

November 26, 2003

Mr. Ralph Butler, Interim Director  
Research Reactor Center  
University of Missouri-Columbia  
Research Park  
Columbia, MO 65211

SUBJECT: NRC INSPECTION REPORT NO. 50-186/2003-203

Dear Mr. Butler:

This letter refers to the inspection conducted on November 3-6, 2003, at the University of Missouri Research Reactor (MURR) facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of this inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress. Based on the results of this inspection, no significant safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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>.

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

Sincerely,

*/RA/*

Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-186  
License No. R-103

Enclosure: NRC Inspection Report No. 50-186/2003-203

cc w/enclosure: Please see next page

University of Missouri-Columbia

Docket No. 50-186

cc:

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Research Reactor Facility  
Columbia, MO 65201

A-95 Coordinator  
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Office of Administration  
P.O. Box 809, State Capitol Building  
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Mr. Ron Kucera, Director  
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Test, Research, and Training  
Reactor Newsletter  
University of Florida  
202 Nuclear Sciences Center  
Gainesville, FL 32611

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ACCESSION NO.: ML033280168

TEMPLATE #: NRR-106

OFFICE	RNRP:RI	RNRP:LA	RNRP:SC
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U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No. 50-186

License No. R-103

Report No. 50-186/2003-203

Licensee: University of Missouri-Columbia

Facility: University of Missouri Research Reactor

Location: Research Park  
Columbia, Missouri

Dates: November 3-6, 2003

Inspector: Craig Bassett

Approved by: Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

University of Missouri - Columbia  
Report No. 50-186/2003-203

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the licensee's 10 Megawatt (MW) Class I research and test reactor (RTR) safety programs including: organizational structure and functions, design control and review and audit functions, reactor operations, operator requalification, maintenance and surveillance, fuel handling, experiments, procedural control, and emergency preparedness 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 Functions

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

### Design Control and Review and Audit Functions

- The evaluation of changes to facilities and procedures satisfied NRC requirements.
- The Reactor Advisory Committee and associated subcommittees were meeting as required and reviewing the topics outlined in the Technical Specifications.

### Reactor Operations

- Operations shift turnovers, communication, and operator cognizance of facility conditions were acceptable.
- Licensee management continued efforts towards establishing a safety-conscious work environment at the facility.
- The Corrective Action Program was functioning as outlined by procedure.
- The licensee had reviewed and reported on events that required Licensee Event Reports to be written as specified in the Technical Specifications.

### Operator Requalification

- Operator requalification was conducted as required by the Requalification Program.

### Maintenance and Surveillance

- The Work Control Program had enhanced the maintenance program at the facility.
- The surveillance program satisfied Technical Specification requirements.

### Fuel Handling

- Fuel movement was conducted in accordance with procedural requirements.

### Experiments

- The program for experiments generally satisfied Technical Specification and procedural requirements.

### Procedures

- The current procedure revision, control, and implementation program satisfied Technical Specifications requirements.

### Emergency Preparedness

- The emergency preparedness program was conducted in accordance with the Emergency Plan.

## REPORT DETAILS

### Summary of Plant Status

The licensee continued to operate their 10 megawatt (10 MW) research and test reactor in support of laboratory experiments, reactor operator training, various types of research, and irradiation of various target materials. During the inspection, the reactor was being operated 24-hours per day (except during the maintenance period on Monday morning) to support laboratory experiments and conduct product irradiation.

### 1. Organizational Structure and Functions

#### a. Inspection Scope (Inspection Procedure [IP] 39745)

To verify that the licensee is complying with the requirements specified in Section 6 of the MURR Technical Specifications (TS), Revision (Rev.) 12, dated September 20, 1999, the inspector reviewed selected aspects of the following:

- University of Missouri Research Reactor (MURR) organization and staffing
- management and staff responsibilities outlined in the TS
- MURR Control Room Logbooks for the period from July through November 2003
- MURR Console Watch Logbooks for the period from July through November 2003

#### b. Observations and Findings

The organizational structure had not changed since the last inspection in the area of reactor operations (refer to NRC Inspection Report No. 50-186/2002-202). The inspector noted that the Chief Operating Officer (COO) continued to fill the position of MURR facility director since the former director left. The person occupying the position of Manager, Product and Service Operations at the facility was filling the slot of COO in the interim.

