



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

October 5, 2020

Dr. Alan Cebula
Nuclear Reactor Facility Manager
Kansas State University
112 Ward Hall
Manhattan, KS 66506-5204

SUBJECT: KANSAS STATE UNIVERSITY – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 05000188/2020202

Dear Dr. Cebula:

From August 17-20, 2020, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at your Kansas State Nuclear Reactor Facility. The enclosed report presents the results of that inspection, which were discussed on August 20, 2020, with you and the Reactor Supervisor.

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).

Should you have any questions concerning this inspection, please contact Craig Bassett at (240) 535-1842, or by electronic mail at Craig.Bassett@nrc.gov.

Sincerely,

/RA/

Travis L. Tate, Chief
Non-Power Production and Utilization
Facility Oversight Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

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

Enclosure:
As stated

cc: w/enclosure:

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Test, Research and Training
Reactor Newsletter
Attention: Amber Johnson
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SUBJECT: KANSAS STATE UNIVERSITY – U.S. NUCLEAR REGULATORY COMMISSION
 ROUTINE INSPECTION REPORT NO. 05000188/2020202
 DATED: OCTOBER 5, 2020

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

Docket No.: 50-188

License No.: R-88

Report No: 05000188/2020202

Licensee: Kansas State University

Facility: Kansas State Nuclear Reactor

Location: Manhattan, Kansas

Dates: August 17-20, 2020

Inspector: Craig Bassett

Approved by: Travis L. Tate, Chief
Non-Power Production and Utilization
Facility Oversight Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Enclosure

EXECUTIVE SUMMARY

Kansas State University
Kansas State Nuclear Reactor
Inspection Report No. 05000188/2020202

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the Kansas State University (KSU, licensee's) Class II research reactor safety programs including: (1) organization and staffing; (2) operations logs and records, (3) requalification training; (4) surveillance and limiting conditions for operation (LCOs); (5) experiments; (6) design changes; (7) committees, audits and reviews; (8) emergency planning; (9) maintenance logs and records; and (10) fuel handling logs and records. The U.S. Nuclear Regulatory Commission (NRC) staff determined the licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with the NRC requirements.

Organization and staffing

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

Operations Logs and Records

- Record keeping program conformed to TS requirements and operational activities were consistent with applicable TS and procedural requirements.

Requalification Training

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

Surveillance and Limiting Conditions for Operation

- The LCOs and surveillances required by TSs and procedures were met and completed as required.

Experiments

- Experiments were reviewed and approved as required by TSs.

Design Changes

- The screening, evaluation, and documentation of changes to the facility satisfied NRC requirements.

Committees, Audits and Reviews

- The review and audit programs were conducted acceptably by the Reactor Safeguards Committee (RSC) as stipulated in TSs.

Emergency Planning

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

Maintenance Logs and Records

- Maintenance was completed as required and logs, records, reviews, and performance satisfied TSs and procedural requirements.

Fuel Handling Logs and Records

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

REPORT DETAILS

Summary of Facility Status

The KSU Training, Research, Isotopes, General Atomics (TRIGA) Mark II 1250-kilowatt research 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 not operated.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69001, Section 02.01)

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

- KSU reactor organizational structure and shift staffing
- daily reactor startup and shutdown checklists for 2018 to the present
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present, and
- TSs for the KSU TRIGA Mark II Reactor, dated March 13, 2008, and amended April 2011

b. Observations and Findings

The inspector determined that, since the last inspection in the areas of operations and emergency preparedness (NRC Inspection Report No. 50-188/2018-201), the organizational structure and the responsibilities of the reactor management and staff were not changed. Review of records verified that management responsibilities were administered as required by TS and applicable procedures. The inspector reviewed reactor operations logs and records and confirmed that licensee shift staffing met the minimum requirements for duty and on-call personnel. There were three licensed senior reactor operators (SROs) and one licensed reactor operator (RO) on staff at the facility.

c. Conclusion

The inspector verified that the licensee's organization and staffing were in compliance with the requirements specified in TS Section 6.1. The inspector determined that shift staffing met the minimum requirements for duty and on call personnel.

