiation Center.

Please provide to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555, with a copy to the responsible inspector, a reply in writing within 30 days of the date of this Notice. This reply should be clearly marked as a "Reply to a Notice of Deviation" and should include: (1) the reason for the deviation, or if contested, the basis for disputing the deviation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further deviations, and (4) the date when your corrective action will be completed. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Dated at Rockville, Maryland  
this 29th day of May 2003.

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

Docket No: 50-027

License No: R-76

Report No: 50-027/2003-201

Licensee: Washington State University

Facility: Nuclear Radiation Center

Location: Pullman, WA

Dates: May 5-8, 2003

Inspector: Craig Bassett

Approved by: William D. Beckner, Program Director  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

This routine, announced inspection involved onsite review of selected programs and activities since the last NRC inspection including: Organizational Structure and Staffing, Review and Audit Functions and Design Control, Operation of the Reactor, Experiments, Fuel Handling, Surveillance, Maintenance, Procedures, and Emergency Preparedness.

### Organizational Structure and Staffing

- The operations organizational structure and responsibilities were consistent with Technical Specifications requirements.
- Shift staffing met the minimum requirements for current operations.

### Review and Audit Functions and Design Control

- The review and audit program was being conducted acceptably by the Reactor Safeguards Committee.
- No design changes had been proposed or completed since the previous NRC inspection at the facility.

### Operations

- Operational activities were consistent with applicable Technical Specifications and procedural requirements.

### Experiments

- Conduct and control of experiments and irradiations met the requirements specified in the Technical Specifications, the applicable experiment and irradiation authorizations, and associated procedures.

### Fuel Handling

- Fuel handling activities and documentation were as required by Technical Specifications and facility procedures.

### Surveillance

- The program for tracking and completing surveillance checks and Limiting Conditions for Operation verifications satisfied Technical Specifications requirements and licensee administrative controls.

### Maintenance

- Maintenance logs, records, performance, and reviews satisfied Technical Specifications and procedure requirements.

### Procedures

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

### Emergency Preparedness

- The emergency response program was generally conducted in accordance with the requirements stipulated in the facility Emergency Plan.
- Two violations were identified for failure to provide training to the emergency room staff at the Pullman Memorial Hospital and failure to conduct an annual drill with the hospital as required by the Emergency Plan.
- A deviation was noted for failure to revise the Emergency Plan as committed during an inspection in May 2002.

## REPORT DETAILS

### **Summary of Plant Status**

The licensee's one megawatt Research and Test Reactor continued to be operated in support of education, operator training, irradiation of various materials, and experiments involving Boron Neutron Capture Therapy work. 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. 17, dated April 3, 1998, were being met:

- Washington State University (WSU) Nuclear Radiation Center organizational structure and staffing
- staff qualifications
- management responsibilities
- staffing requirements for the safe operation of the facility
- WSU Nuclear Radiation Center Reactor Log sheets from May 2002 through May 2003
- WSU Nuclear Radiation Center Administrative Procedure Number (No.) 1, "Responsibilities and Authority of Reactor Operating Staff," (not dated)

#### b. Observations and Findings

The Nuclear Radiation Center organizational structure and the responsibilities of the reactor staff had not changed since the last inspection. However, staffing levels had changed. One Senior Reactor Operator (SRO), who previously worked at the facility, had found other employment, while another individual had taken the NRC examination to become a Reactor Operator (RO) and had received his license. One RO position was open but the licensee had made an offer to an individual who was scheduled to begin work at the facility in June 2003.

The inspector determined that the reactor operations staff satisfied the training and experience requirements stipulated in the TS. In addition, the operations log and associated records confirmed that shift staffing met the minimum requirements for duty and on-call personnel.

#### c. Conclusions

The operations organizational structure and responsibilities were consistent with TS requirements. Shift staffing met the minimum requirements for current operations.