Through a review of the reactor operations logs for the period from August 2002 to the present and interviews with operations personnel, the inspector determined that the licensee was operating with a five-shift rotation with one crew always on "day shift" for training purposes. Each operating crew was staffed with three to four qualified Reactor Operators (ROs) and/or Senior Reactor Operators (SROs). Record reviews and direct observations verified that shift turnover briefings were held during each shift change and that shift activities were discussed in detail.

From the above observations, the inspector also determined that the organizational structure was consistent with the requirements of TS Section 6.1.a and Figure 6.0. Staffing during reactor operation satisfied the requirements of TS Section 6.1.i.

#### c. Conclusions

The MURR organizational structure and staffing were consistent with TS requirements.

## 2. Design Control, Review and Audit Functions

### a. Inspection Scope (IP 40745)

The inspector reviewed selected aspects of the following to ensure compliance with TS Section 6.2:

- Reactor Advisory Committee meeting minutes from October 2002 through the present
- Reactor Safety Subcommittee meeting minutes from October 2002 through the present
- MURR Procedure AP-RR-003, "10 CFR 50.59 Evaluations," Rev. 1, issued June 23, 2003
- AP-RR-003 Attachment 1, 50.59 Screen Forms
- AP-RR-003 Attachment 2, 50.59 Evaluation Forms
- MURR Procedure AP-RO-115, "Modification Records," Rev. 1, issued September 18, 2003

### b. Observations and Findings

#### (1) Change Control

The regulatory requirements stipulated in 10 CFR 50.59 were implemented at the facility through MURR Procedure AP-RR-003. The procedure adequately incorporated criteria provided by the regulation with additional requirements mandated by local conditions.

All new and revised procedures generated at the facility were screened with respect to the above procedure. Non-routine maintenance activities and facility modifications were identified for screening by the facility Work Control Group with input from the on-duty lead senior reactor operator (LSRO). The procedure changes and modification packages were processed through and controlled by the Document Control Coordinator. The inspector verified that the changes to procedures were reviewed by the Procedure Review Subcommittee and the proposed facility modifications were reviewed by the Reactor Safety Subcommittee. The changes and modifications were then reviewed and approved by the Reactor Advisory Committee as required by the TS.

The inspector reviewed selected 50.59 Screen Forms and 50.59 Evaluation Forms processed within the last six months. The completed forms showed that the issues were acceptably reviewed in accordance with AP-RR-003. None of the changes or modifications reviewed by the inspector required a license amendment.

#### (2) Safety Committee Review

Records of the meetings held from October 2002 to date in 2003 by the Reactor Advisory Committee (RAC) and those of the various safety subcommittees were reviewed. The records showed that meetings were held as required and safety

reviews were conducted by the RAC or a designated subcommittee. Topics of these reviews were as required by the TS and were sufficient to provide guidance, direction, and oversight to ensure acceptable use of the reactor.

c. Conclusions

The design change program satisfied NRC requirements. The RAC and associated subcommittees were meeting as required and reviewing the topics outlined in the TS.

**3. Reactor Operations**

a. Inspection Scope (IP 39745)

To verify that the licensee was operating the reactor and conducting operations in accordance with TS Section 3 and procedural requirements, the inspector reviewed selected portions of the following:

