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■ 2023 Year in Review



TRTR Newsletter

Q1 2024



2023 Exams



2023 Inspections

MESSAGE FROM THE CHAIR

One of the more important things we can do as a community is share information and expertise. I want to encourage everyone to realize the importance of this. This is especially true of facilities that have limited staff and resources. No one should feel as though they are on an island, but when you are only a handful of people (or less sometimes), I can appreciate that it may feel that way. To that end, I would encourage our community to reach out to your neighbors and offer assistance when needed. We can do this in two primary ways. First, we can offer to serve on other's safety committees. This is a good way of providing grounded

and knowledgeable expertise on safety committees that may have more academic focused credentials. Second, we can offer assistance on technical matters. This can be as simple as reviewing a 50.59 screen/evaluation that is challenging or providing a technical resource for the inevitable electronics issues that suddenly pop up. That said, it sometimes takes a bit of courage to ask for help. But when we do ask, it makes us all better because we learn from each other, no matter the size or type of reactor. In the end, it is this sharing of information that is vitally important. It lifts all boats. Within the TRTR community, we share information through our



quarterly newsletter (hat tip: Amber!), have an annual meeting where we can discuss in detail issues of the day, we have the TRTR listserv, and we also have the “Hot Topics” call that we can set up. First proposed by our colleagues at the Nuclear Energy Institute last year (hat tip: Hilary!), the “Hot Topics” call was offered as a way of getting folks on the phone on a pressing issue. The nature of the issue at hand dictates the appropriate method of providing the information (e.g., a regulatory issue may warrant a hot topic call simply because of timeliness of responses rather than waiting for the annual meeting). Regardless, one of these ways should ensure knowledge and expertise are being shared.

Steve Reese

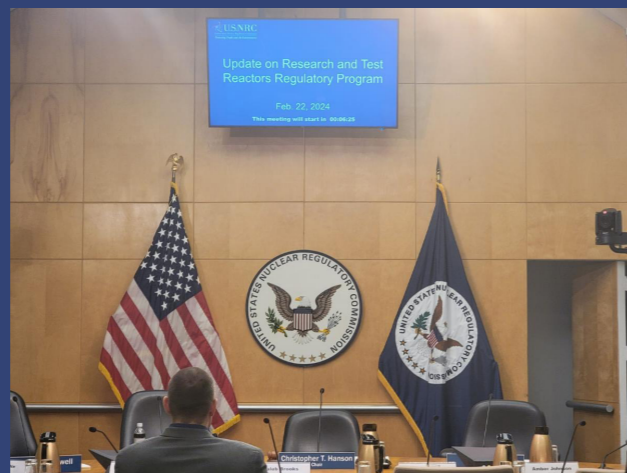
Director, Radiation Center
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LETTER FROM THE EDITOR

Hello TRTR Friends,

Last month I had the opportunity to present to the NRC Commission on behalf of our community. If you missed the live stream, you can view the [archived video](#) when you have some free time! I was honored to be on a panel with Rusty Towell (NEXT Lab), Caleb Brooks (IMRD2), Andrew Boulanger (University Fuel Services Program Manager, DOE) and Joanie Dix (Deputy Director, Office of Conversion, NNSA). The [presentation slides](#) are available for review. I think the importance of research reactors for both science and outreach was recognized on both sides of the (small!) table.



Courtesy Mike Hottinger

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Licensees must report:

- Transactions
- Inventory Adjustments
- Burnup

DOE and NRC reporting requirements are different. [NUREG/BR-0006](#) - Forms 741 and 742 - Changes in inventory

[NUREG/BR-0007](#) - Forms 742 and 742C - Status Reports

Rulemaking: [Alternative to the use of Credit Ratings 10 CFR 30](#)

Dodd-Frank requires removal of references to bond ratings in federal regulations. If approved, this will replace Bond Rating Criteria with a new creditworthiness standard. Expected to impact 5 facilities.

NUREG 1478

Expected to be available April-May 2024. Public comment period to last 60-90 days.

Inspection Guidance Updates

Concerns about audit/oversight committee effectiveness. Inspection Procedures will be updated with more guidance for inspectors on Audits.

Digital 50.59 Guidance

Progressing.

Licensee Administered Exams (TRTR Initiative)

Options paper being developed for presentation to the executive committee at the annual meeting.