2. Operations Logs and Records

a. Inspection Scope (IP 69001, Section 02.02)

The inspector reviewed the following selected maintenance and reactor operations logbooks and associated records to ensure that the requirements of TS Section 6.10, "Plant Operating Records," were met:

- conditions/limit log
- KSU TRIGA Mark II reactor management orders
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present
- TSs for the KSU TRIGA Mark II Reactor, dated March 13, 2008, and amended April 2011

b. Observations and Findings

The inspector determined that information on the operational status of the facility was recorded in the reactor console logbook as required by procedure. The inspector confirmed that operational problems and events, including unintentional shutdowns or scrams were noted in the logs and were reported, reviewed, and resolved as required before the resumption of operations. The inspector verified that required operations evolutions were logged and cross-referenced with other logs and forms, as required, and that selected operational limits specified in TS Section 2, "Safety Limits and Limiting Safety System Settings," and TS Section 3, "Limiting Conditions for Operations," was not exceeded.

c. Conclusion

The inspector determined that the licensee's record keeping program conformed to TS requirements and operational activities were consistent with applicable TSs and procedural requirements.

3. Requalification Training

a. Inspection Scope (IP 69001, Section 02.04)

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 met:

- personal RO and SRO files
- RSC Meeting Minutes for 2018 to the present
- status of operator licenses for three SROs and one RO
- various forms developed by the Reactor Supervisor (RS) to track operator training, operating hours, written and operating examination results, and medical examination due dates
- "Requalification Program, Kansas State University TRIGA Mark II Nuclear Reactor Facility," dated June 2003

- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present
- NRC Form 396, "Certification of Medical Examination by Facility Licensee," for the SROs and RO

b. Observations and Findings

The inspector determined that the licensee's NRC licensed RO staff consisted of three SROs and one RO. The inspector reviewed the licensee's requalification program and determined that it included the regulatory requirement for an annual operating test and the licensee's requalification program requirement for an annual written examination. The inspector reviewed the written and operating examinations used for the 2019-2020 requalification cycle and determined that the licensee was following the requalification program as required. The inspector reviewed documentation indicating that two of the four operators had performed the required number of hours of reactor operation at the frequency specified in the requalification program. The inspector verified, that because of the failure to operate the reactor for the required number of hours per quarter, the two operators were suspended from operating the reactor until they could operate the reactor for six hours under the supervision of an SRO.

The inspector reviewed the medical records for the four licensed operators. The inspector verified that two of the four operators received a physical examination every two years as required. One of the other two operators had an examination recently and received the results during the period of the inspection. The other operator was to have a physical shortly. These two operators (the same two as noted above) are also suspended from operating the reactor until their physical examinations are received by the RS and found to be acceptable.

c. Conclusion

The inspector verified that operator requalification was conducted as required by the Requalification Program and NRC regulations.

4. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001, Section 02.05)

The inspector reviewed the following to verify compliance with TS Section 3, and to determine if the periodic surveillance tests on safety systems were performed as stipulated in TS Section 4, "Surveillances":

- maintenance and surveillance reports for 2018 to the present
- various KSU TRIGA Mark II Operation, test, and maintenance procedures, including: Operating Procedure (OP)-2, "Annual Power Level Calibration," and, OP-5, "Semi-Annual Minimum Interlock and Scram Checks"
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present
- audit reports (completed by the Reactor Manager (RM) and submitted to the RSC) entitled, "Semi-Annual Audit Report of Reactor Operations and

Radiation Protection Program,” for the periods of January-June 2018, July-December 2018, January-June 2019, July-December 2019, and January-June 2020

- annual operating reports for the KSU TRIGA Mark II nuclear reactor facility for 2018 and 2019, submitted to the NRC on November 28, 2019, and February 28, 2020
- TSs for the KSU TRIGA Mark II Reactor, dated March 13, 2008, and amended April 2011

b. Observations and Findings

The inspector determined that the licensee used a monthly form which listed all the periodic checks, tests, calibrations, inventories, and inspections and the dates they are due, including those required by the TSs and procedures. This tool aided the licensee in assuring that surveillances were completed on a timely basis. The inspector verified that surveillances were completed on schedule, in accordance with licensee procedures, and in compliance with the TSs. The inspector confirmed that the results of the periodic checks, tests, calibrations, inventories, and inspections were within specified parameters.

c. Conclusion

The inspector determined that LCO confirmations and surveillance requirements stipulated by TSs and procedures were completed as required.

