



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 20, 2019

Mr. Robert Seymour, Reactor Supervisor
Kansas State University
117 Ward Hall
Manhattan, KS 66506

SUBJECT: KANSAS STATE UNIVERSITY – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE, ANNOUNCED INSPECTION REPORT NO. 50-188/2018-201

Dear Mr. Seymour:

From August 14-16, 2018, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at your Kansas State University Nuclear Reactor Facility. The enclosed report presents the results of that inspection, which were discussed on August 16, 2018, with members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspector reviewed selective procedures and records, observed various activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified. No response to this letter is required.

In accordance with Title 10 of the *Code of Federal Regulations* Section 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

M. Nager

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Should you have any questions concerning this inspection, please contact Mr. Johnny H. Eads at (301) 415-0136 or by electronic mail at Johnny.Eads@nrc.gov.

Sincerely,

/RA/

Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

Docket No. 50-188
License No. R-88

Enclosure:
As stated

cc: w/enclosure: See next page

Kansas State University

Docket No. 50-188

cc:

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Test, Research and Training
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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No.: 50-188

License No.: R-88

Report No: 50-188/2018-201

Licensee: Kansas State University

Facility: TRIGA Mark II Research Reactor

Location: Manhattan, Kansas

Dates: August 14-16, 2018

Inspector: Johnny Eads

Approved by: Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

Enclosure

EXECUTIVE SUMMARY

Kansas State University
TRIGA MARK II Research Reactor Facility
NRC Inspection Report No. 50-188/2018-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the Kansas State University (the licensee's) Class II research reactor safety programs including: (1) organization and staffing; (2) procedures; (3) requalification training; (4) surveillance and limiting conditions for operation (LCO); (5) emergency planning; (6) maintenance logs and records; and (7) fuel handling logs and records. The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with the U.S. Nuclear Regulatory Commission (NRC) requirements.

Organization and staffing

- Organizational structure and staffing were consistent with technical specification (TS) requirements.

Procedures

- The program for changing, controlling, and implementing facility procedures was acceptably maintained as required by the TSs and the applicable procedures.

Requalification Training

- Operator requalification was conducted as required by the Operator Requalification Plan

Surveillance and Limiting Conditions for Operation

- The inspector found that the surveillance program and supporting procedures met the TS requirements.
- Operations met the TS LCO and surveillance requirements.

Emergency Planning

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

Maintenance Logs and Records

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

Fuel Handling Logs and Records

- Fuel handling and inspection activities were completed and documented as required by TS and facility procedures.

REPORT DETAILS

Summary of Facility Status

The Kansas State University's (KSU's) 1250-kilowatt reactor continued to be operated in support of the University's academic program in nuclear engineering laboratory instruction and research. During the inspection, the reactor was shutdown for maintenance.

1. Organization and Staffing

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

The inspector reviewed the following to verify compliance with the organization and staffing requirements in TS Section 6.1, "Organization and Responsibilities of Personnel":

- Kansas State reactor organizational structure and staffing
- TSs for Kansas State University TRIGA reactor, dated October 8, 2008
- Reactor console logbooks covering operations from January 2017 to present
- Daily Reactor Startup and Shutdown Checklist from January 2017 to present

b. Observations and Findings

Since the last inspection (NRC Inspection Report No. 50-188/2017-201), the organizational structure and the responsibilities of the reactor management and staff had not changed except a new Reactor Facility Manager is in place. Review of records verified that management responsibilities were administered as required by TS and applicable procedures. The inspector observed reactor operations that the shift staffing of the licensee satisfied the requirements for TS. There were six licensed senior reactor operators (SRO) and one licensed reactor operators (RO) at the facility.

c. Conclusion

The licensee's organization and staffing were in compliance with the requirements specified in TS Section 6.1. The operations log and associated records confirmed that shift staffing met the minimum requirements for duty and on call personnel.

2. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the requirements of TS Section 6.3, "Procedures," were being met concerning written procedures:

- TS for KSU TRIGA (Training, Research, Isotopes, General Atomics) reactor dated October 8, 2008
- KSU TRIGA Mark II Operation, Test, and Maintenance Procedures, "OP-15 Reactor Startup," dated May 20, 2016
- KSU TRIGA Mark II Operation, Test, and Maintenance Procedures, "OP-1 Biennial Control Rod Inspection," dated February 3, 2012
- KSU TRIGA Mark II Operation, Test, and Maintenance Procedures, "OP-10 Fuel Element Inspection," dated April 7, 2011

b. Observations and Findings

Oversight and review of procedure implementation was provided by licensee management and the Reactor Safeguards Committee (RSC). All procedures reviewed were current and had been approved by the RSC. During reactor operations and other evolutions procedure compliance was evident.

c. Conclusion

The licensee was maintaining and implementing written procedures in accordance with the TS requirements.

3. **Requalification Training**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify that the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 55, "Operators' Licenses," were being met:

- Requalification Program, KSU, dated June 2003
- RSC Meeting Minutes for 2016 and 2017
- Personal RO/SRO files
- Reactor console log books, dated from January 2016 to present
- KSU operator licenses for six SROs and one RO
- Console spreadsheet for operator training and requalification
- NRC Form 396, "Certification of Medical Examination by Facility Licensee," for all SROs and ROs

b. Observations and Findings

The licensee's reactor operator staff consisted of six NRC licensed SRO and one RO.

