

Q3 2022

Register now for the
2022 TRTR Conference
October 11-14!



TRTR



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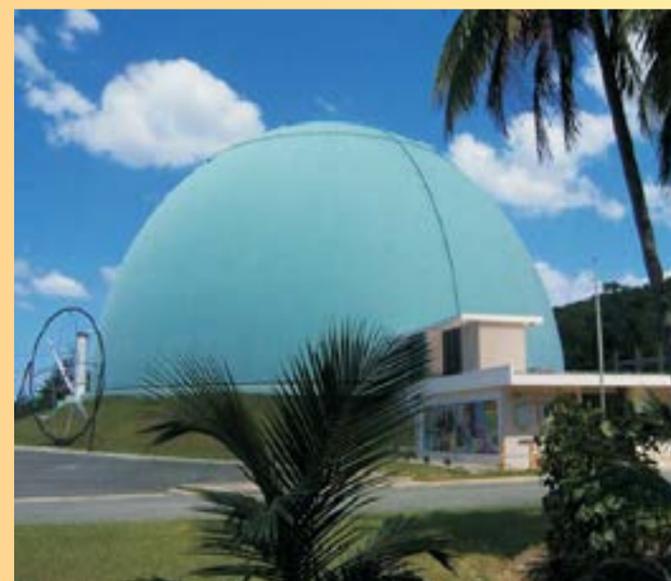
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Know More Nukes

Ohio State University Research Reactor Core. More information about this facility can be found on page 12.



We used AI to generate a reactor for the backpage. We think it looks very similar to the BONUS reactor.



LETTER FROM THE CHAIR

TRTR Community,



As students arrive back on campus, and we prepare to once again leverage our non-power reactor fleet to educate the next generation of nuclear engineers, it is encouraging to reflect on the fact that, for the first time in decades, the university reactor fleet may be growing instead of shrinking. Abilene Christian University has submitted a construction permit application for its 1 MW molten salt reactor at the NEXT Lab, while Ultra Safe Nuclear Corporation has just opened a pilot fuel fabrication facility associated with its planned microreactor at the University of Illinois. The technology of these facilities will diverge from the open pool light water reactors that represent the predominant status quo in the RTR fleet, and should offer interesting new capabilities, challenges, and learning opportunities.

Other exciting developments abound as well: the CHIPS Act provides substantial funding for nuclear research reactor infrastructure and new reactors, the NuScale reactor design became the first SMR to receive design certification from the NRC, and the DOE continues progress toward new reactors such as the MARVEL microreactor. The last several months have truly been an exciting time to be a nuclear engineer, and it is wonderful to see real progress toward the construction of new reactors.

I look forward to hearing about these and other developments when I join you all in State College for our annual meeting from October 11th – 14th. The technical program is starting to take shape, and many interesting abstracts have been submitted. Thank you to all who are planning to speak at or attend the conference. It will be good to see everyone again.

Sincerely,
Jeff Geuther
TRTR Chairman

UPCOMING EVENTS

September 25–29, 2022

[International Conference on Radiation Shielding](#)

Seattle, WA, United States

October 11-14, 2022

[Test, Research and Training Reactor Annual Conference](#)

State College, PA, United States

October 18-22, 2022

[International Conference on Topical Issues in Nuclear Installation Safety: Strengthening Safety of Evolutionary and Innovative Reactor Designs](#)

Vienna, Austria

November 13-17, 2022

[2022 ANS Winter Meeting and Technology Expo](#)

Phoenix, AZ, United States

February 6-9, 2023

[Conference on Nuclear Training and Education](#)

Amelia Island, FL, United States

June 11-15, 2023

[American Nuclear Society Annual Meeting](#)

Indianapolis, IN United States

June 18-22, 2023

[Joint Test, Research and Training Reactor and International Group on Research Reactors Conference](#)

College Park, MD, United States

November 5-8, 2023

[2023 ANS Winter Meeting and Technology Expo](#)

Washington, DC, United States

November 27-30, 2023

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

Dead Sea, Jordan

LETTER FROM THE EDITOR



Hello TRTR Community,

We are excited to see those able to make the trip to Penn State University in October for the annual meeting. We also understand that not everyone is up for travel yet. As such, we have made a few updates to the website that we hope you will find useful!

We have added [Forums](#) for general discussion, job postings, the 2022 conference, and outreach activities. These are visible to everyone but you will need a login to the website to post. There is also a [Wiki/Knowledge Base](#) to capture and share all the information our community has accumulated over the years. The content is visible to everyone. Instructions on how to become a contributor can be found in the Quick Start Guide. Please use the [contact form](#) for any website related inquiries.



