

QUARTER 4 2024

TRTR

Newsletter



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Artwork by Abby Kittel

TRTR!

I hope the end of the year is treating you well.

I'd like to again express my appreciation to Dr. Steve Reese for his service as Chair during the last, very long tenure (nearly 16 months), and for all that he and the Executive Committee were able to accomplish. As your new Chair, I'll endeavor to meet the high bar that he's set for me, and I have a quick message for you all that you hopefully find more useful than annoying. I'm going to focus on continuing to improve our community in three main thrusts:

Communication

I'd like to encourage strong, open communication between facilities and members of our community. This is especially important if you have contact with a facility that generally doesn't have time or resources to attend the annual conference. Please keep them engaged! No facility should be an island and we all run into common issues from time to time (fuel and requalification certainly come to mind) and we should be available to assist each other as needed and as we can.

Collaboration

Benchmarking visits have been extremely useful to my facility and (hopefully) to the facilities that have hosted us. In the last two years, we've benchmarked six different facilities (admittedly we got a three-for-one deal in the Washington DC area), each of them exchanging several valuable lessons learned, best practices, and general good collaboration. We've got a general checklist for what to talk about and look at when visiting another facility that I'd be happy to share. TRTR may be able to arrange for some resources to help facilitate

some visits. And if benchmarking another facility or hosting someone at yours isn't your thing, sharing best practices over a call or email is excellent too. I have certainly found great support in this community when tackling projects and problems that I'm not sure what the best solution will be (tank lights, pneumatic transfer upgrades, many things!). And again, I'd be happy to share the items that you might find useful from my facility, and potentially others (with their permission). One thing that I'm sure many of us would like is a common solution on control consoles; a huge lift, but an excellent opportunity for collaborating and benefiting the community! TRTR peer reviews are still available, as they were in years past. If you're not familiar, a group of personnel from the community, typically facility manager types, will visit your facility upon request and review your program or portions thereof at your direction, to help identify places for improvement, suggestions, and best practices. My facility benefited greatly from this back in 2019 after our agency issued an administrative shutdown following a few violations that we received. So, if you feel it might be worth some outside folks coming in, taking a look, and making recommendations that your institution's leadership might very well take seriously, please let me or any other member of the Executive Committee know and we'll work something out!

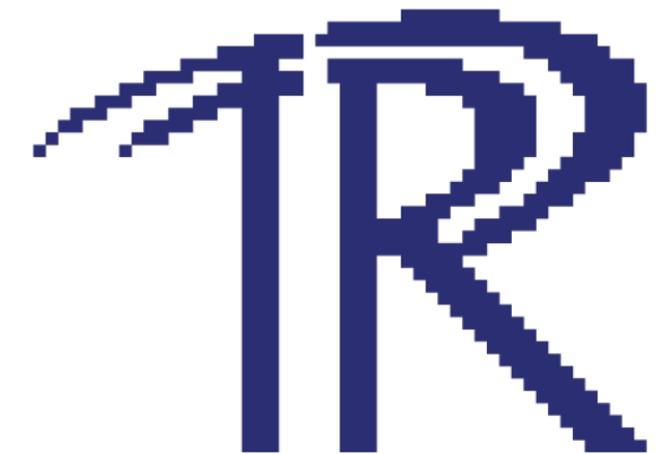
Culture

As we all saw at the conference, there was a common theme in safety culture throughout several presentations. Some of us are fortunate in the history of our facilities, run by people with a commitment to safety culture and all that entails. Others are not so fortunate and need a bit of work to get to a good place. I, myself, push for a very strong, positive safety culture at our facility, but there are always challenges and room for improvements. We all face challenges of different degrees with regard to security, radiation / occupational safety, and conduct of personnel. I want to strongly encourage our community to challenge misconduct,

correct the issues, and make our facilities as safe and comfortable to work in as possible for everyone. Continuous improvement is a permanent commitment and mindset, not something that's in vogue for the moment.

I've certainly rambled for long enough. Please continue to engage with each other, communicate openly, and improve our wonderful little community, especially as it starts to really grow with our new members from the advanced and small modular facilities!

Happy Holidays, everyone!



Amber Johnson
University of Maryland
Editor



Luke Gilde
University of Maryland
Content Editor



Jonathan Wallick
Reactor Director
U.S. Geological Survey
TRTR Chair

NEWS

New IAEA Guidance:

The IAEA has released new guidance documents for Research Reactors [Optimization of Research Reactor Availability and Reliability: Recommended Practices](#), and [Considerations on Decommissioning in the Design and Operation of Research Reactors](#).