5. Experiments

a. Inspection Scope (IP 69001, Section 02.06)

In order to verify that any existing experiments and newly proposed experiments met all TS requirements, the inspector reviewed selected aspects of:

- RSC meeting minutes for 2018 to the present
- various KSU TRIGA Mark II experiment procedures including: experiment (E)-1, “Isotope Production,” approval by the RSC Chairman dated October 8, 2013; E-6, “Control Rod Calibration,” approval dated March 19, 2014; and, E-55, “Fuel Element Gamma Spectroscopy Using Fuel Movement Device,” approval dated June 18, 2018
- KSU TRIGA Mark II by-product logbook with entries dated 2018 to the present
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present
- TSs for the KSU TRIGA Mark II Reactor, dated March 13, 2008, amended April 2011

b. Observations and Findings

The inspector determined that the licensee maintained a current file of existing experiments. The inspector noted that facility TSs require any new experiment to be reviewed by the RS and, if it was not similar to an established one, it must be

approved by the RSC. The inspector determined that one new experiment was proposed to the RSC since the last inspection. The experiment, E-55, "Fuel Element Gamma Spectroscopy Using Fuel Movement Device," was reviewed and approved by the RSC as required. The inspector confirmed that the various experiments were conducted in accordance with approved procedures and were logged in the reactor console logbook as required.

c. Conclusion

The inspector determined that experiments were reviewed and performed in accordance with TS requirements and performed as stipulated in the licensee's procedures.

6. Design Changes

a. Inspection Scope (IP 69001, Section 02.08)

The inspector reviewed the following to ensure that proposed design changes were reviewed and approved in accordance with 10 CFR 50.59, "Changes, tests and experiments," the TS, and the licensee's administrative procedures:

- RSC annual operating audits for 2018 to the present
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present
- annual operating reports for the KSU TRIGA Mark II nuclear reactor facility for 2018 and 2019, submitted to the NRC on November 28, 2019, and February 28, 2020
- TSs for KSU TRIGA nuclear reactor, dated March 13, 2008, amended April 2011

b. Observations and Findings

The inspector determined that the licensee performed 10 CFR 50.59 screenings for various facility modifications and procedure changes since the last inspection in this area. The screenings resulted in the need to complete full evaluations for several of the proposed changes as required. The inspector determined that all evaluations were completed and submitted to the RSC for final approval. Although the licensee purchased and received a new reactor console, no 10 CFR 50.59 evaluation was initiated to place it into operation as of the date of this inspection.

c. Conclusion

The inspector verified that the screening and evaluation of changes to facilities and procedures satisfied NRC requirements specified in 10 CFR 50.59.

7. Committees, Audits and Reviews

a. Inspection Scope (IP 69001, Section 02.09)

The inspector reviewed the following to ensure that audits and reviews stipulated in the facility's TS Section 6.2, "Review and Audit," were conducted by the RSC:

- RSC meeting minutes for 2018 through the present
- TSs for the KSU TRIGA Mark II Reactor, dated March 13, 2008, amended April 2011
- audit reports (completed by the RM and submitted to the RSC) entitled, "Semi-Annual Audit Report of Reactor Operations and Radiation Protection Program," for the periods of January–June 2018, July–December 2018, January–June 2019, July–December 2019, and January–June 2020
- annual operating reports for the KSU TRIGA Mark II nuclear reactor facility for 2018 and 2019, submitted to the NRC on November 28, 2019, and February 28, 2020

b. Observations and Findings

The inspector verified that the RSC conducted meetings at the required frequency with a quorum present, pursuant to TS requirements. The RSC reviewed and approved procedures and experiments and provided direct oversight of reactor operations. The inspector confirmed that the RSC also reviewed and audited facility operations, the radiation protection program, the facility E-Plan and the security plan as specified in the TSs. The inspector verified that the audit frequency met the requirements of the TSs.

c. Conclusion

The inspector determined that the RSC provided the oversight required by the TSs.