The licensee's requalification program included the regulatory requirement for an annual operating test and a biennial written examination. The inspector verified that both examinations were administered at the specified frequency and that the level of difficulty was comparable to that of NRC-administered examinations.

The inspector reviewed the content of the written and oral examinations used for the 2017-2018 requalification cycle and found them adequate. The inspector

reviewed the training and medical records for the 7 licensed operators. The inspector reviewed documentation indicating that all operators had performed the required number of reactor manipulations at the frequency specified in the requalification program.

c. Conclusion

Operator requalification was conducted as required by the Requalification Program and NRC regulations.

4. Surveillance and Limiting Conditions of Operation

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with TS Section 3, "Limiting Conditions for Operation (LCO)," and to determine if the periodic surveillance tests on safety systems were performed as stipulated in TS Section 4, "Surveillance Requirements":

- Maintenance and surveillance reports for the months of January 2017 to present
- KSU TRIGA Mark II Operation, Test, and Maintenance Procedures, "OP-15 Reactor Startup," dated May 20, 2016

b. Observations and Findings

The licensee used a monthly form listing periodic tests, including those required by TS and by procedures. This tool aided the licensee in assuring that surveillances were completed on a timely basis. The inspector verified that surveillances had been completed on schedule, in accordance with licensee procedures, and in compliance with the TS.

c. Conclusion

The LCO and surveillances required by TS were being properly implemented.

5. Emergency Planning

a. Inspection Scope (IP 69001)

The inspector reviewed documentation verifying implementation of selected portions of the emergency preparedness program including:

- Emergency telephone contact list dated May 15, 2018
- Emergency support center equipment inventories
- EP KSU TRIGA Mark II Nuclear Reactor Facility, December 5, 2016
- KSU TRIGA Mark II Nuclear Reactor Facility EP Procedure 2, "Notification List," dated February 28, 2014
- KSU TRIGA Mark II Nuclear Reactor Facility EP Procedure 3, "Emergency Classification," dated August 2, 2011

- KSU TRIGA Mark II Nuclear Reactor Facility EP Procedure 5, “Fire,” dated August 2, 2017
- KSU TRIGA Mark II Nuclear Reactor Facility EP Procedure 7, “External Hazard,” dated August 2, 2017

b. Observations and Findings

Agreement letters with outside support groups were on file, dated during 2016. New agreement letters had been sent to supporting facilities and were being returned as they were signed. The EP requires that the agreement letters be reviewed and updated every 2 years. The inspector verified that current emergency call lists were available and personnel knew where to find the current list. Emergency equipment inventories were conducted quarterly. Emergency drills were being conducted annually as required.

c. Conclusion

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

6. Maintenance Logs and Records

a. Inspection Scope (IP 69001)

To verify that the licensee was complying with the applicable regulations, the inspector reviewed selected aspects of:

- Reactor logbooks for the period January 2017 to present
- Maintenance and surveillance monthly reports from January 2017 to present
- KSU Annual Report to the NRC, January 2016 to December 2016

b. Observations and Findings

The inspector reviewed the maintenance records related to scheduled and unscheduled preventive and corrective maintenance activities that had occurred during the inspection period. Routine and preventive maintenance was controlled and well documented in the console logs and the reactor utilization report. The inspector verified that all maintenance reviewed was conducted in accordance with the requirements of TS Section 4, “Surveillance Requirements.”

c. Conclusion

Maintenance was performed and logs and records maintained consistent with TS and licensee procedure requirements.

7. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001)

The inspector reviewed the July 2017 fuel movement records and the following procedures and logs:

- Reactor console logbook, January 2017 to present
- Procedure No. 26, "Fuel Handling Procedure," dated August 22, 2011
- KSU TRIGA Mark II Operation, Test, and Maintenance Procedures, "OP-1 Biennial Control Rod Inspection," dated February 7, 2012
- KSU TRIGA Mark II, Fuel Log Book
- Fuel location status map (control room)

b. Observations and Findings

The licensee performed fuel inspection during the period of July, 2017. All fuel movements were documented in the console log and the Fuel Log Book. Numerous fuel movements had been made for Experiment 52. All movements were documented in the console log and the fuel inspection sheet. Procedures for refueling, fuel movement, and TS required fuel inspections and control rod surveillances had been reviewed and approved as required. Fuel movement and data recording were being done according to facility procedures.

c. Conclusion

Fuel movements were performed safely in accordance with TS requirements and licensee procedural requirements.

8. Exit Interview

The inspector presented the inspection results to licensee management at the conclusion of the inspection on August 16, 2018. The inspector described the areas inspected and discussed in detail the inspection observations. 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

Licensee

R. Bridges	Head of Radiation Safety Office, Environmental Health and Safety Division and Campus Radiation Safety Officer
M. Catanach	Deputy Director, Radiation Safety Office, Environmental Health and Safety
A. Cebula	Reactor Manager
J. Hewitt	Senior Reactor Operator
M. Nager	Reactor Supervisor
R. Seymour	Senior Reactor Operator

INSPECTION PROCEDURES USED

IP 69001	Class II Non-Power Reactors
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ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

None

Closed:

None

Discussed:

None

LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
IP	Inspection Procedure
KSU	Kansas State University
NRC	U.S. Nuclear Regulatory Commission
LCO	Limiting Conditions for Operation
RO	Reactor Operator
RSC	Reactor Safeguards Committee
SRO	Senior Reactor Operator
TS	Technical Specification
EP	Emergency Plan