## 2. Review and Audit Functions and Design Control

### a. Inspection Scope (IP 69001)

In order to verify that the licensee had established and conducted reviews and audits as required in TS Section 6.5, the inspector reviewed selected aspects of:

- Reactor Safeguards Committee (RSC) meeting minutes for 2002 to date
- safety review and audit records documented on WSU Nuclear Radiation Center forms entitled, "Reactor Safeguards Committee Facility Records Quarterly Audit," for the period from April 2002 through the present
- responses to the safety reviews and audits
- WSU Nuclear Radiation Center Administrative Procedure No. 3, "Approval and Review of Facility Modifications and Special Tests or Experiments," (not dated)

### b. Observations and Findings

The RSC membership satisfied TS requirements and the Committee's procedural rules. The RSC had quarterly meetings as required and a quorum was present. Review of the committee meeting minutes indicated 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 biennial reviews of the emergency and security plans had been conducted and acceptably documented.

Through records review and interviews with licensee personnel, the inspector determined that no design changes had been proposed or completed since the last NRC inspection at the facility in May 2002 (refer to NRC Inspection Report No. 50-027/2002-201, ADAMS Accession Number ML021350266).

### c. Conclusions

The review and audit program was being conducted acceptably by the Reactor Safeguards Committee. No design changes had been proposed or completed during the past twelve months.

## 3. Operations

### a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with TS Section 6.2 and the applicable procedures:

- WSU Nuclear Radiation Center Reactor Log sheets from May 2002 through May 2003

- selected entries on forms entitled WSU Nuclear Radiation Center Form No. 34, "WSU Reactor Start-Up Checkoff," Revision March 5, 2002
- Scram Summary Log entries from January 2002 through May 2003
- Pulsing Summary Log entries from January 2002 through May 2003
- staffing for operations as recorded on the Reactor Log sheets
- observation of selected startup, operations, and shutdown activities on May 6, 7, and 8, 2003
- the licensee's reports entitled "Annual Report on the Operation of the Washington State University TRIGA Reactor" for July 1, 2000 through June 30, 2001, and July 1, 2001 through June 30, 2002
- WSU Nuclear Radiation Center SOP No. 1, "Standard Procedure for Use of the Reactor," dated November 29, 1995
- WSU Nuclear Radiation Center SOP No. 4, "Standard Procedure for Startup, Operation, and Shutdown of the Reactor," dated November 29, 1995

b. Observations and Findings

Reactor operations were carried out following written procedures and TS requirements. Information on the operational status of the facility was recorded in log books and on checklists as required by procedures and TS. Use of maintenance and repair logs satisfied procedural requirements. Operational problems and events noted in the operations log were reported, reviewed, and resolved as required by TS and administrative procedures. Scrams were identified in the logs and records, reported as required, and their cause(s) resolved before the resumption of operations under the authorization of an SRO.

The inspector verified that TS and procedure required items were logged and cross referenced with other logs and/or forms, as required, and that TS operational limits had not been exceeded.

As noted previously, operations logs and records confirmed that shift staffing met the minimum requirements for duty and on-call personnel.

c. Conclusions

The Operational activities were found to be consistent with applicable TS and procedural requirements.

#### 4. Experiments

a. Inspection Scope (IP 69001)

To verify compliance with the licensee's program for conducting experiments and irradiations as outlined in TS Sections 3.10 and 6.5.4 and in various procedures, the inspector reviewed selected aspects of:

- WSU Nuclear Radiation Center Reactor Log sheets and irradiation records from May 2002 through May 2003

- experiment approvals documented on WSU Nuclear Radiation Center Form No. 2, entitled "Experiment Request Form," form dated December 1972, with the associated WSU Nuclear Radiation Center Form No. 4, entitled "Experiment Authorization Form," form dated August 1975
- annual reviews documented in RSC meeting minutes
- irradiation approvals documented on WSU Nuclear Radiation Center Form No. 1, entitled "Irradiation Request Form," dated October 1992, with the associated WSU Nuclear Radiation Center Form No. 3, entitled "Irradiation Authorization Form," form dated October 1980
- Irradiation Data Log sheets for the period from May 2002 to the present
- WSU Nuclear Radiation Center SOP No. 1, "Standard Procedure for Use of the Reactor," dated November 29, 1995
- WSU Nuclear Radiation Center SOP No. 2, "Standard Procedure for Performing Irradiations Using the Reactor," dated April 24, 2001
- WSU Nuclear Radiation Center SOP No. 3, "Standard Procedure for Performing Experiments Using the Reactor," dated February 2, 1995

b. Observations and Findings

The inspector reviewed in detail an irradiation request form and the associated authorization form that had been approved since the last inspection. That request form for Commercial Users, C-5, approved April 15, 2003, involved generation of short lived fission products to measure coincidence radionuclide analysis systems. The request form contained the appropriate information and had been reviewed and approved as required by TS and procedure.

