



Newsletter

Q4 2023

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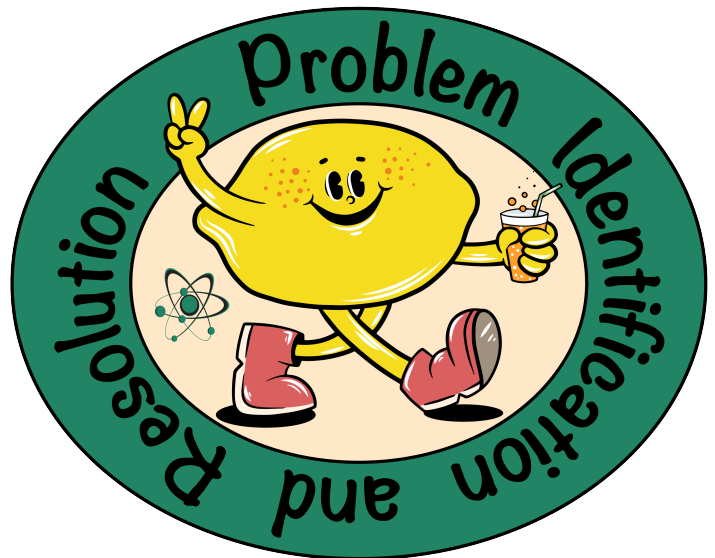
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Hello TRTR Community,

This quarter we are reflecting on the [Traits of a Positive Safety Culture](#). We also turned these into cute illustrations that can be found throughout the newsletter. If there is interest, we may do a limited run of stickers. For now, they are colorful reminders of the way we should operate.

To close out this newsletter, we gathered some reportable occurrences from years ago. We plan to discuss these in our training sessions to identify lessons learned and safety culture issues.

If you have any ideas for future newsletters, please let us know!!



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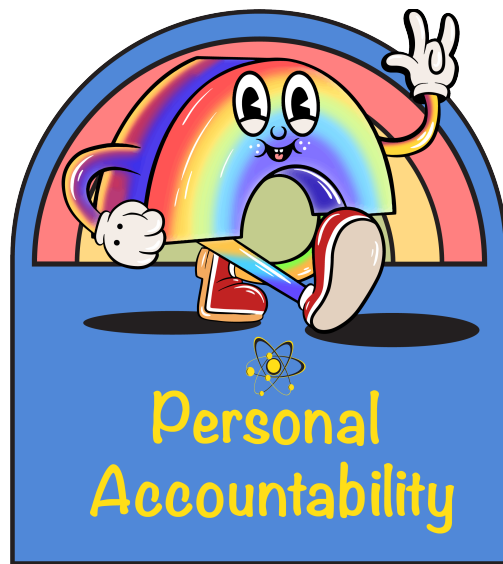
Colleagues,

At this point, I think we are all familiar with the accident at the National Institute of Standards and Technology (NIST) that occurred in February 2021. The staff at NIST has been very generous providing information to the community on the progression of the accident, the consequences, and lessons learned from it. What we as a community may not be as familiar with is the recent NRC Office of Inspector General (OIG) report entitled, "[Special Inquiry into the U.S. Nuclear Regulatory Commission's Oversight of Research and Test Reactors, IOG Case No. I2100162, September 29, 2023.](#)" This report looks at the NRC Division of Advanced Reactors and Non-Power Production and Utilization Facilities (DANU) inspection program, reflecting on the incident at NIST. The point of bringing this up is not to pass judgment on the report or the findings stated in it. DANU is currently responding to the report, and I think it is prudent to withhold opinions until they have responded. However, there is something that the TRTR community can glean from this report immediately. It relates to something that I have observed from time-to-time while performing audits or while sitting on safety committees. During the course of the audits or reviews, when bringing up a process or documentation issue, several times I've received a response along the lines of, "Well, the NRC inspected it and didn't have a problem with it so it must be ok." When we perform audits on our respective facilities, we must strive to be better than this.

When the NRC performs an inspection, they only look at if you are meeting the minimum requirements of the regulation. They use words like "adequate", "acceptable", or "minimum" in inspection reports when describing our programs. They will not, or at least I understand that they won't, ever say more than that; they are not supposed to say how much over the bar you are, only that you are over the bar. If you don't realize this, you may be fooled into thinking that your

program is just fine without knowing just how close to the edge you are.