8. Emergency Planning

a. Inspection Scope (IP 69001, Section 02.10)

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

- emergency telephone contact list dated April 6, 2020
- emergency equipment inventories for 2018 to the present
- "Emergency Plan and Emergency Plan Procedures KSU TRIGA Mark II Nuclear Reactor Facility," dated December 5, 2016
- KSU TRIGA Mark II nuclear reactor facility E-Plan procedures including: Emergency Plan Procedure (EPP)-2, "Notification List;" EPP-3, "Emergency Classification;" EPP-5, "Fire;" EPP-8, "Radiation Hazard;" and, EPP-9, "Loss of Reactor Coolant"

b. Observations and Findings

The inspector reviewed the licensee's emergency preparedness program as defined in the aforementioned E-Plan and implementing procedures. The inspector determined that the E-Plan and procedures were reviewed biennially as required in the plan. The inspector confirmed that agreement letters with outside support groups were on file as required. The latest versions of the letters were dated August 2019 and were updated every 2 years. The inspector verified that an emergency call list was updated as required and was available. Emergency equipment inventories were conducted quarterly. The inspector also reviewed documentation related to annual drills, biennial exercises, the critiques of the drills and exercises, and lessons learned. The inspector verified that emergency drills and exercises were conducted at the periodicity required in the E-Plan.

c. Conclusion

The inspector confirmed that the emergency preparedness program was conducted as required by the E-Plan and implementing procedures.

9. Maintenance Logs and Records

a. Inspection Scope (IP 69001, Section 02.11)

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

- maintenance and surveillance monthly reports for 2018 to the present
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present
- audit reports (completed by the RM and submitted to the RSC) entitled, "Semi-Annual Audit Report of Reactor Operations and Radiation Protection Program," for the periods of January–June 2018, July– December 2018, January–June 2019, July–December 2019, and January–June 2020
- TSs for the KSU TRIGA Mark II Reactor, dated March 13, 2008, amended April 2011
- annual operating reports for the KSU TRIGA Mark II nuclear reactor facility for 2018 and 2019, submitted to the NRC on November 28, 2019, and February 28, 2020

b. Observations and Findings

The inspector reviewed the reactor console and maintenance logs and determined that documentation of maintenance activities was recorded as required. The inspector noted that the licensee was in the process of improving the maintenance records by requiring that more complete documents be completed and maintained so that problems and trends could be tracked and resolved. The inspector verified that maintenance was conducted consistent with the TSs and applicable procedures. Maintenance activities ensured that

equipment remained consistent with the safety analysis report and TS requirements.

c. Conclusion

The inspector verified that maintenance was performed and logs and records were maintained consistent with TS and licensee procedure requirements.

10. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001, Section 02.12)

The inspector reviewed the following procedures and logs to verify that fuel movements and inspections were conducted in accordance with applicable TSs and procedure requirements:

- fuel location status map
- KSU TRIGA Mark II reactor console logbooks covering operations for 2018 to the present, and,
- KSU TRIGA Mark II operation, test, and maintenance procedures, OP-10, "Fuel Element Inspection," and OP-26, "Fuel Handling Procedure"

b. Observations and Findings

The inspector determined that the licensee performed fuel inspections during the periods of September 27 and December 6, 2019. The inspector confirmed that all fuel movements were documented in the console log as required by procedure. The inspector verified that fuel element inspections were completed to ensure that the requirements in TS Section 3.7, "Fuel Integrity," and Section 4.7, "Fuel Integrity," were met. Fuel element inspection notes were maintained on spreadsheets in computer files that were password protected and accessible only by the RM and RS. The inspector confirmed that procedures for refueling, fuel movement, and fuel inspections were reviewed and approved by the RSC as required. The inspector verified that fuel movement and data recording were completed in accordance with TS and facility procedure requirements except as noted below (see Paragraph 11.b(2)).

c. Conclusion

The inspector confirmed that fuel movements and fuel element inspections were performed in accordance with TS and licensee procedural requirements.

