

August 3, 2000

Dr. Nicholas Tsoulfanidis, Interim Reactor Director  
Nuclear Reactor Facility  
University of Missouri-Rolla  
Rolla, MO 65401-0249

SUBJECT: NRC ROUTINE, ANNOUNCED INSPECTION REPORT NO. 50-123/00201

Dear Dr. Tsoulfanidis:

This letter refers to the inspection conducted on May 23-25, 2000, at the University of Missouri-Rolla Nuclear Reactor Facility (UMRR). The enclosed report presents the results of that inspection.

Various aspects of your reactor operation 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, no safety concern or noncompliance with NRC requirements was 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/NRC/ADAMS/index.html>. Your cooperation is appreciated. Should you have any questions concerning this inspection, please contact Mr. Stephen Holmes at 301-415-8583.

Sincerely,

/RA/ Linda Howell FOR

Ledyard B. Marsh, Chief  
Events Assessment, Generic Communications and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-123  
License No. R-79

Enclosure: NRC Inspection Report No. 50-123/00201  
cc w/enclosure: Please see next page

University of Missouri-Rolla

Docket No. 50-123

cc:

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U. S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-123

License No: R-79

Report No: 50-123/00201

Licensee: University of Missouri-Rolla

Facility: Nuclear Reactor Facility

Location: Rolla, Missouri

Dates: May 23-25, 2000

Inspector: Stephen W. Holmes

Approved by: Ledyard B. Marsh, Chief  
Events Assessment, Generic Communications and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## **EXECUTIVE SUMMARY**

This routine, announced inspection included onsite review of selected aspects of the operations program, organizational structure and functions program, design control program, review and audit program, operator requalification program, maintenance program, surveillance program, fuel handling program, experimental program, procedural control program, and security program.

The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements since the last NRC inspection of this program.

### **ORGANIZATIONAL STRUCTURE AND FUNCTIONS**

The operations program satisfied Technical Specification (TS) requirements.

### **OPERATIONS**

The operations program satisfied TS requirements.

### **DESIGN CONTROL**

The design change program satisfied NRC requirements.

### **REVIEW AND AUDIT**

The review and audit program satisfied TS requirements.

### **OPERATOR REQUALIFICATION**

The Requalification Program was being acceptably implemented.

### **MAINTENANCE**

Maintenance logs, records, performance, and reviews satisfied TS and procedure requirements.

### **SURVEILLANCE**

The licensee's program for surveillance and limiting condition for operations (LCO) confirmations satisfied TS requirements.

### **FUEL HANDLING**

Fuel handling activities and documentation were as required by TS and facility procedures. No safety concerns were identified.

### **EXPERIMENTS**

The program for experiments satisfied TS and procedural requirements.

## PROCEDURES

The procedural control and implementation program satisfied TS requirements.

## SECURITY

Security activities and systems satisfied regulatory and license requirements.

## Report Details

### Summary of Plant Status

Since the last inspection, the reactor was operated several hours per week to support experiments, education, operator training, and surveillance.

#### 1. ORGANIZATIONAL STRUCTURE AND FUNCTIONS (69001)

##### a. Scope

The inspector reviewed selected aspects of:

- organization and staffing
- qualifications
- management responsibilities
- administrative controls

##### b. Observations and Findings

The organizational structure and staffing had changed since the last inspection. The Reactor Director left and an Interim Reactor Director (IRD) had been appointed. Recruitment of a permanent Reactor Director was nearing completion. Additionally, management had decided to fill a Reactor Manager position previously vacated. The organizational structure and staffing observed at the facility, and as reported in the Annual Report, were as required by TS. Qualifications of the staff met TS 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 requirements.

#### 2. OPERATIONS (69001)

##### a. Scope

The inspector reviewed selected aspects of:

- operational logs and records
- staffing for operations
- selected operational, startup, or shutdown activities

##### b. Observations and Findings

The operating logs and records were sufficiently detailed to provide indication of operational activities. This included documentation of events and resolution or tracking of events. Scrams were identified in the logs and records and were reported and resolved as required before the resumption of operations under the authorization of a

senior reactor operator (SRO). The logs and records indicated that shift staffing (including on-call personnel) was as required by the TS. Logs and records indicated operational conditions and parameters were consistent with license and TS requirements. The inspector observed reactor pre-start checks, a reactor startup, power operation, and a full shutdown that further confirmed that these conditions and requirements were satisfied.

c. Conclusions

The operations program satisfied TS requirements.