c. Conclusions

The conduct and control of experiments and irradiations met the requirements specified in the TS and the applicable experiment and irradiation authorizations and procedures.

## 5. **Fuel Handling**

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to ensure that the licensee was complying with TS Sections 4.4, 5.1, 5.2, and 6.9:

- WSU Nuclear Radiation Center Reactor Log sheets from 2001 through the present
- fuel handling equipment and instrumentation
- Core Change Log
- WSU Nuclear Radiation Center SOP No. 7, "Standard Procedure for Core Changes and Fuel Movement," dated February 17, 1995
- WSU Nuclear Radiation Center SOP No. 8, "Standard Procedure for Control Element Maintenance, Removal, and Replacement," dated February 17, 1995

b. Observations and Findings

Procedures for refueling, fuel movement, and TS required surveillances ensured controlled operations for Core 33X, which was a mixed core of FLIP and standard fuel elements. A detailed plan for performing fuel movement was required to be developed prior to each fuel movement operation.

The inspector noted that the data recorded for fuel movements that had been conducted in the past were acceptable and were required to be cross referenced in the operations logs. Log entries indicated fuel movements were completed under the direct supervision of an SRO as required. Through records review and interviews with licensee personnel, the inspector determined that no fuel movements had been conducted since the last NRC inspection at the facility in May 2002.

c. Conclusions

The fuel handling activities and documentation were as required by facility TS and procedures.

**6. Surveillance**

a. Inspection Scope (IP 69001)

To verify compliance with TS Sections 3 and 4, the inspector reviewed selected aspects of:

- Preventative Maintenance Checklists for 2002 and to date in 2003
- Power Calibration Log for 2001 through the date of the inspection
- Control Element Inspection Log
- Control Element Calibration Log
- other related surveillance, calibration, and test data sheets and records
- WSU Nuclear Radiation Center Administrative Procedure No. 5, "Surveillance Documentation Review," (not dated)
- WSU Nuclear Radiation Center SOP No. 13, "Standard Procedure for Performing Power Calibrations," dated May 3, 1994
- WSU Nuclear Radiation Center SOP No. 14, "Standard Procedure for Calibration of Pulse Instrumentation," dated April 24, 2001
- WSU Nuclear Radiation Center SOP No. 15, "Standard Procedure for Alignment of the Fuel Temperature System," dated March 1, 1992
- WSU Nuclear Radiation Center SOP No. 16, "Standard Procedure for Control Element Calibration," dated February 20, 1995

b. Observations and Findings

The Inspector determined that the daily, weekly, monthly, semiannual, and other periodic checks, tests, and verifications for TS required Limiting Conditions for Operations (LCOs) were being completed as required. In addition, all surveillance and LCO verifications reviewed were completed on schedule as required by TS and in accordance with licensee procedures. Extensive checklists were used to track

completion of the various required surveillances and LCO verifications. The checklists included the date the activity was completed and by whom. These checklists provided acceptable documentation of the results and proper control of reactor operational tests and surveillances. Some of the daily and periodic checks of equipment operability included recording system parameters such as temperature, pressure, and flow. All recorded results observed by the inspector were within prescribed TS and procedure parameters and in close agreement with the previous surveillance results.

c. Conclusions

The program for tracking and completing surveillance checks and LCO verifications satisfied TS requirements and licensee administrative controls.