Take care,

Amber Johnson
Director
Radiation Facilities
University of Maryland

Luke Gilde
Reactor Manager
Radiation Facilities
University of Maryland

The winner of last quarter's newsletter contest was Tracy Tipping from the University of Texas at Austin. Here is the tumbler pictured at the controls.



Japan Approves Reactor Restart

The Japanese government has approved the restart of unit 2 at Chugoku Electric Power Company's Shimane nuclear power plant. It is likely to be the first BWR reactor in Japan to restart following the 2011 Fukushima accident.

[More...](#)

BWXT Selected to Build Project Pele Reactor

The US Department of Defense (DOD) has now been awarded a contract to BWXT complete and deliver the Project Pele demonstration reactor to be tested at Idaho National Laboratory in 2024. Project Pele is a program intended to design, build, and demonstrate a mobile microreactor for the military.

[More...](#)

Company Hopes to Launch Nuclear Reactor Into Space

Atomos Space, a new startup, is attempting to conduct a basic critical test of a low-power (100-Watts thermal) fission reactor in orbit. The company hopes to one day commercialize a nuclear powered "space tug" that guides satellites into target orbits after launch.

[More...](#)

MURR Facility Expanding

The University of Missouri Board of Curators approved a \$20 million, three-story addition to the Missouri University Research Reactor's North Building, resulting in a 40,000 square-foot expansion to the existing facility.

[More...](#)

Application Submitted for new Dutch Research Reactor

The Foundation Preparation Pallas-reactor has applied to the Dutch nuclear regulator for a permit to construct and operate the Pallas research reactor in the Netherlands. The Pallas Research Reactor is to be built at Petten to replace the aging High Flux Reactor and will be of the "tank-in-pool" type with a thermal power of around 55 MW.

[More...](#)

Bulk Shield Reactor and Low Intensity Test Reactor to be Demolished

Crews from UCOR are working to deconstruct the Bulk Shield Reactor, Low Intensity Test Reactor, and Oak Ridge Research Reactor.

[More..](#)

Westinghouse to Help Decommission Norwegian Research Reactors

Westinghouse has been awarded an engineering contract by Norwegian Nuclear Decommissioning (NND) to plan the decommissioning of the country's two nuclear research reactors.

[More...](#)

IAEA Assesses Utilization of Chilean Research Reactor

The IAEA conducted its first Integrated Research Reactor Utilization Review (IRRUR) mission at the Chilean RECH-1 research reactor. The IRRUR is a new IAEA review service, developed to assist countries in enhancing the utilization and sustainability of nuclear research reactor facilities.

[More...](#)

Richland Nuclear Plant Could Use Recycled Fuel

Energy Northwest has signed up with Curio, a small startup company based in Washington DC to potentially buy recycled nuclear fuel.

[More...](#)

DOE Selects INL as Site of VTR

The DOE has selected Idaho National Laboratory as the site of the Versatile Test Reactor. Although it is not currently funded, DOE has requested FY 2023 funding to help move the VTR project forward toward the design phase.

[More...](#)

Iran to Begin Construction of new Research Reactor

Iran intends to construct a new research reactor in Isfahan to test fuel for other new reactors.

[More...](#)

NRC Certifies NuScale SMR

The NRC has announced its decision to certify NuScale's small modular reactor design for use in the United States. The certification simplifies the licensing process for any new plants using the design.

[More...](#)

CHIPS and Science Act Enacted

The CHIPS and Science Act, which includes University Research Reactors, the NIST Center for Neutron Research, isotope production reactors, advanced and microreactors, as well as fusion systems has been signed into law.

[More...](#)

GAO Finds Flaws in NRC Licensing Process

The GAO has released a report claiming that "the Nuclear Regulatory Commission's (NRC) current system for verifying licenses does not adequately protect against the purchase of high-risk radioactive materials using a fraudulent license."

[More...](#)

NRC Approves Fuel Loading at Vogtle Unit 3

The NRC has authorized fuel loading and operation to begin at Vogtle Unit 3 in Georgia. Vogtle Units 3 and 4 are the first nuclear power plants to be constructed in the US in several decades.

[More...](#)

Japanese HEU Shipped to US

High Enriched Uranium from the Kyoto University Critical Assembly (KUCA) has been returned to the US for disposal.