3. DESIGN CONTROL (69001)

a. Scope

The inspector reviewed selected aspects of:

- facility design changes and records
- facility configuration
- Radiation Safety Committee (RSC) records

b. Observations and Findings

Records and observations confirmed that changes at the facility were acceptably reviewed in accordance with 10 CFR 50.59 and applicable licensee administrative controls. None of the changes required a change to the TS. The licensee used a formal, detailed, systematic review and approval procedure.

All 10 CFR 50.59 packages were approved by the RSC prior to implementation. This has caused significant delays in repairing and upgrading the facility. The TS require that the RSC approve only changes to the core, systems, and design features that would affect safety of the reactor. The IRD stated that the licensee would evaluate making a change to the procedures and/or TS to allow non-safety related changes to be evaluated and implemented by the reactor staff prior to RSC approval.

c. Conclusions

The design change program satisfied NRC requirements.

4. REVIEW AND AUDIT (69001)

a. Scope

The inspector reviewed selected aspects of:

- safety review records
- audit records
- RSC records



- responses to safety reviews and audits
- qualifications of personnel performing review and audits
- interviewed RSC Chairman

b. Observations and Findings

The RSC meeting schedule and membership satisfied TS requirements and the committee's procedural rules. Review of the RSC minutes indicated that the RSC provided guidance, direction, and operations oversight of the reactor.

Records indicated that safety reviews had been conducted at the frequency required by the TS. The focus of these reviews was also consistent with TS requirements to provide guidance, direction, and oversight, and to ensure acceptable use of the reactor.

The audit records confirmed that audits had been completed in those areas outlined in the TS and at the required frequency.

The inspector noted that the safety reviews and audits, and the associated documentation of the review and audit findings, were acceptably detailed. The licensee had responded and taken corrective actions as needed.

The safety review and audit personnel qualifications satisfied TS requirements and licensee administrative controls. Further, the number of personnel involved in the safety reviews and audits also satisfied TS and licensee procedural requirements.

c. Conclusions

The review and audit program satisfied TS requirements.

5. OPERATOR REQUALIFICATION (69001)

a. Scope

The inspector reviewed selected aspects of:

- the Requalification Program
- operator licenses
- operator training records
- operator physical examination records
- operator examination records
- operator active duty status

b. Observations and Findings

The Requalification Program had been maintained in a current status, and all operator licenses were current. All currently licensed SROs were successfully completing the licensee's emergency procedure and abnormal events training, reactivity manipulations,

and participating in the ongoing training as required by the NRC-approved Requalification Plan. Physical examinations of the operators were conducted as required. Records indicated that written and operating examinations of the operators were acceptably implemented. Program checklists and annual/biennial exams were comprehensive, and exams had been administered in timely manner. Logs indicated that operators maintained active duty status as required.

c. Conclusions

The Requalification Program was being acceptably implemented.

6. MAINTENANCE (69001)

a. Scope

The inspector reviewed selected aspects of:

- maintenance procedures
- equipment maintenance records

b. Observations and Findings

Routine and preventive maintenance was controlled and documented in the maintenance log, equipment discrepancy book, or the operations log consistent with the TS and licensee procedures. Logs indicated that corrective maintenance activities and problems had been addressed as required by procedure. Records indicated that routine maintenance activities were conducted at the required frequency and in accordance with the TS, applicable procedures, or equipment manuals. Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and TS requirements. Further, maintenance activities were consistent with the requirements of 10 CFR 50.59.

c. Conclusions

Maintenance logs, records, performance, and reviews satisfied TS and procedure requirements.

7. SURVEILLANCE (69001)

a. Scope

The inspector reviewed selected aspects of:

- surveillance and calibration procedures,
- surveillance, calibration and test data sheets and records

b. Observations and Findings

Daily and other periodic checks, tests, and verifications for TS required LCOs had been completed as required. All surveillance and LCO verifications had been completed on schedule as required by TS and in accordance with licensee procedures. All were within prescribed TS and procedure parameters and in close agreement with the previous surveillance results. The records and logs reviewed were complete and had been maintained as required.