- MURR Control Room Logbooks for the period from July through November 2003
- MURR Console Watch Logbooks for the period from July through November 2003
- Operations Shift Turnover sheets for September, October, and November 2003
- MURR Procedure AP-RR-001, "Corrective Action Program," Rev. 5, issued November 26, 2002
- MURR Procedure AP-RR-020, "Safety Concern - Nuclear Significant," Rev. 0, issued November 26, 2002
- MURR Procedure AP-RR-022, "Administrative Concern and Conflict Resolution," Rev. 1, issued May 5, 2003
- MURR Procedure AP-RR-023, "MURR Safety Oversight Committee," Rev. 0, issued November 26, 2002
- MURR Procedure AP-RR-024, "Ombudsmen Program," Rev. 0, issued November 26, 2002
- MURR Procedure AP-RR-025, "Concern Investigation," Rev. 0, issued November 26, 2002
- MURR Procedure AP-RR-026, "Event Review," Rev. 0, issued May 5, 2003
- MURR Procedure AP-RO-110, "Conduct of Operations," Rev. 2, issued October 10, 2003 and the associated form FM-58, "Short Form Startup Checklist"
- MURR Procedure OP-RO-210, "Reactor Startup - Normal," Rev. 3, issued September 10, 2003

The inspector also observed the annual Safety-Conscious Work Environment training for 2003 conducted on Wednesday and Thursday, November 5 & 6, 2003.

b. Observations and Findings

(1) Reactor Operation

During the reactor startup on Monday, November 3, 2003, after a routine weekly maintenance period, a problem developed with the Wide Range Monitor drawer. After the picoammeter was replaced and the unit was recalibrated, a second

reactor startup was initiated. The inspector observed the second reactor startup that evening. It was noted that the startup proceeded without incident and was conducted in accordance with procedures. The inspector also observed reactor operations on various occasions during the week including the handling of samples and sample manipulating tools. The operations and sample handling were conducted as planned and in accordance with the applicable procedures.

## (2) Staff Communication

During the inspection, the inspector attended operations shift turnover meetings on Tuesday evening and Thursday morning. The status of the reactor and the facility was discussed on each occasion. All shift operators of the relief crews reviewed and were informed of the upcoming shift activities and planned events.

The inspector attended a "Plan of the Day" meeting on Wednesday. The meeting, chaired by the Reactor Manager, was held daily and representatives from all organizations at the facility were in attendance. Each organization had the opportunity to provide input and discuss their work group's activities that had been planned for the day. Safety-significant issues, if any, were also discussed and any concerns or schedule conflicts were resolved. The inspector noted that this meeting provided managers, supervisors, and staff members with an opportunity to be aware of current facility conditions and upcoming activities.

The inspector also attended an "Operations Meeting" held on Thursday morning. The meeting was chaired by the Reactor Manager and attended by the operations crew in training that week, the Assistant Reactor Manager - Physics, the Interim Chief Operating Officer, the Reactor Supervisor, and other invited persons. The meeting was held to keep the operators informed of the current status, not only of the reactor and auxiliary equipment, but of the entire facility and ongoing and future activities.

## (3) Safety-Conscious Work Environment

The inspector attended the annual training provided by facility management for all employees concerning a Safety-Conscious Work Environment (SCWE). Half of the facility staff attended the training on Wednesday while the other half attended on Thursday. A contractor from the nearby Calloway Nuclear Power Station presented a one hour review and discussion of what SCWE entailed. The Facility Director also gave a presentation and answered questions from the staff. The training appeared to be an appropriate review of SCWE and staff concerns were addressed.

## (4) Corrective Action Program

The inspector reviewed the licensee's Corrective Action Program (CAP) which had been developed to provide staff members with a formal process to identify deficiencies and bring the issues to management's attention for resolution. The program was designed so that anyone could identify a discrepancy, concern, or improvement opportunity and enter the issue into the CAP system via the MURR

intranet. When issues were identified, each issue was screened for safety significance, evaluated to determine the cause and its contributing factors, and the issue was assigned to a cognizant manager for resolution. Corrective actions were developed and implemented consistent with the safety significance of the issue and according to an established schedule.

As of the date of this inspection, 241 CAP items had been submitted since the program's inception. Of these, 197 had been closed and 44 remained open. The inspector determined that the licensee was committed to the program and the program results were reported every quarter to the Reactor Safety Subcommittee and the RAC. The inspector also noted that the program allowed the licensee to track problems and identify negative trends or areas that needed attention. Two recent issues or trends that had been identified through the CAP involved problems with staff removing Red Tags without proper authorization and lack of attention to detail in the area of transportation of radioactive material. The licensee was taking corrective actions to curb these trends.