Our programs need to be beyond this. We need to operate our facilities knowing that the programmatic foundations of operation are sufficiently **above regulatory** (emphasis mine) concern. Routine NRC inspections need not take on the dramatic. Will mistakes be made? Of course, we are human and sometimes fallible individuals. However, the underpinnings of our reactor operation programs need to be on solid ground, above the adjectives used in NRC inspection reports. How high of a bar we set, defining what sufficiently high means, is most certainly up to each program. There is plenty of flexibility for give and take (e.g., avoiding constantly ratcheting up) as well as being risk informed and commensurate with the level of activity. That said, I would encourage all of our facilities to shepherd reactor operations programs in a way that looks beyond the expectations of the NRC.



Steve Reese

Director, Radiation Center
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Oregon State University
TRTR Chair

NEWS

[NRAD Irradiates Chloride-based Molten Salt](#)

The NRAD Reactor at INL is being used to conduct an experiment to irradiate enriched uranium - chloride molten salts, which has not been done since the 1960s.

[NRC Accepts Hermes 2 Construction Permit Application For Review](#)

The NRC has accepted Kairos Power's application for a construction permit to build Hermes 2, a proposed two-unit demonstration plant that would generate electricity in Tennessee.

[IAEA Completes INSARR Mission in Iran](#)

A team of experts from the IAEA completed a Integrated Safety Assessment for Research Reactors (INSARR) review of the Miniature Neutron Source Reactor (MNSR) and Heavy Water Zero Power Reactor (HWZPR) research reactors in Iran. The IAEA noted recent enhancements to the facilities and made several suggestions for further improvements.

[UW's Research Reactor Operator](#)

[Training](#)

University of Wisconsin's TRIGA conversion reactor is used for a successful educational program.

[UC Davis License Amendment Issued](#)

UC Davis was issued a license amendment to allow for operating the reactor with water holes in the core. This amendment will allow them to continue operations following the finding of interference in one of the core grid plate locations.

[General Atomics Awarded Contract Supporting Sandia Reactor](#)

General Atomics was awarded a contract by Sandia National Laboratories to provide design development services in support of a conceptual research reactor design for a new advanced facility.

[Rosatom To Build Research Reactor in Bangladesh](#)

Rosatom is expected to build a research reactor in Bangladesh.

[Penn State Receives First New TRIGA Fuel](#)

Penn State recently received the first 30 TRIGA fuel elements from the

newly restarted TRIGA International production facility.

[Delft Reactor to Install Cold Source](#)

A cold neutron source will be installed at the TU Delft Reactor to become a national center for neutron research.

[Study for an Advanced Reactor at NC State University](#)

North Carolina has allotted \$3 million to study to explore the feasibility of the establishment of an advanced nuclear research reactor at the University.

[MARVEL Prototype Starts Testing](#)

The electrically heated prototype of the MARVEL microreactor, called PCAT (Primary Coolant Apparatus Test) has begun operations in New Freedom, PA.

[IAEA Completes Review of Idaho's Neutron Radiography Reactor](#)

An IAEA Team completed a Integrated Research Reactor Utilization Review on the Neutron Radiography Reactor (NRAD).

[McMaster Nuclear Reactor Tests New Operating Schedule](#)

The McMaster Nuclear Reactor (MNR) is conducting a six-week pilot project to test an increased operating schedule where the reactor will operate 24 hours a day, five days

a week.

[MARVEL Microreactor Reaches Final Design Milestone](#)

The MARVEL microreactor achieved 90 percent final design, a key step that will allow the project to move forward with fabrication and construction.

[Washington State University Reactor 60th Anniversary](#)

The Washington State University TRIGA reactor celebrates more than 60 years of operations.

[GE-Hitachi Announces Intent to Decommission Nuclear Test Reactor](#)

GE-Hitachi notified the NRC of its intent to cease operations of the Nuclear Rest Reactor in Vallecitos California in December, and apply for a possession only license to decommission the reactor.

[NRC Commissioner Visits ACU's NEXT Lab](#)

Christopher Hanson, chair of the U.S. Nuclear Regulatory Commission (NRC), visited Abilene Christian University's Nuclear Energy eXperimental Testing Laboratory.

[Huff Speaks at Missouri S&T](#)

Dr. Kathryn Huff, assistant secretary for the Office of Nuclear Energy in the U.S. Department of Energy spoke via Zoom at Missouri University of Science and Technology.

[MIT Confirms Serva Energy's Production Method of Actinium-225](#)

The MIT Nuclear Reactor Laboratory validated Serva Energy's novel reactor-based method to produce Ac-225.

[Poland's MARIA Research Reactor Restarts](#)

Poland's MARIA reactor has been restarted following several months of upgrades.