[More...](#)

Washington State Reactor Receives Grant

The Washington State University Research Reactor received a \$100,000 NEUP grant to purchase spare neutron detectors and recoat the reactor pool.

[More...](#)

New Subcritical Reactor in the Philippines

The Department of Science and Technology (DOST) in the Philippines has commissioned a new subcritical research reactor utilizing TRIGA fuel originally used at the Philippine Research Reactor-1 which shut down in 1988. The new facility is known as the Subcritical Assembly for Training, Education, and Research (SATER).

[More...](#)

Abilene Christian University Applies for Construction Permit

Abilene Christian University has applied to the NRC for a construction permit to build a 1 MW molten salt reactor. ACU hopes to have the reactor operational by 2025.

[More...](#)



RHODE ISLAND NUCLEAR SCIENCE CENTER

MARCH 14-17, 2022

[ML22089A220](#)

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



UNIVERSITY OF WISCONSIN NUCLEAR REACTOR LABORATORY

APRIL 4 - 7, 2022

[ML22109A082](#)

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



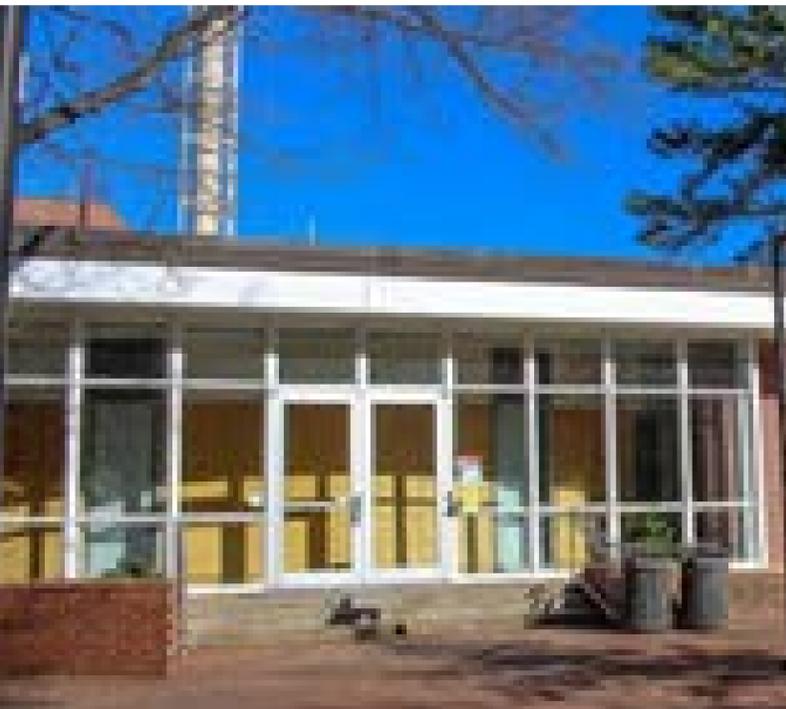
MISSOURI UNIVERSITY RESEARCH REACTOR

APRIL 25-28, 2022

[ML22137A321](#)

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

NRC Inspections



NORTH CAROLINA STATE UNIVERSITY PULSTAR REACTOR

APRIL 18-21, 2022

[ML22130A001](#)

The inspection included a review of procedures, experiments, health physics (HP), design changes, committees, audits and review, and transportation of radioactive materials. No violations were identified.

JUNE 21-23, 2022

[ML22181B184](#)

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.



REED RESEARCH REACTOR

APRIL 25-27, 2022

[ML22153A196](#)

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

MAY 2 - 4, 2022

[ML22140A392](#)

The inspection included a review of security compliance. One Severity Level IV violation was identified but is not being cited.

NRC QUARTERLY CALL SUMMARY

The special nuclear material security enhancement rulemaking group has submitted an extension request.

- Please take advantage of this delay to review Table 4.3 in [ML14321A007](#) against your physical security plan and procedures.

The NPUF rulemaking is with the Commission. Let your PM know how this delay impacts your facility.

Federal agencies are moving away from Sensitive Unclassified non-Safeguards Information (SUNSI) to Controlled Unclassified Information (CUI). This does not change how submissions to the NRC are made under [10 CFR 2.390](#) and [10 CFR 73.23](#). When the transition happens in November 2023, licensees will need to sign an agreement to receive CUI by self-certifying that their computer system (1) meets the requirements of [NIST SP 800-171](#), (2) is working to meet the requirements or (3) will not be able to meet the requirements.