#### (5) Licensee Event Reports

The inspector reviewed recent Licensee Event Reports and interviewed licensee management concerning the events. The events had been reviewed by the licensee as required by MURR Procedure AP-RR-026 and corrective actions developed as needed. Reports detailing the events and the causes had been submitted to the NRC as required. The inspector noted that these events were entered into the CAP system so that potential trends could be noted and corrected.

#### c. Conclusions

MURR operations shift turnovers, communications, and operator cognizance of facility conditions were acceptable. The licensee continued efforts towards establishing a safety-conscious work environment. The Corrective Action Program was functioning as outlined by procedure. The licensee had reviewed and reported on events that required Licensee Event Reports to be written as specified in the TS.

### 4. Operator Requalification

#### a. Inspection Scope (IP 69003)

The inspector reviewed selected aspects of the following to ensure compliance with the "Operator Requalification Program - University of Missouri Research Reactor (MURR)" dated January 7, 1997:

- status of operator licenses
- operator training and examination records for the years 2002 and 2003
- "MURR Operator Active Status Log" for the past two years
- "Annual On-The-Job Training Requirements/Checklists" for the past two years
- "Written Examination Forms" for the past two years
- "Annual Operating Test Records" for the past two years

- “Change Review Sheets” for the past two years

b. Observations and Findings

The Requalification Program was maintained up to date and RO and SRO licenses were current. Records showed that operator training was consistent with the Requalification Program requirements and there were 15 SROs and 9 ROs. There was no one currently in training to become a reactor operator at the time of the inspection. Records confirmed that the operators were acceptably completing written and operating examinations. MURR Operator Active Status Logs and records also showed that operators maintained active duty status as required. The inspector also verified that the operators were receiving a biennial physical examination as required.

c. Conclusions

Operator requalification was conducted as required by the Requalification Program.

**5. Maintenance and Surveillance**

a. Inspection Scope (IP 39745, 61745)

To verify that the licensee was meeting the requirements of their Preventive Maintenance Program and complying with TS Section 5, the inspector reviewed selected aspects of:

- entries in the "Completed PM's Notebook"
- various "Preventive Maintenance Requirement Cards"
- Monthly "RO PM Lists" for 2003
- various "Weekly Worklists for Maintenance Shutdown for 2003" kept in the "Maintenance Day Book"
- "Maintenance Lists" for 2002 and 2003
- various MURR Compliance Procedures (CPs)
- selected CP data sheets and records
- MURR Procedure AP-RR-015, "Work Control Procedure," Rev. 2, issued November 26, 2002
- MURR Procedure GS-RA-100, "MURR Equipment Tag Out," Rev. 3, issued October 10, 2003
- MURR Operator Aid OA-21, "MURR Maintenance Guidelines," Rev. 0, issued October 16, 2003

b. Observations and Findings

Because of problems in the past, the licensee had developed a Work Control Program and a new organization was established at the facility to handle maintenance activities. The organization originally consisted of a Work Control Manager (WCM), a planner/scheduler, and a chief research engineering technician. The WCM had since been placed in charge of the Project Management group, the Mechanical Support group, the Instrumentations Support group, and the Computing Support group. The WCM was responsible to ensure that all maintenance activities were screened, planned and completed, post maintenance testing conducted, and the entire process documented

appropriately. A planning and scheduling software package, *Maximo*, was being used to assist in this effort. The licensee indicated that the software was being implemented at a slower pace than had initially been anticipated. The maintenance program appeared to be functioning properly and the software appeared to be versatile in its application.

Surveillance verifications and calibration of equipment, including the testing of various reactor systems, instrumentation, auxiliary systems, and security systems and alarms, were reviewed by the inspector. The licensee's terminology for this program was "Compliance Check" and followed the same schedule each year. The data recorded in the Logbooks and on the CP records indicated that the verifications and calibrations had been completed on schedule and in accordance with licensee procedures. The results reviewed by the inspector were within the TS and procedurally prescribed parameters.

c. Conclusions

The Work Control Program had enhanced the maintenance program at the facility. The surveillance program satisfied TS requirements.