SLOWPOKE Reactor for Space Applications:

The Canadian Space Mining Corporation has acquired the rights to develop the SLOWPOKE reactor for space power applications under a grant from the Canadian Space Agency.

DoD Breaks Ground on Project Pele:

Construction has started on the testing facility for the Project Pele transportable nuclear reactor at Idaho National Lab. The reactor is scheduled to be tested in 2026.

Petten Reactor Shutdown Led to Radioisotope Shortage:

An article on the impact of the unexpected shutdown of the Petten High Flux Reactor for maintenance on the Mo-99 supply.

First Criticality Experiment Using HALEU-Based Fuel in Decades:

The Deimos criticality experiment was performed at the National Criticality Experiments Research

Center to provide new criticality safety data for TRISO fuel.

Kyoto University Critical Assembly Converted to LEU:

The NNSA has completed the conversion of the Kyoto University Critical Assembly from HEU to LEU fuel. This is the 110th reactor that NNSA has converted or verified as shut down.

Oklo Acquires Atomic Alchemy:

Oklo has acquired Atomic Alchemy in an attempt to improve radioisotope production capabilities. Atomic Alchemy was attempting to develop reactors in Idaho for radioisotope production.

OPAL Reactor Restarted:

The OPAL Reactor in Australia was recently restarted after a six-month shutdown for maintenance and upgrades

University Research Reactors in a Nuclear Energy Resurgence:

Corey Hines, Director of the Washington State University Reactor writes on the role can university research reactors play in a nuclear energy resurgence.

Argentina Seeks to Become International Research Reactor Center:

The National Atomic Energy Commission (CNEA) in Argentina is seeking to be designated a Interna-

tional Centres based on Research Reactors (ICERR) by the IAEA. ICERRs allow IAEA member states to “gain timely access to relevant nuclear infrastructure based on research reactors to achieve their capacity building and research and development objectives”.

CROCUS Reactor Lego Model:

A Lego model of the CROCUS research reactor has been developed and now needs supporters to be made into a kit!

Cold Neutron Source for TU Delft Research Reactor:

The Cold Neutron Source recently installed at the TU Delft reactor is enabling a number of new experiments to be performed.

MARVEL Microreactor Continues Development:

Components for the MARVEL Microreactor are now being fabricated, with operations expected to begin in 2025 or 2026, and last for 2 years.

University of Rhode Island Partnered with Australian University:

University of Rhode Island and Flinders University in Adelaide, Australia have partnered to teach five specialized nuclear engineering courses at Flinders University in support of the AUKUS program.

History of Penn State Breazeale Reactor:

The Penn State Breazeale Reactor is the oldest operating research reactor in the US.

Fuel Fabricated for Bolivian Research Reactor:

The fuel load for Bolivia’s BRR-1 research reactor has been manufactured, with delivery scheduled for 2025. The reactor and fuel are being made by Rosatom.

McMaster Reactor Tours:

The McMaster Nuclear Reactor tours around 4000 visitors a year.

JRR-3 Reactor Upgrades:

The Japan Atomic Energy Agency’s Japan Research Reactor 3 restarted in 2021 after damage from a 2011 earthquake was repaired. A number of new capabilities were developed during the shutdown.

University of Florida Training Reactor Education and Outreach:

The University of Florida Training Reactor is being used to support research and education through a department of energy grant.

Ultra Safe Nuclear Files for Bankruptcy:

Ultra Safe Nuclear Corp. has filed for bankruptcy. Ultra Safe is working with University of Illinois Urbana-Champaign to develop a research reactor for the campus.

McMaster University Neutron Beam Science:

The Canadian Neutron Beam Laboratory is being developed at the McMaster Nuclear Reactor. The Lab will house five unique neutron beamlines.

NC State University Partners with South Carolina State University:

North Carolina State University partnered with South Carolina State University to allow nuclear engineering seniors access to the NC State PULSTAR reactor.

University of Maryland Reactor 50th Anniversary:

The Maryland University Training Reactor celebrated the 50th anniversary of its TRIGA conversion.

Argentina Increasing Radioisotope Production:

Argentina’s National Atomic Energy Commission (CNEA) seeks to increase molybdenum-99 production 50% and iodine-131 production 22% by adding an extra shift and increasing the hours of irradiation at the RA-3 reactor.