The draft of NUREG 1478 has received internal comments that are being addressed prior to public comment.

The process by which operator examination reports reach ADAMS is being reviewed to address the backlog.

- Please use [EIE](#) to submit forms 396 & 398. Note that there is a 2 week window to access documents shared on EIE.

There will be an opportunity to speak with NRC representatives in small groups at the annual meeting.



KANSAS STATE NUCLEAR REACTOR FACILITY

MAY 9-12, 2022 [ML22151A174](#)

The inspection included a review of organization and staffing, operations logs and records, requalification training, surveillance and limiting conditions for operation (LCOs), experiments, design changes, committees, audits and reviews, emergency planning, maintenance logs and records, and fuel handling logs and records. No violations were identified.



MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY RESEARCH REACTOR

JUNE 6-9, 2022 [ML22174A404](#)

The inspection included a review of operations logs and records, requalification training, surveillance and limiting conditions for operation (LCO), design changes, emergency planning, maintenance logs and records, and fuel handling logs and records. Two Severity Level IV violations were identified for operators failing to have medical examinations every 2 years, and for failure to measure excess reactivity, control rod worth, and shutdown margin following changes in core configuration.



PENNSYLVANIA STATE UNIVERSITY BREAZEALE REACTOR

MAY 16-18, 2022 [ML22158A237](#)

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 identified for the reactor exceeding its maximum licensed power level, but this is being treated as a non-cited violation.

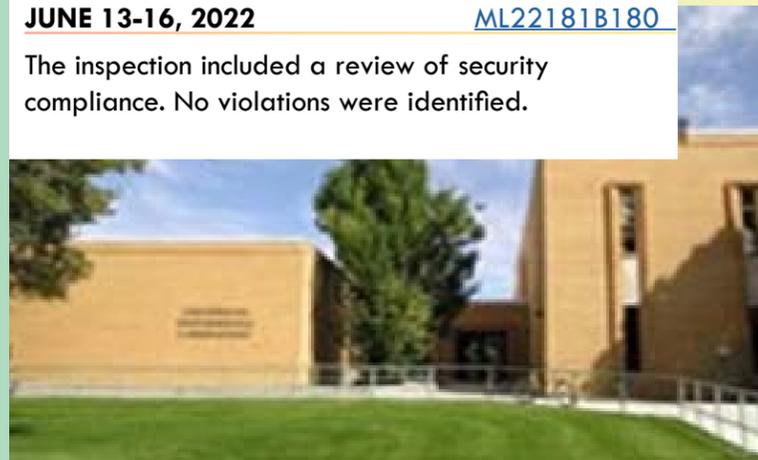
IDAHO STATE UNIVERSITY AEROJET GENERAL NUCLEONICS-201 RESEARCH REACTOR

JUNE 13-16, 2022 [ML22181B183](#)

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

JUNE 13-16, 2022 [ML22181B180](#)

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



2022 NEUP GRANT AWARDS \$2,828,770

MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY \$172,157

Procurement of Spare Parts for Instrumentation Channels, Electronics Test Equipment, and Power Upgrade Study.

[\[More\]](#)

North Carolina State University \$130,100

Enhanced Safety, Operations, and Utilization Infrastructure.

[\[More\]](#)

PENNSYLVANIA STATE UNIVERSITY \$364,240

Enhancement of Radiation Safety, Security, and Research Infrastructure at Newly Constructed Neutron Beam Hall.

[\[More\]](#)

Reed College \$543,500

Removal and replacement of antiquated tank farm.

[\[More\]](#)

The Ohio State University \$111,354

Replacement Equipment for Crucial Reactor Pool Components.

[\[More\]](#)

University of Florida \$55,720

Reactor Gaseous Effluent Monitoring in Support of Reactor Operations and Research Activities.

[\[More\]](#)

UMASS LOWELL \$156,496

Operations and Radiation Safety Upgrades.

[\[More\]](#)

UNIVERSITY OF MARYLAND COLLEGE PARK \$171,956

Core Modifications to Ensure the Continued Safe and Reliable Operation.

[\[More\]](#)

UNIVERSITY OF MISSOURI, COLUMBIA \$170,775

Replacement and Upgrades to the Electrical Transformer and Reactor Primary Coolant Pumps and Motors.

[\[More\]](#)

UNIVERSITY OF TEXAS AT AUSTIN \$792,101

Upgrading the Reactor Console and Instrumentation.