Quarterly Call Summary

The NRC - TRTR quarterly meeting was hosted by the NRC on 2/22/2024 ([ML24046A211](#)).

Overview of NMMSS System



Amber Johnson
Editor



Luke Gilde
Content Creator

2024 ANS Student Conference

April 4-6, 2024
State College, PA

European Research Reactor Conference

April 21-25, 2024
Warsaw, Poland

NMMSS User Training

May 13-16, 2024
Las Vegas, NV

NAYGN Continental Conference

June 2-5, 2024
Charlotte, NC

ANS Annual Conference

June 16-19, 2024
Las Vegas, NV

U.S. Women in Nuclear Conference

July 22-25, 2024
Pittsburgh, PA



Reportable Occurrences

Missouri University of Science and Technology - Event # 56878

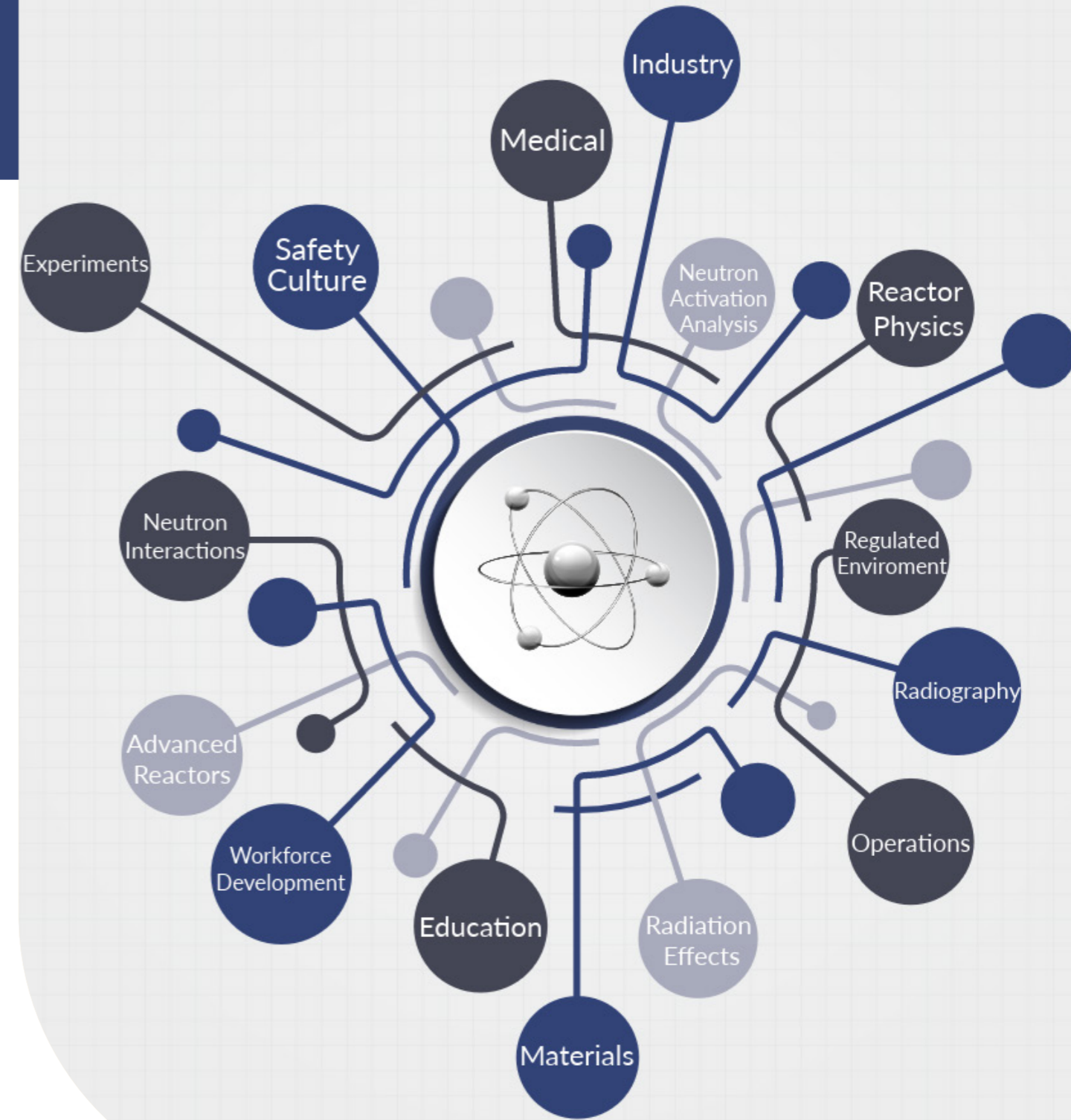
Missouri S&T had a reportable occurrence when a failed amplifier caused a high power scram indication. This was considered a reactor safety system component malfunction. Actual reactor power remained at normal levels during the event. A follow up report was issued ([ML23349A206](#)) and the failed power supply of the amplifier will be replaced.