[Kairos Power Loads Molten Salt Test Loop](#)

Kairos Power has begun transferring 14 tons of molten fluoride salt coolant into an Engineering Test Unit (ETU) located in Albuquerque, N. M. for a "multi month testing program" to support development of the Hermes Test Reactor.

[Aerotest Responds to Violation Findings](#)

Aerotest is contesting several of the violations identified in a July inspection of the facility by the NRC. The NRC is reviewing the [violation findings](#).

[Story of Fuel Removal from Vietnamese TRIGA](#)

A podcast featuring the story of Wally Hendrickson who removed the fuel from the Vietnamese TRIGA reactor during the Vietnam war.

UPCOMING EVENTS

Postponed

[International Conference on Research Reactors: Achievements, Experience and the Way to a Sustainable Future](#)

Dead Sea, Jordan

March 12-14, 2023

[Regulatory Information Conference](#)

Rockville, MD

April 21-24, 2024

[International Conference on Physics of Reactors](#)

San Francisco, CA

February 22, 2024

[Commission Meeting: Update on Research and Test Reactors Regulatory Program](#)

Rockville, MD

March 17-21, 2024

[International Topical Meeting on Nuclear Applications of Accelerators](#)

Norfolk, VA

April 21-25, 2024

[European Research Reactor Conference](#)

Warsaw, Poland

March 11 - 15, 2024

[Intermediate MCNP6 Training](#)

Paris, France

April 4-6, 2024

[2024 ANS Student Conference](#)

State College, PA

June 3-5, 2024

[NAYGN Continental Conference](#)

Charlotte, NC

QUARTERLY CALL SUMMARY

The NRC - TRTR quarterly meeting was hosted by the NRC on 11/29/2023 via Microsoft Teams ([ML23321A164](#)). Holly Cruz is acting Chief for the Non-power Production and Utilization Facility Licensing Branch until Josh Borromeo returns from a temporary assignment.

Status updates:

- [NPUF Rule](#) - This is still with the commission. There have been recent inquiries so it might be gaining traction.
- NUREG 1537 - The goal is to issue this simultaneously with the NPUF rule. The TRTR Chair made a request for additional review time once a draft is released. Facilities are coming up for license renewal and need correct guidance to prepare their applications. Idaho State University is due for license renewal in August 2026.
- NUREG 1478 - Expect this to be available for public comment in Q1 2024.
- SECY Option Paper for Enhanced Security of Special Nuclear Material - Currently with EDO for concurrence and expected to go to the commission by mid-December. A [summary](#) of the options was presented at the annual meeting.
- Draft Regulatory Guides to support the final [Enhanced Weapons Rule](#) - Only 2 of the 3 guides are applicable: [DG-5082](#) Suspicious Activity Reports Under 10 CFR Part 73 and [DG-5080](#) Physical Security Event Notifications, Reports, and Records. Inspections will focus on having and following procedures not second guessing a licensee's determination. An enforcement guidance memorandum for any issues an inspector may encounter will be out soon. Of concern to the TRTR community is a discrepancy between language in the code [10 CFR 73.1200\(c\)\(1\)\(i\)\(A\)](#): "(A) The theft or diversion of a Category I, II, or III quantity of SSNM or a Category II or III quantity of special nuclear material (SNM)" and [DG-5080, pg 28](#): "For notifications required under 10 CFR 73.1200(c)(1)(i)(A), licensees should report the theft or diversion of any quantity of SSNM or SNM." NEI will include this in their comment letter to be submitted by the Dec. 11 deadline.
- [OIG Report on the NRC's oversight of its Research and Test Reactor Program](#) - Response will be provided by the end of January 2024. There are no major program changes expected. Instead, this will be used to identify areas for improvement.
- [Form 396 Training Session](#) - This will be scheduled for early Q1 2024. This will be an excellent event to understand all the challenges encountered when completing this form! Slides will be made available on the NRC public website for future reference.
- Rulemaking on [Part 55](#) to expand the definition of physician to include nurse practitioners and physician assistants. 10 CFR 55.4 defines a physician as "an individual licensed by a State or territory of the United States, the District of Columbia or the Commonwealth of Puerto Rico to dispense drugs in the practice of medicine." Until the rulemaking goes into effect, a medical doctor is required to sign form 396.
- Save the Date! Next TRTR Quarterly Call will be on February 22, 2024 to follow the Commission Meeting on Research and Test Reactors scheduled for that morning. More information to follow!



University of Florida Training Reactor

June 26-30, 2023 - [ML23213A044](#)

The inspection included a review of organization and staffing, operations logs and records, procedures, requalification training, surveillance and limiting conditions for operation (LCO), experiments, and maintenance logs and records. No violations were identified.