[\[More\]](#)

UNIVERSITY OF WISCONSIN-MADISON \$55,495

Procure a Radiation Tolerant Inspection Camera.

[\[More\]](#)

UNIVERSITY OF WISCONSIN-MADISON \$55,495

Procure a Radiation Tolerant Inspection Camera.

[\[More\]](#)

WASHINGTON STATE UNIVERSITY \$104,976

Enhancing the Operational Reliability by Utilizing Back-Up Reactor Core Nuclear Instrumentation.

[\[More\]](#)



Nuclear Reactor Laboratory Building 1960 original construction and 2014 foyer addition.



Nuclear Reactor Laboratory Building showing the control room modifications.

Know More Nukes

The Ohio State University

Andrew Kauffman, Sr Associate Director of Nuclear Reactor Lab, has provided answers for this edition of Know More Nukes.

What year did your reactor first go critical?

The OSU Nuclear Reactor Laboratory (NRL) was built in 1960 and first went critical in March 1961. For those interested, there is a little bit of [history](#) and [pictures](#) online.

What is the reactor license number? Power level?

License R-75 permits operation of the OSU research Reactor (OSURR) up to a maximum power of 500 kW.

What is your position at the reactor? How long have you held that position?

I am the Senior Associate Director, and I have served in this position / Associate Director position for nearly 20 years now.

Have any major changes/modifications, such as conversion, power upgrade, etc..., been done?

The OSURR was converted to LEU in 1988, and it underwent a license power uprate from 10 kW to 500 kW in 1992. While not the first reactor to convert to LEU, I have been told that the OSURR was the first to convert to redesigned LEU fuel that maintained previous flux performance.

What is a unique feature of your reactor?

The OSURR has an open space next to the core grid plate that allows us to position a large dry tube next to the core. This has enabled high-temperature reactor experiments, ranging from 100s of °C up to a small-volume experiment that reaches 2000°C.

What is a fun fact about your reactor?

The pneumatic transport system ("rabbit") in use is the original unit from 1961. (And it still functions very well.)

What is the biggest challenge facing your reactor?

As a small facility, the biggest challenges have always been space and personnel.

What is the most unusual request someone has had to use your reactor?

A potential customer approached us with the question of how many pounds of high explosive we could do neutron radiography on. (And how far away the nearest occupied dwellings were, as a minimum

standoff distance was required for the materials!) Our Technical Specifications limit of zero pounds of high explosives made for a quick "no" in reply.

What drew you to your current position?

I really enjoy being involved in research for the aspects of learning and trying to devise simple solutions to complex problems in order to make experiments safe while still meeting the user's research goals. Working at the NRL allows me to be involved this way in interesting research without dealing with the additional burdens that faculty must shoulder.

What has been your favorite project?

Overcoming all the design challenges for a project to improve our thermal beam facility and create a reactor-spectrum beam facility was very rewarding.

Before working at your reactor, what was the most unusual or interesting job you've ever had?

Nothing else that I have done is nearly as interesting as working at the reactor laboratory, but I did have an unusual job as a sail cutter at a small company when I was an undergraduate student. My job there was to cut out fabric panels that would then be sewn into sailboat sails.

What do you find the most challenging at your reactor?

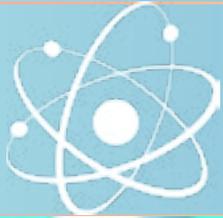
Balancing all the demands of customers, regulators, facility upgrades (and upgrade proposals), and the university.

What advice would you give to new reactor operators?

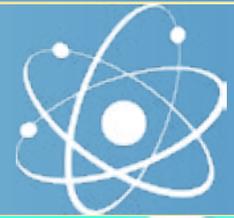
Never stop learning. In particular, pay attention and learn as much as possible about materials, chemistry, and electronics to support experiment creation and facility modifications. In addition, always question things that are unexpected. If you see something unusual, talk to an SRO to determine if it is something warranting some investigation.

What are three career lessons you've learned thus far?

Putting (and updating) information online to facilitate experiment design for users will reduce the amount of time answering the same questions over and over. The annual TRTR conference is a great venue for sounding out facilities for how things are done elsewhere. For example, when the NRL was evaluating how it should do neutron spectrum unfolding going forward, I talked to people from 5-10 facilities about what they were doing at the time. There are ASTM standards for many things of use to a research reactor, and many university library systems have access to these standards, so they can be used for free.



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Image generated using DALL•E 2 with the
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surrounded by the ocean, vaporwave.

<https://openai.com/dall-e-2/>