Texas A&M University - Event # 56899

Texas A&M had a reportable occurrence when it was found that the confinement pressure monitor was not tied into the trip system and was not visible to operators in the control room leading to a potential violation of the Limiting Conditions for Operation. This condition has existed since 2006.

University of New Mexico - Event # 56927

University of New Mexico had a reportable occurrence when, after directing a trainee to shut down the reactor, the Reactor Operator left the control room while the key remained in the reactor console.



Research Reactor Applications

INDEPENDANT ASSESMENT

A number of reports [required by the Confirmatory Order issued to the NIST Center for Neutron Research](#) were recently released

[Independent Nuclear Safety Consultant Assessment of Training at the NIST Center for Neutron Research \(NCNR\)](#)

The independent assessment concluded that the NCNR-ROE staff has a vision for an effective training program but a lack of resources prevents a timely completion of the upgrade and is impacting the desire to achieve the 5th crew concept. Three Positive Observations (PO), seven Areas for Improvement (AFI) and two Areas Needing Attention (ANA) were identified.

PO #1: The Assessment Team observed one classroom training session (license class review of regulatory requirements in preparation for upcoming NRC exam). The training was done well and the TPM encouraged participation by the individuals and asked probing questions to ensure comprehension of the material. Instructor and trainee engagement was positive.

PO #2: The Assessment Team observed one RX startup and shutdown (License candidate practice for upcoming NRC exam). Licensed SRO and License candidate engagement was positive.

PO #3: The NCNR-ROE Team has a vision of what the program should look like.

AFI #1: Failure to adapt a structured and rigorous training program has resulted in inadequate employee knowledge, skills, and abilities for performance of duties.

AFI #2: Failure to implement the standards

established by ANSI/ANS 15.4-2007 has resulted in a training program which is knowledge based as opposed to performance based.

AFI #3: Failure to provide guidance on how to fully implement training programs has resulted in inconsistencies in implementing initial license classes (from class to class) as well as implementing 24-month requal cycles.

AFI #4: Failure to implement the requalification program as intended has resulted in a loss of Operator proficiency due to a lack of a structured program and lack of minimum knowledge criteria.

AFI #5: Failure to implement the On-the-Job-Training established in ANSI/ANS 15.4-2007 has resulted in inconsistencies in knowledge requirements expected for license candidates and a loss of knowledge proficiency of licensed Operators.

AFI #6: Lack of Operations training personnel has contributed to a loss of proficiency of licensed and initial licensed personnel due to the lack of a structured rigorous and sustainable program.

AFI #7: Lack of a structured leadership training program for NCNR personnel has led to inconsistencies in application of training of supervisory personnel and is ineffective as a corrective action.

ANA # 1: Failure to implement an electronic storage system for completed documentation relating to completed training and evaluations places NCNR at risk of not being able to provide required documentation to auditors and regulators in a complete and timely manner.

NCNR

ANA # 2: Based on employee feedback, corrective action (CAP) and Human Performance Tools (HPES) training given to NCNR personnel is ineffective. Although this observation was limited in scope (training) it raises the question of the overall effectiveness of the Corrective Action Program. NCNR management should perform an independent review of the effectiveness of the actions taken to date for the Corrective Action Program.

[Problem Identification And Resolution \(PI&R\) Performance Area Assessment Report](#)

The assessment concluded that the PI&R program is functional but not operating at a mature level. Some parts of PI&R are either under development or are planned to be instituted. One Areas Needing Attention and 8 Areas For Improvement were identified.

AFI #1: In addition to the Generic Communication Program, the Benchmarking, Cause Analysis, Trending, Operating Experience, and Metrics (Performance Indicators, are PI&R programs and have insufficient guidance in procedures/programs at NCNR to drive full implementation.