## 6. Fuel Handling

a. Inspection Scope (IP 60745)

To ensure that the licensee was following the requirements of TS Sections 3.8, 4.3, and 5.5, the inspector reviewed selected aspects of the following:

- selected Fuel Movement Sheets developed for each fuel movement
- Fuel Status Board located in the Control Room
- MURR Procedure RP-RO-100, "Fuel Movement," Rev. 1, issued November 22, 2003
- MURR Procedure OP-RO-210, "Reactor Startup - Normal," Rev. 3, issued September 10, 2003
- MURR Procedure OP-RO-250, "Fuel Handling," Rev. 3, issued December 26, 2002

b. Observations and Findings

The inspector reviewed the fuel movement process and verified that fuel was moved according to established procedure and in conjunction with the specific fuel movement sheets developed by the Assistant Reactor Manager-Physics for each core loading. The inspector compared the location of fuel elements in the reactor core with the information maintained on the Fuel Status Board in the Control Room and on the fuel movement sheets for Core Number 03-52. No problems or anomalies were noted. The inspector also verified that the procedures governing fuel handling and movement had been revised and were the ones most recently approved by the RAC.

c. Conclusions

Fuel movement was conducted in accordance with TS and procedural requirements.



## 7. Experiments

### a. Inspection Scope (IP 69005)

The inspector reviewed selected aspects of the following to verify compliance with TS Sections 3.6 and 6.1.f:

- listing of Reactor Utilization Requests
- listing of current experiments
- MURR Procedure EX-RO-105, "Reactor Irradiation Experiments," Rev. 1, issued December 26, 2002
- MURR Procedure EX-RO-120, "Beamport 'A' Operation," Rev. 0, issued August 1, 2001
- MURR Procedure EX-RO-126, "Thermal Column Door," Rev. 0, issued November 9, 2001

### b. Observations and Findings

The experiments conducted at the facility were required to be evaluated and reviewed using the Reactor Utilization Request (RUR) program. The RUR program required an individual proposing a new experiment to evaluate the irradiation of the target material to determine that, if performed within the limitations stated in the RUR safety analysis, the irradiation experiment would remain with the TS limits for experiments. The safety analysis included a review of: 1) thermal effects, 2) possible sample decomposition, 3) experiment failure, 4) loss of coolant flow, 5) corrosive effects of the sample, and 6) possible explosive potential. The analysis was also required to address post irradiation handling procedures, detection of radioactivity produced, radiation hazards, and reactivity worth. Each RUR, or revision, was required to be reviewed and approved by the Assistant Reactor Manager - Physics, the Health Physics Manager, and the Reactor Manager. The RUR was also required to be reviewed by the Reactor Safety Subcommittee and approved by the RAC.

The inspector reviewed four of the most recent RURs that had been submitted. The analysis for each had been performed and the reviews and approvals completed. The experiments were conducted with the cognizance of the reactor manager and the LSRO, and in accordance with TS requirements (e.g., reactivity limitations).

The current procedure governing RURs, Standard Operating Procedure (SOP) VIII, required in step 1.1.D.1 that active RURs be reviewed by the Reactor Manager and the Principle Experimenter on an annual basis. The inspector reviewed the records concerning this annual review. It was noted that a review of the active RURs was completed in March 2002 but none had been conducted to date in 2003. This issue was identified as an Unresolved Item<sup>1</sup> and the licensee informed that the issue will be reviewed during a future inspection (URI 50-186/2003-203-01).

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<sup>1</sup>An Unresolved Item is a matter about which more information is required to determine whether the issue in question is an acceptable item, a deviation, a nonconformance, or a violation.

c. Conclusions

The program for experiments generally satisfied TS and procedural requirements.