**7. Maintenance**

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- equipment maintenance as documented in the WSU Nuclear Radiation Center Form No. 40, entitled "Console Auxiliary Equipment Maintenance Checklist," form dated May 2000 and in the Maintenance Log
- Preventative Maintenance Checklists for 2002 and to date in 2003
- WSU Nuclear Radiation Center Reactor Log sheets from 2001 through the present
- RSC meeting minutes for the past two years
- WSU Nuclear Radiation Center Administrative Procedure No. 6, "Performance of Maintenance Activities," (not dated)
- WSU Nuclear Radiation Center SOP No. 5, "Standard Procedure for Performing Preventive Maintenance on the Reactor and Associated Equipment," dated April 24, 2001
- WSU Nuclear Radiation Center SOP No. 8, "Standard Procedure for Control Element Maintenance, Removal, and Replacement," dated February 17, 1995
- WSU Nuclear Radiation Center SOP No. 25, "Standard Procedure for Purification System Resin and Filter Change," dated December 28, 1982
- WSU Nuclear Radiation Center SOP No. 28, "Standard Procedure for Removal and Installation of the Reactor Pool Room Ventilation System Absolute Filters," dated December 5, 1995
- WSU Nuclear Radiation Center Temporary Operating Procedure No. 1, "Procedure for Cooling System Cutout Switch Maintenance," dated January 26, 2001

b. Observations and Findings

The Inspector observed that routine and preventive maintenance was controlled by and documented in the maintenance or reactor operations logs and the monthly Console Auxiliary Equipment Maintenance Checklists consistent with the TS and licensee procedures. Unscheduled maintenance or repairs were reviewed to

determine if they required a 50.59 evaluation. Verifications and operational systems checks were performed to ensure system operability before return to service.

c. Conclusions

The maintenance logs, records, performance, and reviews satisfied TS and procedure requirements.

**8. 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:

- selected administrative and standard operating procedures
- records of procedure revision or review documented on licensee forms entitled, "Procedure Approval and Review Form"
- observation of procedure implementation
- administrative controls as outlined in WSU Nuclear Radiation Center Administrative Procedure No. 2, "Standard Procedure for the Approval, Revision, and Review of Standard Operating Procedures," (not dated)

b. Observations and Findings

The Inspector found the operations procedures were available for those tasks and activities required by the TS and facility directives and that written changes were reviewed and approved by the RSC as required. In addition, the SOPs were reviewed biennially as required by TS Section 6.5.4 with the last review having been completed November 8, 2001.

Through observation of reactor operations and experiment handling, the inspector verified that licensee personnel conducted TS activities in accordance with applicable procedures. Training of personnel on procedures and changes was determined to be acceptable.

c. Conclusions

The review, revision, control, and implementation of procedures by the licensee satisfied TS requirements.

**9. Emergency Preparedness**

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- Emergency Plan and implementing procedures
- emergency response facilities, supplies, equipment, and instrumentation

- training records for licensee staff and support personnel
- offsite support as documented in the Letter of Agreement with the hospital
- emergency drills and exercises for the past two years
- WSU Nuclear Radiation Center SOP No. 6, "Standard Procedure in the Event of an Emergency Situation," dated February 17, 1995
- WSU Nuclear Radiation Center SOP No. 32, "Standard Procedure for Security and Emergency Plan Training for Nuclear Radiation Center, Radiation Safety Office, and Campus Police Personnel," dated November 18, 1997

b. Observations and Findings

(1) Emergency Plan Implementation

The Emergency Plan (E-Plan) in use at the Nuclear Radiation Center was the same as the version most recently approved by the NRC dated June 19, 1994. The E-Plan was audited and reviewed biennially as required. Implementing procedures were reviewed and revised as needed to effectively implement the E-Plan. Emergency facilities, instrumentation, and equipment were being maintained and controlled, and supplies were being inventoried quarterly as required in the E-Plan.

The Inspector determined 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. The agreement with the Pullman Memorial Hospital had been updated and maintained as necessary. Communications capabilities were acceptable with these support groups and had been tested weekly and monthly as stipulated in the E-Plan. Off-site support for the facility was verified to be acceptable and in accordance with the E-Plan.