11. Follow-up (Previously Identified Issues)

a. Inspection Scope (IP 92702)

The inspector reviewed the licensee's actions taken in response to previously identified issues including two Reportable Occurrences and a violation (VIO) outlined in the following:

- KSU letter to the NRC, “Reportable Occurrence on December 22, 2018 at the Kansas State University TRIGA Mark II Nuclear Reactor Facility,” dated January 1, 2019
- KSU letter to the NRC, “Reply to a Notice of Violation – 2019 NRC Annual Inspection of the Kansas State University TRIGA Mark II Nuclear Reactor (Facility License #R-88, Facility Docket # 50-188),” dated November 29, 2019
- KSU letter to the NRC, “Reportable Occurrence on December 4, 2019 at the Kansas State University TRIGA Mark II Nuclear Reactor Facility,” dated December 13, 2019

b. Observations and Findings

(1) Reportable Occurrence Involving an LCO Violation

On December 23, 2018, the licensee notified the NRC of a Reportable Occurrence involving an LCO violation that occurred the previous day. It was recorded and tracked by the NRC as Event No. 53805. While performing surveillance testing following control rod maintenance, the RS identified a problem involving an interlock check. After further review, the licensee determined that a violation of TS 4.4.2 had occurred since the CONTROL ROD (STANDARD) position interlock was not surveillance tested semiannually as required and was, therefore, considered inoperable.

After declaring an LCO violation, the licensee initiated immediate corrective actions by administratively shutting down the reactor. The licensee staff at the reactor was informed of the violation as well. A thorough investigation of the problem was begun to determine the cause of and then correct the problem. The licensee determined that the main cause of the reportable occurrence was an inadequate procedure to test a TS-required SAFETY SYSTEM CHANNEL in the appropriate mode. The inadequacy in the procedure was caused by confusion and lack of understanding of the multiple interlocks associated with PULSE MODE operations. A subsequent test of the CONTROL ROD (STANDARD) position interlock showed it to be operable. In addition, there was no history indicating that it had not functioned properly in the past.

Further licensee corrective actions included reviewing the occurrence with those reactor staff members who were not present during the event (due to Christmas break). The licensee staff members were also retrained and debriefed on the reactor control system. The procedure involved, OP-5, “Semi-Annual Check Minimum Interlock & SCRAM Checks,” was revised to correct the identified deficiency and properly test the CONTROL ROD (STANDARD) position interlock. The RSC reviewed the reportable occurrence and reviewed and approved the revised procedure. In addition, the interlocks involved were retested using the revised testing procedure. When all the corrective actions were completed, the RSC approved the resumption of routine reactor operations.

The inspector reviewed this reportable occurrence and the licensee’s corrective actions. The inspector verified that the reactor staff had reviewed the incident and were trained on the new procedure. Following the training,

reactor staff members were given a quiz on the occurrence. The inspector determined that the procedure revision ~~was adequate~~ addressed the issue that resulted in the violation. The inspector reviewed the RSC meeting minutes and determined that the RSC met on January 11, 2019, reviewed the event and the revised procedure, and approved the procedure revision and restarting the reactor.

The licensee was informed by the inspector that failure to perform a surveillance of the CONTROL ROD (STANDARD) position interlock in pulse mode within the required time frame was a Severity Level IV violation of TS 4.4.2. However, the potential safety consequence was low because the interlock was operable but was not tested in Pulse Mode as required. All other checks and tests indicated that the CONTROL ROD (STANDARD) would function as required. The inspector determined that the problem was identified and reviewed by the licensee and reported to the NRC as required. Corrective actions were identified and was completed as well. As a result, the licensee was informed that this non-repetitive, licensee-identified and corrected violation would be treated by the NRC as a Non-Cited Violation (NCV), consistent with Section 2.3.2.a of the NRC Enforcement Policy (NCV 05000188/2020202-01). This issue is considered closed.