**8. Procedures**

a. Inspection Scope (IP 42745)

To verify compliance with TS Sections 6.1.b and 6.1.c, the inspector reviewed selected portions of the following:

- MURR Procedure AP-DC-100, "Procedures and Form Revisions," Rev. 2, issued May 30, 2003
- MURR Procedure AP-DC-102, "Document Control," Rev. 1, issued May 30, 2003
- Various other MURR Procedures

b. Observations and Findings

The "MURR Procedure Writer's Guide," Rev. 4, issued August 14, 2002, provided clear and detailed information regarding procedure development. New and revised procedures issued using this guide were consistent and user-friendly. Technical Specification 6.1.c required the RAC review procedure changes with safety significance. The Reactor Procedure Review Subcommittee was chartered to fulfill this requirement. As noted previously, the inspector verified that the subcommittee was meeting as required to review the current procedure revisions and changes.

The inspector also attended a meeting of the Procedure Review Subcommittee on Thursday and observed the discussion concerning revisions to various procedures. The discussion centered around wording of the procedures and corrections to what had been written. Changes were made to the procedures when everyone agreed that the changes were needed to clarify or correct the guidance given.

c. Conclusions

The current procedure revision, control, and implementation program satisfied TS requirements.

**9. Emergency Preparedness**

a. Inspection Scope (IP 82745)

The inspector reviewed selected aspects of:

- Emergency Plan for the University of Missouri Research Reactor Facility, Rev. 12, dated January 14, 2000
- MURR Site Emergency Procedures and Facility Emergency Procedures, Rev. 36, dated March 5, 2003
- Letter of Agreement with the City of Columbia dated May 19, 2003

- offsite support groups
- 2001, 2002, and 2003 emergency drill documentation and critiques
- MURR Procedure REP-RO-100, "Reactor Emergency Procedures," Rev. 0, issued January 15, 2003

b. Observations and Findings

The inspector reviewed the Emergency Plan (E-Plan) in use at the reactor and verified that the E-Plan was reviewed annually as required. The Site Emergency Procedures and Facility Emergency Procedures (E-Plan implementing procedures) were reviewed and revised as needed to ensure effective implementation of the E-Plan.

Through records review and interviews with Facility Emergency Organization (FEO) personnel (i.e., emergency responders), the inspector determined that they were knowledgeable of the proper actions to take in case of an emergency. Training for these individuals had been conducted annually as required.

The inspector verified that the Letter of Agreement with the City of Columbia Fire Department had been maintained and updated as necessary. Communications capabilities with support groups were acceptable and had been periodically tested.

The inspector determined that annual emergency drills had been conducted and off-site support organization notification and/or participation was as required by the E-Plan. A critique was held following each drill to discuss the strengths and weaknesses noted during the exercise and to develop possible solutions to the problems identified.

c. Conclusions

The emergency preparedness program was conducted in accordance with the Emergency Plan.

**10. Follow-up On Previously Identified Items**

a. Inspection Scope (IP 92701)

The inspector reviewed actions concerning the following Inspector Follow-up Items (IFIs):

b. Observations and Findings

- (1) (Closed) IFI 50-186/2002-201-01 - Follow-up on the licensee's efforts to implement an effective audit program for operations.

No formal audit program was required by the TS but, in the past, peer reviews had been conducted by persons from other universities. This practice had not been followed for some time during the period before 2001. When asked about this, the licensee indicated that the reviews/audits would be resumed.

During the current inspection, the inspector determined that representatives from the University of Missouri - Rolla had conducted an audit in January 2002. The audit appeared to be a good characterization of the operations program at the facility; no deficiencies were identified. Another audit had been completed in December 2002 as well. With the resumption of these peer reviews and audits, this issue is considered closed.

- (2) (Closed) IFI 50-186/2001-201-02 - Follow-up on the licensee's actions to ensure documentation of the annual review of active Reactor Utilization Requests.

A requirement in SOP VIII.1.1D.1 stated that active RURs will be reviewed by the Reactor Manager and the Principle Experimenter on an annual basis. Although there was evidence that this had been done for most experiments, there was no formal documentation of the review.