AFI #2: CAP procedures are incomplete and do not meet expectations noted in DOE G414.1-5, Corrective Action Program Guide, or INPO – Principles for Effective SelfAssessment and Corrective Action Program.

AFI #3: While recent performance has improved since June 2023, CAP has not been well rolled out to all facility personnel and has not been consistently reinforced by management. Much work remains for full implementation.

AFI #4: A Quality Assurance plan or program must be revised to achieve full compliance with ANS-15.8.

AFI #5: NCNR does not have a single source entry for PI&R reporting. The consequences of multiple distributed safety, trouble and work request platforms affect the ability to ensure CAQ/SCAQ are corrected, the ability to trend performance, and as indicated by interviews - is confusing for staff as to which platform to use.

AFI #6: The facility is lacking Operability and Reportability guidance/procedures.

AFI #7: The facility inappropriately changed Chapter 12 of the SAR (NCNR license basis).

AFI #8: While the facility can be operated safely, there are insufficient staff at NCNR to complete the added duties of implementing and maintaining PI&R, as defined in IP 7115

ANA # 1: The facility does not have Work Management Procedures/Processes that provide clarity and completeness to implement work at NCNR.

[Independent Nuclear Safety Consultant Assessment of the Root Cause Analysis Performed by NCNR into the February 3, 2021 Event at the NIST Center for Neutron Research](#)

The assessment concluded that, while the event root cause provides sufficient actions such that they can be reasonably expected to prevent another undetected latching event, there are significant structural evaluation issues indicating that the root cause conclusions are not at the appropriate depth to ensure underlying organizational or cultural drivers are identified and actions prescribed. Four Areas for Improvement were identified.

INDEPENDANT ASSESMENT CONTINUED

AFI #1: There are structural evaluation issues that indicate that root cause conclusions are not at the appropriate depth to ensure underlying organizational or cultural drivers are identified and actions prescribed.

AFI #2: Corrective Actions specified for each root cause were not, in all cases, specific enough to implement reliably, measurable to ensure the organization can determine when adequately completed, or relevant (i.e., tied logically with the stated root cause).

AFI #3: NCNR staff need additional training to improve skills and knowledge related to conduct and oversight of root cause analysis for significant events.

AFI #4: There are significant gaps in closure documentation for the corrective actions prescribed by the event root cause due to not having a fully effective Closure Review Board and Closure Notebooks with complete closure documentation to support review.

Assessment of NCNR-ROE Procedures Program

The assessment concluded that the NCNR-ROE staff has a vision for a Procedure Program, the lack of resources and knowledge of Procedure Program requirements prevents the implementation of an effective Procedure Program. The program does not contain the necessary rigor to ensure the safe operation of the facility for the long term.

Safety Evaluation Committee (SEC)/ Safety Assessment Committee (SAC) Final Report

The assessment determined that the SEC/SAC met

the regulatory requirements of the NCNR Technical Specifications. Two Positive Observations, three Areas for Improvement, and five Areas Needing Attention were identified.

PO #1: The new Chief of Reactor Engineering displayed an in-depth knowledge of the 50.59 process. He is on the National Institute of Engineering (NIE) committee that is writing a standard on the 50.59 process as it applies to research reactors.

PO #2: The audits performed by the SEC Audits subcommittee clearly documented that the

frequency requirements specified in the TS had been met. The audits were noted to be comprehensive and in-depth.

AFI #1: The assessment team identified an unauthorized change to the Safety Analysis Report (SAR), weaknesses in justifications in evaluations. A procedure defining how to perform an evaluation has not been developed, and there is a lack of training or qualifications required to perform evaluations.

AFI #2: A process or procedure to define the audit process has not been developed. ANSI/ANS 15.8, Quality Assurance Program for Research Reactors, section 2.18 states "Assessments shall be performed in accordance with written procedures or checklists."

Examples:

- No procedure that defines the conduct of audits and/or assessments
- No training/qualifications to perform the audits
- Audit reports categorized identified points of interest as "Findings". Many of these do not fit the industry accepted definition(s) of a finding.

AFI #3: Neither NBSR-0002-DOC-02, QA Program for Modifications to the NBSR Reactor, or AR procedures, identified as being needed but not yet developed, address all of the requirements of ANSI/ANS 15.8.

ANA # 1: The appointment letters for SEC members do not provide any explanation or justification on how the new members meet the charter and TS requirements.