(2) Reportable Occurrence Involving a Surveillance Requirement Violation

On December 5, 2019, the licensee notified the NRC of a Reportable Occurrence involving a surveillance requirement violation that was discovered the previous day. It was tracked by the NRC as Event No. 54421. Following a review of fuel inspection records, the licensee identified fuel elements that potentially was not inspected as required by TS 4.7.3.

TS Section 4.7.3 requires that, "B, C, D, E, and F RING elements comprising approximately 1/3 of the core SHALL be visually inspected annually for corrosion and mechanical damage such that the entire core SHALL be inspected at 3-year intervals, but not to exceed 38 months." The licensee used an inspection tracking sheet for determining which fuel elements were inspected during each inspection cycle. During a review of the inspection records in December, it was noted that two records indicated different inspection dates for the same fuel elements. Due to an inspection tracking sheet sorting error, the licensee found there were possibly fuel elements which were not identified as requiring an inspection during the last fuel inspection which had occurred on September 27, 2019. The RM notified the RS that all reactor operations were administratively suspended.

After a comprehensive review of the fuel element inspection documents, the licensee found that the problem resulted from the mismatch in fuel element serial numbers with the last inspection date listed on the inspection tracking spreadsheet. The licensee determined that the mismatch occurred because of personnel error in properly sorting the records by inspection date. Following the review, four elements were identified that was not inspected as required. As noted above, reactor operations were suspended until the event could be reviewed by the RSC and approval to restart granted.

The main cause of the reportable occurrence was an error in tracking fuel element inspection dates for each element and then determining which elements remained to be inspected. The licensee took various corrective actions including reviewing this event with all reactor staff. The four elements that did not meet the surveillance frequency requirement were inspected on December 6, 2019, and a complete review of the fuel inspection records was initiated and finished on December 11, 2019. Subsequently, on December 13, 2019, the fuel element inspection tracking document was properly revised to reflect current conditions.

The inspector reviewed this reportable occurrence and the licensee's corrective actions. The inspector verified that the reactor staff had reviewed the incident and received training regarding proper inspection tracking methods. The records were reviewed and corrected. The RM sent an e-mail message to all members of the RSC asking them to review the event and the corrective actions taken and approve restarting the reactor. Restart was approved by the RSC on December 18, 2019.

The licensee was informed by the inspector that failure to conduct the required fuel inspection of four elements was a Severity Level IV violation of TS 4.7.3. However, the potential safety consequence was low because of the type of fuel involved (stainless steel clad TRIGA fuel) and the safety features designed into the elements. The inspector determined that the problem was identified and reviewed by the licensee and reported to the NRC as required. Corrective actions were identified and completed. As a result, the licensee was informed that this non-repetitive, licensee-identified and corrected violation would be treated as an NCV, consistent with Section 2.3.2.a of the [NRC Enforcement Policy](#) (NCV 05000188/2020202-02). This issue is considered closed.

- (3) 50-188/2019-201-01 – VIO - Two examples of a VIO of TS requirements involving: 1) failure to submit the facility annual report for 2017 and 2018 within 60 days after the end of the calendar years as required by TS 6.11 e); and, 2) failure to conduct semi-annual environmental monitoring surveys measuring the dose rates at the facility boundary with the reactor at full-power as required by TS 6.3 a).

During an inspection conducted during October 2019, the inspector determined that the annual report was not submitted to the NRC within the time frame required by the TS. After reviewing the 2017 annual report, the inspector noted that it was dated and was submitted to the NRC on December 31, 2018. When asked about the 2018 annual report, the licensee indicated that it was in the process of completion. The licensee was informed by the inspector that failure to submit the facility annual report for 2017 and 2018 within 60 days after the end of the calendar year was an example of an apparent VIO of TS requirements.