As noted above, during this inspection, the inspector determined that a review had been completed in March 2002 but none had been conducted since then. This IFI will be closed and the issue of whether or not a review of the active RURs is conducted in 2003 will be reviewed during a future inspection. This IFI is considered closed.

- (3) (Closed) IFI 50-186/2001-201-03 - Complete Performance Enhancement Plan to prevent future violations of regulatory requirements.

Following various events in 2000, the licensee developed a Performance Enhancement Plan (PEP) to make program improvements and avoid further problems. The items in the PEP were generally completed in 2002 except for one item concerning procedure revision and review.

This IFI was opened and left open pending completion of the procedure revision effort at the facility. Although every procedure has not been revised and rewritten in the new format developed by the licensee, approximately ninety percent (90%) of them have been. With the program to revise procedures in place and the continuing actions of the Procedure Review Subcommittee, this issue is considered closed.

c. Conclusions

Three IFIs were reviewed and closed.

**11. Exit Interview**

The inspection scope and results were summarized on November 6, 2003, with members of licensee management and staff. The inspector described the areas inspected and discussed in detail the inspection findings.

No dissenting comments were received from the licensee. The licensee did not identify, as proprietary, any of the material provided to or reviewed by the inspector.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee Personnel

B. Brocker, Lead Senior Reactor Operator  
R. Butler, Interim Director, MURR  
A. Coria, MURR Training Coordinator  
M. Dixon, Assistant Reactor Manager - Operations  
R. Dobby, Health Physics Manager  
J. Ernst, Associate Director, Regulatory Assurance Group  
L. Foyto, Reactor Manager  
J. Fruits, Work Control Manager  
A. Gaddy, Document Control Coordinator  
R. Hudson, Lead Senior Reactor Operator and Operations Training Coordinator  
K. Kutikkad, Assistant Reactor Manager - Physics  
J. Lanigan, MURR Safety Associate and CAP Coordinator  
W. Meyer, Interim Chief Operations Officer  
A. Saale, Lead Senior Reactor Operator  
M. Wallis, Lead Senior Reactor Operator

### Other Personnel

R. Martin, Lieutenant, City of Columbia Fire Department, Fire Station No. 7

## **INSPECTION PROCEDURES USED**

IP 39745 Class I Non-Power Reactors Organization, Operations, and Maintenance Activities  
IP 40745 Class I Non-Power Reactor Review and Audit and Design Change Functions  
IP 42745 Class I Non-Power Reactor Procedures  
IP 60745 Class I Non-Power Reactor Fuel Movement  
IP 61745 Class I Non-Power Reactor Surveillance  
IP 69003 Class I Non-Power Reactor Operator Licenses, Requalification, and Medical Activities  
IP 69005 Class I Non-Power Reactor Experiments  
IP 82745 Class I Non-Power Reactor Emergency Preparedness  
IP 92701 Followup

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

### Opened

50-186/2003-203-01 UFI No 2003 review of reactor utilization requests by reactor manager and principle experimenter.

### Closed

50-186/2002-201-01 IFI Follow-up on the licensee's efforts to implement an effective audit program for operations.

50-186/2002-201-02	IFI	Follow-up on the licensee's actions to ensure documentation of the annual review of active Reactor Utilization Requests.
50-186/2002-201-03	IFI	Complete Performance Enhancement Plan to prevent future violations of regulatory requirements.

### **LIST OF ACRONYMS USED**

CFR	Code of Federal Regulations
COO	Chief Operating Officer
CP	Compliance Procedure
E-Plan	Emergency Plan
ECP	Estimated Critical Position
IP	Inspection Procedure
IR	Inspection Report
LSRO	Lead Senior Reactor Operator
MIT	MURR Improvement Team
MSOC	MURR Safety Oversight Committee
MURR	University of Missouri-Columbia Research Reactor
MW	Megawatt
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
RAC	Reactor Advisory Committee
Rev.	Revision
RTR	Research and Test Reactor
SCWE	Safety-Conscious Work Environment
SOP	Standard Operating Procedure
TRTR	Test, Research, and Training Reactor (Organization)
TS	Technical Specification
WCM	Work Control Manager