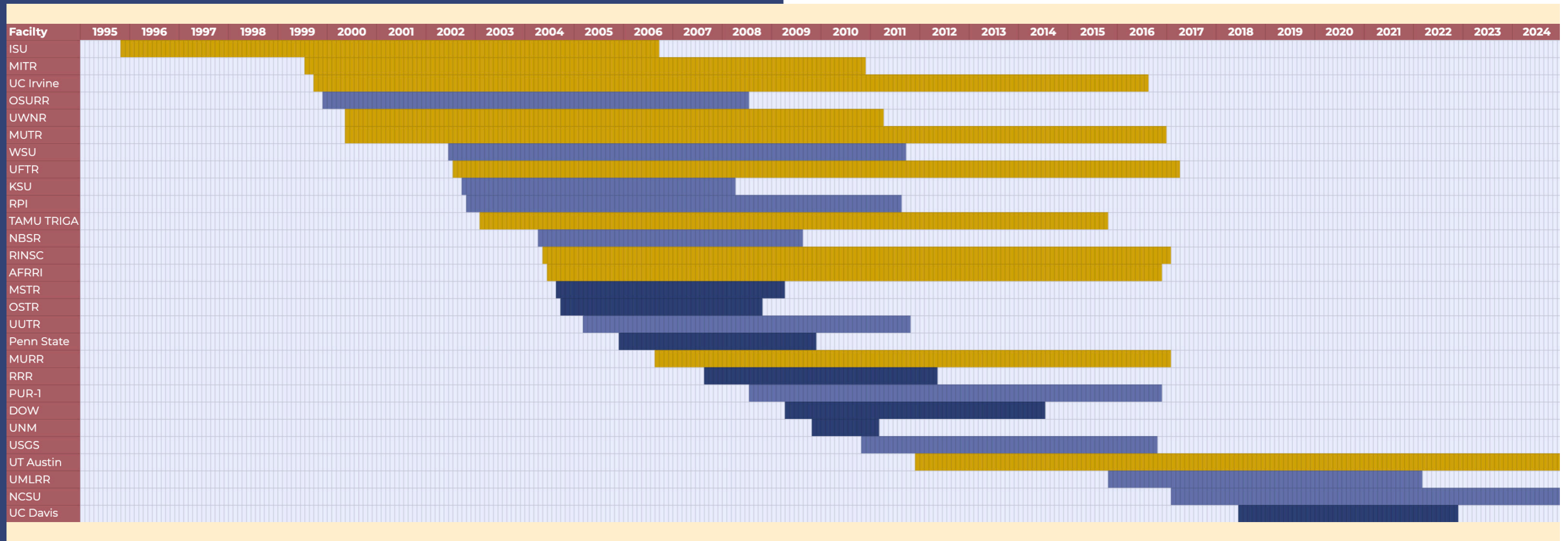
ANA # 2: There is no procedure or charter formalizing the SAC process to include a record of selection requirements and Director approval.

ANA # 3: The Procedure Audit Subcommittee (PAS) requires management attention to ensure procedure audits, as specified in the PAS charter, are performed. No audits had been completed since the subcommittee charter was approved in September 2022. Several are now in progress.

ANA # 4: There is no training or qualifications specified for individuals performing the TS required audits.

ANA # 5: There is no training or indoctrination for new members of the SEC or subcommittees regarding their roles and responsibilities as a SEC member.





NON-POWER PRODUCTION OR UTILIZATION FACILITY LICENSE RENEWAL NPUF, SECY-19-0062

The NRC commissioners continue to review the NPUF Rule which would remove license terms for Research, but not Test Reactors, require updated SAR submissions every 5 years, and redefine Test Reactors based on an accident dose criterion rather than an arbitrary power level.

Relicensing Timeline

The chart above shows the relicensing timeline for facilities from 1995-now. The colors correspond to the length of time required from initial application to license issuance:

- > 10 years
- 5-10 years
- < 5 years

Two facilities are currently engaged in license renewal. The relicensing process will begin again in 2026 with ISU. Nine facilities, 1/3rd of the active licensees, will apply for license renewal between October 2035 and March 2037.