Daily and periodic checks of equipment operability, including recording system parameters such as temperature, pressure, and flow, observed by the inspector satisfied the limits and parameters listed in the applicable procedure or checklist.

c. Conclusions

The licensee's program for surveillance and LCO confirmations satisfied TS requirements.

8. FUEL HANDLING (69001)

a. Scope

The inspector reviewed selected aspects of:

- fuel handling procedures
- fuel handling equipment and instrumentation
- fuel handling and examination records

b. Observations and Findings

Procedures for refueling, fuel shuffling, and TS-required inspections and surveillances were thorough and detailed. Fuel movement, inspection, log keeping, and data recording were conducted or completed in accordance with facility procedures. Data recorded for fuel movement was clear and cross referenced in fuel and operations logs. Radiological controls and procedures conformed to health physics ALARA principles. Log entries clearly identified, as required by procedure, the minimum two persons present when moving fuel.

c. Conclusions

Fuel handling activities and documentation were as required by TS and facility procedures. No safety concerns were identified.

9. EXPERIMENTS (69001)

a. Scope

The inspector reviewed selected aspects of:

- experimental program requirements
- procedures
- logs and records
- experimental administrative controls and precautions

b. Observations and Findings

Experiments performed at the facility were routine procedures that had been in place for several years. No new or unknown-type experiments had been initiated, reviewed, or approved since the last inspection. The experiments were completed with the cognizance of the IRD and a SRO and in accordance with TS requirements (e.g., reactivity limitations). The results of the experiments were documented in appropriate experimental logs, data sheets, or records. Engineering and radiation protection controls were implemented as required to limit exposure to radiation.

c. Conclusions

The program for experiments satisfied TS and procedural requirements.

10. PROCEDURES (69001)

a. Scope

The inspector reviewed selected aspects of:

- administrative controls
- records for changes and temporary changes
- procedural implementation
- logs and records

b. Observations and Findings

Personnel conducted activities in accordance with applicable procedures. Records indicated that procedures for potential malfunctions (e.g., reactor equipment problems) had been implemented as required.

Written procedures required by the TS were available and used by the staff. The inspector observed procedure use during operations. Implementation of and adherence to the procedures was acceptable. Administrative controls for changes and temporary changes to procedures, and the associated review and approval processes, were implemented as required. A selective review of procedures verified that changes had been evaluated and approved as required.

Training of personnel on procedures and changes was acceptable. Personnel conducted activities in accordance with applicable procedures.

c. Conclusions

The procedural control and implementation program satisfied TS requirements.

11. SECURITY (81401/81421)

a. Scope

The inspector reviewed selected aspects of:

- the Physical Protection Plan
- security systems, equipment and instrumentations
- implementation of the Physical Protection Plan

b. Observations and Findings

Amendment No. 17 to the Facility Operating License No. R-79 deleted the requirement that a Physical Protection Plan be maintained. However security systems consistent with the provisions of 10 CFR 73.67(f), "Fixed Site Requirements For Special Nuclear Material of Low Strategic Significance," had continued to be maintained. Physical protection systems (barriers and alarms), equipment and instrumentation were in place. Access control was as required. Implementing procedures were consistent with the licensee's requirements. Acceptable security response and training was demonstrated through alarm response and drill response in accordance with procedures.

c. Conclusions

Security activities and systems satisfied regulatory and license requirements.

12. EXIT MEETING SUMMARY

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on May 25, 2000. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

### **PARTIAL LIST OF PERSONS CONTACTED**

N. Tsoulfanidis	Interim Reactor Director, UMRR
B. Bonser	Acting Reactor Manager, UMRR
J. Jackson	Senior Laboratory Mechanic/ RO
M. Fitch	Chairman, RSC

### **INSPECTION PROCEDURE (IP) USED**

IP 69001	Class II Non-Power Reactors
IP 81401	Plans, Procedures, and Reviews
IP 81421	Fixed Site Physical Protection of LSM

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

Open

None

Closed

None

### **LIST OF ACRONYMS USED**

ALARA	As Low As is Reasonably Achievable
LCO	Limiting Conditions for Operations
NRC	Nuclear Regulatory Commission
RSC	Radiation Safety Committee
SRO	Senior Reactor Operator
TS	Technical Specifications
UMRR	University of Missouri Research Reactor