In addition, the Inspector determined that the emergency drills were generally being conducted as required by the E-Plan. In one instance, credit was taken for an actual event which required the response of the emergency organization. Critiques were written following the drills and/or the event to document any strengths and weaknesses identified and to develop possible solutions to any problems noted.

(2) Problems Noted with Plan Implementation

Section 6.8(3) of the TS requires that the licensee have written operating procedures for emergency situations including provisions for building evacuation, earthquake, radiation emergencies, fire or explosion, personal injury, civil disorder, and bomb threat.

Section 3.1.12 of the E-Plan requires that an annual training program, including principles of radiation safety and contamination control, be conducted for the emergency room staff of the (Pullman Memorial) hospital. In addition, Section 101 of the E-Plan requires that, among other support groups, Memorial Hospital emergency room personnel be trained on an annual basis in radiation safety and Nuclear Radiation Center emergency procedures.

The inspector reviewed the training that the licensee had provided to various support organizations for the past three years. During 2001, 2002, and to date in 2003, annual training had been provided to WSU Police Department personnel. Records indicated that some training had also been provided to WSU Fire Department personnel during that period. However, during 2001, 2002, and to date in 2003, the inspector determined that no training had been provided by the Nuclear Radiation Center for Memorial Hospital emergency room personnel in radiation safety and Nuclear Radiation Center emergency procedures.

The licensee was informed that failure to conduct training for Memorial Hospital emergency room personnel in radiation safety and Nuclear Radiation Center emergency procedures was an apparent violation (VIO) of TS Section 6.8(3) (VIO 50-027/2003-201-01).

Section 8.4 of the Emergency Plan requires that written agreements with respect to arrangements for hospital, medical, and other emergency services shall be updated on a biennial basis.

The support agreement between the licensee and the hospital entitled, "Emergency Service Agreement in the Event of a Radiological Incident at the WSU Nuclear Radiation Center," in effect from April 1, 2000 through March 31, 2002, and the one currently in effect states that Pullman Memorial Hospital has been provided with a copy of the WSU Nuclear Radiation Center Emergency Plan and the associated implementing procedures. The Agreement further states that Pullman Memorial Hospital agrees to participate in annual training sessions for the individuals who will provide the support services as well as an annual drill exercise, implying that drills are to be conducted annually.

The inspector toured the Pullman Memorial Hospital with hospital representatives on May 8, 2003. During the tour the inspector asked hospital personnel about their response capabilities and what the Nuclear Radiation Center could do to help the hospital personnel fulfill their role of providing support medical services for the reactor facility. The hospital representatives stated that they had not been provided with a copy of the WSU Nuclear Radiation Center Emergency Plan and the associated implementing procedures. They also indicated that they would like to have the Nuclear Radiation Center provide annual training for emergency response staff and would like to have an annual drill with the Nuclear Radiation Center. The hospital staff members indicated that the last drill involving them was held in 1996. The inspector subsequently checked the records of exercises and drills at the reactor facility. The licensee records indicated that, during the years 2001, 2002, and to date in 2003, no annual drill exercises had been conducted by the WSU Nuclear Radiation Center with the Pullman Memorial Hospital. The most recent drill held by the licensee with the hospital was apparently on February 24, 1997.

The licensee was informed that failure to provide the hospital with a copy of the WSU Nuclear Radiation Center Emergency Plan and the associated implementing procedures and failure to conduct annual drill exercises with the

Pullman Memorial Hospital was another apparent violation of TS Section 6.8(3) (VIO 50-027/2003-201-02).

c. Conclusions

The emergency response program was generally conducted in accordance with the requirements stipulated in the Emergency Preparedness Plan. Two violations were noted with respect to implementation of the Plan.

**10. Follow-up on Previously Identified Issues**

a. Inspection Scope

The inspector reviewed the actions taken by the licensee following identification of Inspector Follow-up Items (IFI) during an inspection in May 2002, and documented in NRC Inspection Report No. 50-027/2002-201, dated May 30, 2002.

b. Observations and Findings

- (1) IFI 50-027/2002-201-02 - Follow-up on the clarification of the last step in the Reactor Startup Checkout.