Improved Efficiencies
Create a more responsive and efficient licensing process

Increased Awareness
Periodic SAR updates

Risk-informed, Performance-based Approach
Establish an accident dose criterion

LICENSING UPDATES

Kairos Power Construction Permit Issued

The NRC has issued the Construction Permit ([ML23338A258](#)) for the Kairos Power Hermes Test Reactor. This is the first Construction Permit for a new Research or Test Reactor issued by the NRC since 1985 for the University of Texas - Austin TRIGA Reactor. Kairos applied for the Construction Permit September 2021 ([ML21272A375](#)), and it was issued in December 2023. Kairos has not applied for an operating license for the reactor yet, but hopes to begin operations by 2026. The Hermes Test Reactor will be a 35 MW molten salt cooled test reactor in Oak Ridge, Tennessee, and will be the first non-water or air cooled reactor in the US since the Ft. St. Vrain Nuclear Power Plant shut down in 1989.

Additionally, Kairos was recently [awarded](#) up to \$303 million as part of the Department of Energy's Advanced Reactor Demonstration Program to support the Hermes reactor construction. The company receives fixed payments upon the demonstration of significant project milestones.

Oregon State Applies for LAR

Oregon State is applying for an LAR ([ML24052A143](#)) to remove the Square Wave Mode of operation from their license. After an operator error led to exceeding a Limiting Safety System Setting in Square Wave Mode in 2023, the mode was determined to no longer serve a useful purpose and was disabled.

GE Granted Possession Only License

GE was granted a license amendment ([ML24031A622/](#)

[ML14136A071](#)) to change the license for the Nuclear Test Reactor (NTR) to possession only in preparation for decommissioning the reactor. GE ceased operating the NTR on December 21, 2023.

Kansas State Confirmatory Action Letter:

The NRC issued a Confirmatory Action Letter ([ML24009A063](#)) to formalize commitments KSU administratively made to ensure that reactor operations remained bounded by the reactor's current Thermal Hydraulic Analysis. These restrictions include:

1. Not operate the reactor with core excess reactivity significantly greater than its current [October 7, 2019] value (i.e., more than 0.15 above the current [October 7, 2019] core excess reactivity), except low power reactor operation that may be necessary to make measurements needed to determine excess reactivity.
2. Not operate the reactor when the bulk pool temperature is above 50 degrees Celsius (°C) (122 degrees Fahrenheit (°F)).
3. Not operate the reactor when experiments or other objects are inserted in interstitial flux wire ports in the grid plate and the bulk pool temperature is above 37 °C (98.6 °F).
4. Not operate the reactor when one or more control rods is inoperable.

This Confirmatory Action Letter will remain in effect until KSU receives a License Amendment revising the Technical Specifications to prohibit potential reactor operating conditions that may not be bounded by analyses supporting the reactor's licensing basis.

RESPONSE TO OIG REPORT

The NRC has issued its response ([ML24016A252](#) / [ML24017A135](#)) to the Office of Inspector General's (OIG) September 2023 Special Inquiry into the U.S. Nuclear Regulatory Commission's Oversight of Research and Test Reactors ([ML23272A039](#)). In their report, the OIG determined that:

- The NRC failed to identify problems with fuel movement, including precursors to later events.
- The NRC's inspection practices often lacked direct observation of activities important to safety.
- RTRs other than the NIST reactor experienced significant fuel oversight issues.
- The agency's RTR program has not been substantively updated for at least two decades and does not reflect the agency's risk-informed and safety culture positions.

The NRC's internal review found that many of OIG's underlying observations were previously identified as part of NRC's self-assessment activities. They found no significant gaps, but will be making

Update guidance and training in the areas of reactive inspection decision-making process, the level of detail in inspection reports, scheduling onsite inspections, and safety culture.

several enhancements by October 2024 including "update(d) guidance and training in the areas of reactive inspection decision-making process, the level of detail in inspection reports, scheduling on site inspections, and safety culture". Some examples include:

- NRC Inspectors making an effort to observe reactor operations, fuel movements, and other significant activities.
- Updating inspection guidance to include assessing implementation of the safety and audit committee's recommendations.
- Increased awareness and recognition of potential weaknesses in a licensee's safety culture.
- Improving inspector training and guidance of the precursors that could lead to fuel element damage.
- Developing an [inspection report web page](#) and operations experience dashboard to enhance sharing of reactor operating experience.
- Adding a formalized self-assessment of the RTR oversight program.
- Perform a periodic review of research reactor inspection procedures and manuals.

2023 NRC EXAMS



110 operator candidates took the NRC RO or SRO exams in 2023 with an overall success rate of 89%.