American Physical Society Recognizes Graphite Reactor:

The American Physical Society has recognized the Oak Ridge Graphite Reactor (X-10) as an APS historic site.

Texas A&M Seeks Small Modular Reactor:

Texas A&M is offering its Texas A&M-RELLIS site as a potential test bed site for small modular reactors.



UPCOMING EVENTS

February 3–6, 2025

[Conference on Nuclear Training and Education](#)

Amelia Island, FL

March 10-14, 2025

[International Workshop: Multiphysics of Energy and Environmental Applications](#)

Idaho Falls, ID

April 6-10, 2025

[European Research Reactor Conference](#)

Aix-en-Provence, France

April 7-11, 2025

[Third International Conference on Applications of Radiation Science and Technology](#)

Vienna, Austria

May 18-23, 2025

[International Symposium on Reactor Dosimetry](#)

Charleston, SC

June 15-19, 2025

[22nd IGORR Meeting](#)

Mito, Japan

June 15-18, 2025

[ANS Annual Conference](#)

Chicago, IL

September 8-12, 2025

[TRTR Annual Meeting](#)

College Station, TX



Tawfik Raby Scholarship winner Auden Oliveri from Reed College.

Conferences attendees enjoy a presentation.

The 2024 TRTR Annual Meeting was hosted by Sandia National Laboratory in Albuquerque, New Mexico with approximately 200 participants. The archived presentations are available on the [TRTR website](#).

The meeting included technical tours of the Annular Core Research Reactor, Sandia National Laboratory Gamma Irradiation Facility, and Kairos Power's manufacturing facility. A reception, with a talk from the Sandia National Lab Historian, Justin Quinn Olmstead, was held at the Explora

Science Center. The Tawfik M. Raby Scholarship was awarded to Auden Oliveri, SRO at Reed College.

The 2025 TRTR Annual Meeting will be hosted by the Texas A&M Engineering Experiment Station in College Station, Texas from September 8 – 12, 2025. We hope to see you there!

TRTR Election Results

Chair

Jonathan Wallick, USGS

Past Chair

Steve Reese, Oregon State University

Treasurer

Tom Newton, NIST

Secretary

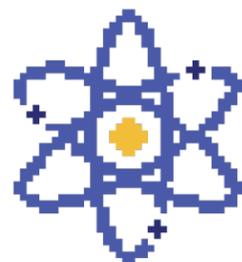
Amber Johnson, University of Maryland

Chair Elect Committee

Cameron Goodwin, RINSC

LISTSERV Updates

Moving to a TAMU server in the near future



Armed Forces Radiobiology Research Institute TRIGA Reactor

July 15-18, 2024 - [ML24222A722](#)

The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and reviews, and transportation activities. No violations were identified.

July 15-18, 2024 - [ML24239A350](#)

The inspection included a review of security compliance. No violations were identified.

Purdue University Reactor - One

July 9-10, 2024 - [ML24241A025](#)

The inspection included a review of security compliance. No violations were identified.

Idaho State University Reactor

August 12-15, 2024 - [ML24253A163](#)

The inspection included a review of security compliance. No violations were identified.

Massachusetts Institute of Technology Reactor

July 8-11, 2024 - [ML24248A113](#)

The inspection included a review of effluent and environmental monitoring, review and audit and design change functions, emergency preparedness, radiation protection, and transportation activities. No violations were identified.

North Carolina State University PULSTAR Reactor

August 12-15, 2024 - [ML24254A306](#)

The inspection included a review of organization and staffing, operations logs and records, requalification training, surveillance and limiting conditions for operation, emergency planning, maintenance logs and records, and fuel handling logs and records. A **Severity Level IV violation** was issued for emergency procedures that did not contain sufficient information for emergency classification. A **minor violation** was identified for an event where the reactor was operated above 500 kW with a required power monitoring channel inoperable, but is not being cited.

Washington State University TRI-GA Reactor

July 29-31, 2024 - [ML24242A125](#)

The inspection included a review of security compliance. **Two Severity Level IV violations** were identified, but are not being cited.

Rhode Island Nuclear Science Center

September 3-6, 2024 - [ML24268A104](#)

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.

University of Massachusetts Lowell Research Reactor

September 9-12, 2024 - [ML24269A100](#)

The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and reviews, and transportation. No violations were identified.