In addition, during the inspection noted above, the inspector determined that completion of semi-annual environmental monitoring surveys was not performed as required. Upon reviewing the surveys performed to fulfill this requirement, the inspector noted that an annual survey involving

measurement of both gamma-ray and neutron dose rates at the facility operations boundary with the reactor at full-power operation was conducted in 2016, 2017, and 2018. The survey was not conducted semi-annually as required. The licensee was informed by the inspector that failure to conduct semi-annual environmental monitoring surveys by measuring the dose rates at the facility boundary with the reactor at full-power operation was a second example of a VIO of TS requirements.

The licensee issued a response to the violation by letter dated November 29, 2019. The licensee reviewed the problems and the reason for each. Actions were taken to correct the problems including revising the monthly tracking document used to track periodic surveillances, which included semi-annual and annual surveillance requirements. The environmental survey was mistakenly listed as an annual requirement. The licensee reviewed all surveillances listed on the monthly tracking document for accuracy as well. In addition, the tracking document was revised to include a record of the dates for previously performed surveillances. The licensee indicated that this was to provide redundancy in the tracking document for checking compliance with surveillance intervals.

The licensee submitted their 2018 annual report on November 28, 2019, to fulfill the requirement to submit a report. The inspector determined that the next annual report was submitted on February 28, 2020, which was within the TS requirement. With respect to the semi-annual environmental survey, through records review the inspector verified that a survey was conducted on August 9, 2019, to fulfill the environmental survey requirement. The inspector verified that subsequent surveys were performed on February 3, 2020, and July 29, 2020. This frequency was within the time frame specified in the TSs.

In their response letter the licensee also committed to conduct training on surveillance requirements and compliance. The licensee indicated that the training was completed on December 6, 2019, although it was not documented. The inspector noted that the licensee's "Surveillance and Maintenance Training" presentation was dated December 6, 2019, lending credence that the training was completed as indicated.

The inspector verified that the licensee's specified corrective actions in response to the VIO and was completed as indicated. This issue is considered closed

c. Conclusion

The inspector reviewed the actions taken by the licensee in response to two Reportable Occurrences and a VIO and determined that these issues are closed.

12. Exit Interview

The inspector presented the inspection results to licensee management at the conclusion of the inspection on August 20, 2020. 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

A. Cebula	Reactor Manager
D. Nichols	Senior Reactor Operator
R. Seymour	Reactor Supervisor

INSPECTION PROCEDURES USED

IP 69001	Class II Non-Power Reactors
IP 92702	Follow-up

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

05000188/2020202-01	NCV	Failure to perform a surveillance of the CONTROL ROD (STANDARD) position interlock in pulse mode within the required time frame as required by TS 4.4.2.
05000188/2020202-01	NCV	Failure to conduct the required inspection of four fuel elements as required by TS 4.7.3.

Closed:

05000188/2020202-01	NCV	Failure to perform a surveillance of the CONTROL ROD (STANDARD) position interlock in pulse mode within the required time frame as required by TS 4.4.2.
05000188/2020202-01	NCV	Failure to conduct the required inspection of four fuel elements as required by TS 4.7.3
50-188/2019-201-01	VIO	Two examples of a violation of TS requirements involving: 1) failure to submit the facility annual report for 2017 and 2018 within 60 days after the end of the calendar years; and, 2) failure to conduct semi-annual environmental monitoring surveys measuring the dose rates at the facility boundary with the reactor at full-power as required.

LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
E	Experiment
E-Plan	Emergency Plan
EPP	Emergency Plan Procedure
IP	Inspection Procedure
KSU	Kansas State University

LCO	Limiting Conditions for Operation
NRC	U.S. Nuclear Regulatory Commission
OP	Operating Procedure
RM	Reactor Manager
RO	Reactor Operator
RS	Reactor Supervisor
RSC	Reactor Safeguards Committee
SRO	Senior Reactor Operator
TSs	Technical Specification
TRIGA	Training, Research, Isotopes, General Atomics
VIO	Violation