The NRC conducted 23 exams at 18 facilities. The largest number of candidates for a single exam was 11.

2023 NRC INSPECTIONS



25-Operating, 8-Security, 1-Decommissioning, 1-Supplemental



25 facilities were inspected.

Inspection Reports

University of Massachusetts – Lowell

October 16-18, 2023. The inspection included a review of organization and staffing, operations logs and records, requalification training, surveillance and limiting conditions for operation (LCO), emergency planning, maintenance logs and records, and fuel handling logs and records. **No violations were identified.** [ML23304A145](#)

University of Missouri – Columbia

September 25-28, 2023. The inspection included a review of operator licenses, requalification, and medical examinations, experiments, organization and operations and maintenance activities, procedures, fuel movement, and surveillances. **Two Severity Level IV violations were identified.** One for a staffing violation caused when an operator's license was not renewed within the timely renewal period, and they subsequently operated after the expiration of their license; and a second for control blade heights differing by more than 1 inch while the reactor was operating at a power of greater than 100 kW, violating Tech Spec 3.2.b. **These violations are not being cited due to the corrective actions taken by the licensee.** [ML23297A072](#)

Rensselaer Polytechnic Institute

September 18-20, 2023. The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and reviews, and transportation activities. **No violations were identified.** [ML23296A247](#)

Rhode Island Nuclear Science Center

August 28-31, 2023. The inspection included a review of operator licenses, requalification, and medical examinations, experiments, organization and operations and maintenance activities, review and audit and design change functions, procedures, fuel movement, and surveillances. **No violations were identified.** [ML23261B484](#)

Inspection Reports Continued

University of New Mexico

October 23-27, 2023. The inspection included a review of organization and staffing, operations logs and records, requalification training, surveillance and limiting conditions for operation (LCO), emergency planning, maintenance logs and records, and fuel handling logs and records. **One Severity Level IV violation was cited** for operating the reactor in excess of its licensed power level. A response to the violation ([ML24002B111](#)) was issued describing that the protocol which led to the licensed power being exceeded will be revised. [ML23317A003](#)

October 23-27, 2023. The inspection included a review of security compliance. **No violations were identified.** [ML23312A132](#)

University of California–Davis

October 23-25, 2023. The inspection included a review of security compliance. **No violations were identified.** [ML23310A006](#)

Idaho State University

July 31-August 3, 2023. The inspection included a review of organization and staffing, operations logs and records, procedures, requalification training, surveillance and limiting conditions for operation (LCOs), experiments, design changes, committees, audits and reviews, maintenance logs and records, and fuel handling logs and records. **One Severity Level IV violation was identified** for 2 operators failing to have medical exams in the required time interval. [ML23229A025](#)

University of Maryland

November 6-8, 2023. The inspection included a review of organization and staffing, procedures, experiments, health physics, emergency planning and transportation activities. **No violations were identified.** [ML23319A274](#)

University of Utah

July 10-13, 2023. The inspection included a review of organization and staffing, operations logs and records, procedures, requalification training, surveillance and limiting conditions for operation, experiments, design changes, committees, audits and reviews, maintenance logs and records, and fuel handling logs and records. **Two violations were identified** for failure to have sufficient experimental review procedures, and for failure to inspect all fuel elements at the required interval. **These violations are not being cited due to the corrective actions taken by the licensee.** [ML23226A010](#)

National Institute of Standards and Technology

January 1, 2023-June 30, 2023. The NRC conducted supplemental inspection activities at NIST covering emergency plan and event response, fuel handling, reactor startup, operator licensing, management oversight, corrective actions, safety committee oversight, procedures, design change process, safety culture, and material control and accounting. **No violations were identified.** [ML23268A395](#)

University of Texas – Austin

January 8-11, 2024. The inspection included a review of organization and staffing, operations logs and records, requalification training, surveillance and limiting conditions for operation (LCO), emergency planning, maintenance logs and records, and fuel handling logs and records. **No violations were identified.** [ML24022A106](#)

Aerotest Operations

Aerotest disputed ([ML23255A034](#) / [ML23255A036](#)) two violations identified in a June 2023 Inspection ([ML23219A188](#)). One violation was for failure to have qualified Certified Fuel Handlers and implement the ARRR CFH Training/Requalification Program, and a second was for the failure to hold Reactor Safeguards Committee meetings at least annually. The NRC chose not to rescind the violations, but did clarify the violations ([ML24025A167](#)).