June 26-30, 2023 - [ML23227A188](#)

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

North Carolina State University PULSTAR Reactor

August 28-30, 2023 - [ML23255A201](#)

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

Massachusetts Institute of Technology Reactor

July 31- August 3, 2023 - [ML23228A133](#)

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

October 10-13, 2023 - [ML23304A126](#)

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.

Maryland University Training Reactor

August 7-9, 2023 - [ML23243A929](#)

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

US Geological Survey TRIGA Reactor

August 21 - 24, 2023 - [ML23243A975](#)

The inspection included a review of security compliance. One Severity Level IV violation was identified, but is being treated as a Non-Cited Violation.

August 21 - 24, 2023 - [ML23270B190](#)

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

GE-Hitachi Nuclear Test Reactor

August 14-17, 2023 - [ML23268A373](#)

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

Penn State Breazeale Reactor

July 31-August 3, 2023 - [ML23240A005](#)

The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and reviews, and transportation activities. One Severity Level IV violation was identified for failure to provide neutron dosimetry for some workers, but is not being cited.

Commission Meeting Summaries

The NRC is planning a commission meeting on February 22nd, 2024 on the Research and Test Reactors Regulatory Program. There have been 2 recent prior meetings of the commission focused on Research and Test Reactors:

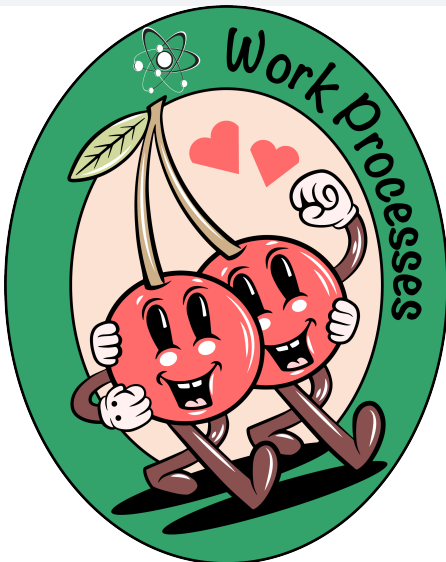
March 27, 2012: [Briefing on License Renewal for Research and Test Reactors](#)

The [2012](#) meeting focused on the long license renewal times affecting many research reactors and included presentations by [Leo Bobek \(TRTR\)](#), [Sastry Sreepada \(RPI\)](#), [Ralph Butler \(MURR\)](#), and [Steven Miller \(AFRRI\)](#), as well as the [NRC](#).

November 18, 2014: [Update on Research and Test Reactors Initiatives](#)

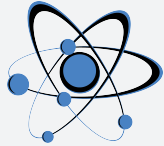
The [2014](#) meeting included further licensing updates and medical isotope production facilities. There were presentations by [Tom Newton \(TRTR\)](#), [Greg Piefer \(SHINE\)](#), [Les Foyto \(MURR\)](#), and the [NRC](#). A portion of the 2014 meeting is also available on [YouTube](#).





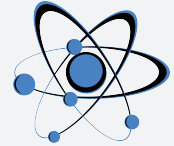
SAFETY CULTURE REVIEW

WHAT SAFETY CULTURE TRAITS DO YOU THINK APPLY TO THESE MODIFIED REPORTABLE OCCURRENCES?



A student trainee entered a dry irradiation room after the reactor core had been moved adjacent to the to the room (while the reactor was shutdown) to complete a measurement. The gate to the room had been left unlocked. The trainee's dose was 115 mRem.

During a reactor startup, the operator observed that one of the required power monitors was not responding. The operator scrambled the reactor and notified the Reactor Supervisor. The problem was identified and fixed before restarting the reactor.



Samples were being removed from a reactor pool following an irradiation. The dose rate from the samples was much greater than anticipated, exceeding 50 Rem/hr. The SRO continued with the sample removal, and placed the samples in a shield. The SRO's extremity dose was approximately 12.5 Rem.

During a reactor shutdown, it was found that one of the control rods became stuck at about 30% withdrawn due to being caught on an experiment cable. Reactor operators identified the problem, defueled the core, removed the control rod from the core, and freed the cable. No damage to the reactor was found.



An operator fell asleep for approximately half an hour while at the console on an overnight shift. A second operator on shift was unable to contact the operator on console at this time. The operator awoke, and there were no adverse consequences.

A Reactor key was left in the console unattended for a period of approximately 1 hour while the reactor was shut down. Upon being discovered, the key was immediately secured by a licensed operator. The event was entered into the corrective actions program, and steps to prevent recurrence were identified.