During the inspection in May 2002, the inspector reviewed a report sent to the NRC on August 7, 2000. The report detailed a licensee-identified monitoring failure that occurred during the month of June 2000. The radionuclide content of the reactor pool water was required to be monitored monthly at an interval not to exceed six weeks in order to detect a significant leak in the sources stored in the reactor pool. Due to personnel error, this monitoring was not performed in June. The oversight was detected July 31, 2000, at which time a pool water sample was obtained and analyzed. The water sample showed no abnormal radionuclide levels. One of the licensee's corrective items was to add an item to the Reactor Startup Checkout to ensure that all operations, i.e., all required surveillances, were completed before reactor operation. During the 2002 inspection it was noted that an item had been added to the Checkout sheet but it was unclear as to what it directed the operators to do.

The inspector checked on the clarification of this step in the Reactor Startup Checkout. To date the licensee had not added any further guidance to the final step in the Startup Checkout sheet but indicated that this would be done by the end of the week.

This item remains open pending final clarification of the Reactor Startup Checkout procedure.

- (2) IFI 50-027/2002-201-03 - Follow-up on the issue of revising the E-Plan to reflect actual training practices currently in use at the facility.

During the inspection in May 2002, the inspector noted that the training was not being conducted annually for all groups specified in the E-Plan. The licensee

stated that the emergency response training had always been given to the Campus Police, WSU Fire Department and Ambulance Service personnel, and Memorial Hospital on a rotating basis so that all groups received training about every three years. Because of this interpretation of the E-Plan by the licensee, the inspector indicated that something would need to be changed. Either the training would need to be conducted or the E-Plan should be changed to require triennial training of support groups. As a result, the licensee made a commitment to the inspector to change the E-Plan language to conform with the actual practice.

The inspector reviewed the issue of revising the E-Plan to reflect actual training practices involving support groups. No revision had been completed as of the date of the inspection. The licensee was informed that failure to revise the E-Plan was a deviation (DEV) from a commitment made to the NRC (DEV 50-027/2003-201-03). This IFI is considered closed.

c. Conclusions

The licensee had not completed a change to the Reactor Startup Checkout procedure that would provide clarification for the last step. Also, the licensee failed to fulfill a commitment made to the NRC during the last inspection in May 2002 which resulted in a deviation.

**11. Exit Interview**

The inspection scope and results were summarized on May 8, 2003, 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

E. Corwin	Reactor Technician (RO)
K. Fox	Project Associate and SRO
S. Sharp	Reactor Supervisor
G. Tripard	Director, Nuclear Radiation Center

### Other Personnel

D. Hagihara	Chairman, Reactor Safeguards Committee
L. Porter	Director, WSU Radiation Safety Office

## INSPECTION PROCEDURES USED

IP 69001      Class II Research and Test Reactors

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

50-027/2003-201-01	VIO	Failure to conduct training for Memorial Hospital emergency room personnel in radiation safety and Nuclear Radiation Center emergency procedures as required by the Emergency Plan.
50-027/2003-201-02	VIO	Failure to provide the hospital with a copy of the WSU Nuclear Radiation Center Emergency Plan and the associated implementing procedures and failure to conduct annual drill exercises with the Pullman Memorial Hospital.
50-027/2003-201-03	DEV	Failure to fulfill a commitment made to the NRC concerning revision of the Emergency Plan to reflect actual training practices.

### Closed

50-027/2002-201-03	IFI	Follow-up on the issue of revising the E-Plan to reflect actual training practices currently in use at the facility.
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### Discussed

50-027/2002-201-02	IFI	Follow-up on the clarification of the last step in the Reactor Startup Checkout.
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## PARTIAL LIST OF ACRONYMS USED

ADAMS	Agencywide Documents and Management System
CFR	Code of Federal Regulations
DEV	Deviation
E-Plan	Emergency Plan
IFI	Inspector Follow-up Item
IP	Inspection Procedure
LCO	Limiting Conditions for Operation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RSC	Reactor Safeguards Committee
SOP	Standard Operating Procedure
SRO	Senior Reactor Operator
RO	Reactor Operator
TS	Technical Specifications
VIO	Violation
WSU	Washington State University