News!

[Kurchatov Institute To Help Tajikistan to Restore a Soviet Nuclear Reactor:](#) Kurchatov Institute will assist Tajikistan to restore the Argus nuclear research reactor, built and abandoned in the 1980s. The reactor may be used for radiopharmaceutical production.

[IAEA Reviews Radwaste Management in Netherlands:](#) The IAEA conducted a Integrated Review Service for Radioactive Waste & Spent Fuel Management, Decommissioning & Remediation (ARTEMIS) mission in the Netherlands. The mission found that the Netherlands is committed to continuous improvement for the safe management of radioactive waste and used fuel and made several suggestions for improvement.

[MURR Commences Shipments of Lu-177:](#) The University of Missouri Research Reactor (MURR) recently completed its first commercial shipment of no-carrier-added Lutetium-177 for human use.

[Contractor Selected for Pallas Reactor:](#) Spanish construction firm FCC Construcción (FCC) has been contracted to build the Pallas research reactor at the

Energy & Health Campus in Petten, the Netherlands. [NRC Visits Purdue to Learn About Digital-Twin Research Reactor:](#) Purdue University has created the first digital-twin of a research reactor control system. NRC officials visited the school to learn more about the system.

[NRC Commissioner Visits ACU's NEXT Lab:](#) NRC Commissioner David Wright visited Abilene Christian University's Nuclear Energy eXperimental Testing Laboratory (NEXT Lab) where the university is seeking to build a molten salt research reactor.

[Saudi Research Reactor Nearly Complete:](#) The IAEA states that Saudi Arabia's research reactor is almost complete. The reactor was built by INVAP, and the fuel is ready to ship to the country.

[Reed College Reactor:](#) Robert P Crease, author of the book *The Leak: Politics, Activists, and Loss of Trust* at Brookhaven National Laboratory, writes about the Reed Research Reactor.

[RA-10 Receives Equipment From Closed German Reactor:](#) A small-angle neutron scattering instrument (SANS) has been delivered to the Argentine Neutron Beam Laboratory after being donated by the German Helmholtz Zentrum Berlin (HZB) institute following the closure of the BER-II reactor in 2019. [RA-10 is expected to begin operations in 2026.](#)

[State of Advanced Reactors:](#) The American Nuclear Society provides a status update on the various advanced reactor projects currently underway.

[Oklo Gets Approval for Fuel Fabrication Facility:](#) Oklo has announced that the U.S. Department of Energy (DOE) has reviewed and approved the Safety Design Strategy (SDS) for its Aurora Fuel Fabrication Facility at INL. The Aurora Fuel Fabrication Facility will demonstrate the reuse of fuel to support Oklo's planned demonstration reactor at INL.

[Iran Starts Construction on New Research Reactor:](#) Iran has begun construction on a new research reactor in Isfahan. The new reactor will be 10 MW.

[NASA Closer to Deploying Reactors on the Moon:](#) NASA has awarded \$5 million contracts to Lockheed Martin, Westinghouse, and IX to develop preliminary

designs for a reactor to provide power on the moon. [SUNRISE Centre: Sustainable Nuclear Energy Research in Sweden:](#) Sweden's SUNRISE centre (Sustainable Nuclear Energy Research In Sweden) aims to prepare for the construction and operation of a Swedish lead-cooled research reactor with a target start date in 2030.

[eVinci™ Microreactor The Next Generation Nuclear Research Reactor:](#) Westinghouse envisions their eVinci™ Microreactor as a combined research and power reactor with beam ports and rabbits as well energy production.

[INL's MARVEL Reactor Fuel Near Start of Construction:](#) Microreactor Applications Research Validation and Evaluation (MARVEL) project is a liquid-metal cooled microreactor with a rated peak power of 100 kW expected to begin operations by 2026. [\\$8.4 Million has been awarded for the fabrication of 37 fuel elements by TRIGA International.](#)

[IAEA Releases Project Management in Construction of Research Reactors:](#) The IAEA has released a new guide on Project Management in Construction of Research Reactors.

[IAEA to Collaborate on Artificial Intelligence for Nuclear Power:](#) The IAEA has announced a partnership with the Center for Science of Information at Purdue University to explore artificial intelligence for nuclear power applications, including reactor design, plant operations, and training and education.

Albuquerque



ANNUAL MEETING
September 29 –
October 3, 2024