GE Nuclear Test Reactor

October 7-9, 2024 - [ML24299A239](#)

The inspection included a review of decommissioning activities at the 4 shutdown reactors at the Vallecitos Nuclear Center. No violations were identified.

Missouri University Research Reactor

September 9-13, 2024 - [ML24274A072](#)

The inspection included a review of operator licenses, requalification, and medical examinations, experiments, organization and operations and maintenance activities, procedures, fuel movement, and surveillances. No violations were identified.

September 9-13, 2024 - [ML24276A036](#)

The inspection included a review of security compliance. No violations were identified.



University of New Mexico Reactor

September 24-27, 2024 - [ML24290A083](#)

The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and review, and transportation of radioactive materials. Two violations, for exceeding the maximum licensed power level and failing to meet minimum staffing requirements, were closed out.

University of Wisconsin Nuclear Reactor

October 7-9, 2024 - [ML24298A096](#)

The inspection included a review of security compliance. No violations were identified.

Reportable Occurrences

Missouri University Research Reactor

MURR declared a reportable occurrence ([EN-57382](#)) on 10/14/2024, when a required scram channel (Fluxtrap Irradiations Reactivity Safety Trip) was found to be inoperable during pre-startup checks. MURR submitted a follow up report ([ML24299A074](#)) on 10/25/2024. The failed switch was replaced, and the reactor was restarted. MURR implemented a maintenance schedule to replace the required components at a two year frequency.

MURR had a second reportable occurrence ([EN-57445](#)) on 11/25/2024 when the switch that allows control blades to be selected for manual operation failed during an operation. The reactor was shut down and the switch was repaired.

Licensing Updates

Oregon State University TRIGA Reactor

The NRC issued a license amendment ([ML24219A406](#)) for the Oregon State TRIGA Reactor to revise the SNM possession limits and to remove the Square Wave mode of operation for the reactor. Oregon State applied for the License Amendment in February 2024 ([ML24052A143](#)).

Abilene Christian University

The NRC has issued construction permit CPRR-124 ([ML24229A195](#) / [ML24243A040](#)) for the construction of a 1 MW Molten Salt Research Reactor (MSRR) at Abilene Christian University. ACU applied for the construction

permit in August 2022 ([ML22227A201](#)).

The NRC also provided feedback ([ML24282A733](#) / [ML24295A130](#)) on ACU's Material Control and Accounting whitepaper. As a molten salt fueled reactor, the MSRR will face unique fuel tracking challenges.

ACU also submitted a revised Regulatory Engagement Plan in October 2024 ([ML24305A288](#)).

Kansas State University TRIGA Reactor

Kansas State University submitted additional information ([ML24281A032](#)) for its request for a temporary exemption ([ML24085A808](#)) from several requirements of 10 CFR 55.59 in order to maintain operator proficiency during the extended shutdown of the reactor to address fuel issues. On November 20, 2024, Kansas revised the requested exemption to cover only 10 CFR 55.53 e, f, and h, as well as 10 CFR 55.59 a. ([ML24326A142](#)) The NRC now expects to complete its review of the exemption request by December 20th, 2024 ([ML24326A196](#)).

Idaho State University AGN-201 Reactor

The NRC has issued a license amendment ([ML24262A198](#)) for the Idaho State University AGN-201 reactor to modify scram channel requirements. The License Amendment Request was submitted in February 2023 (ML23074A066).

University of Utah TRIGA Reactor

The NRC has accepted ([ML24303A345](#)) University of Utah's request for an exemption ([ML24183A173](#)) from several of the requirements of 10 CFR 55.53 and 55.59 in order to maintain operator proficiency during an extended shutdown for reactor tank repairs. The NRC expects to complete its review of the exemption request by the end of January, 2025. University of Utah submitted additional information to support the review in September ([ML24250A104](#)).

North Carolina State University PULSTAR Reactor

NC State submitted a response ([ML24289A181](#)) to a notice of violation ([ML24254A306](#)) issued for emergency procedures that did not contain sufficient information for emergency classification. NC State disagrees with the finding of a violation and requesting that it be rescinded. Revisions to the emergency procedures have also been initiated.

Kairos Power

The NRC Commissioners voted to approve the issuance of the [construction permit](#) for the Kairos Power Hermes 2 Test Reactor Facility ([ML24325A378](#)). Kairos Power applied for the construction permit in July 2023.

