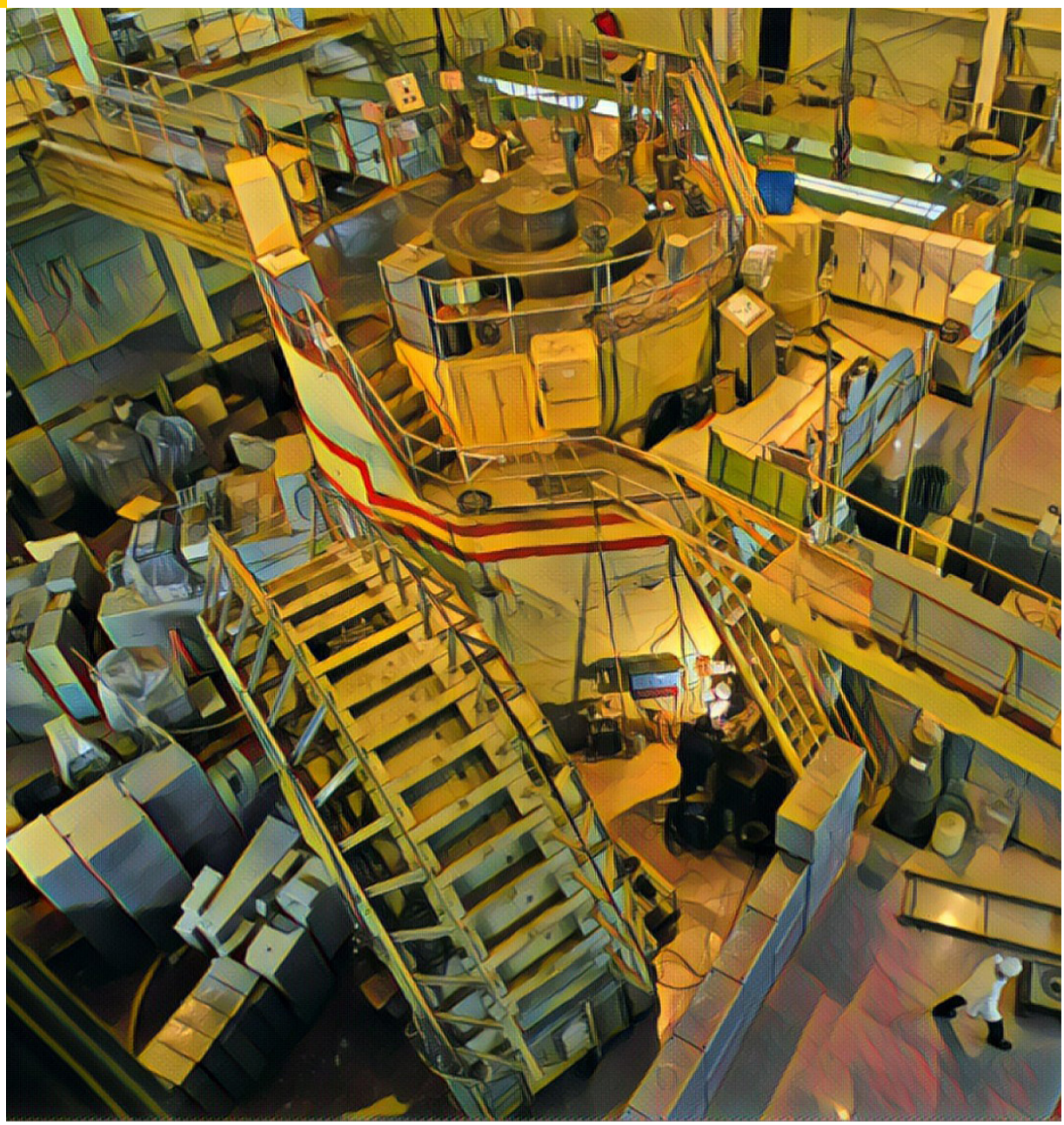
TRTR

Newsletter

2022
Quarter 1



Inside this Edition

On the Cover

A nuclear reactor is seen at a nuclear research facility in Kiev March 23, 2012.

Jeff Geuther
Associate Director
Radiation Science and
Engineering Center
Penn State University
TRTR Chair

Letter from the Chair

TRTR Community,

I hope that everyone is having a healthy and productive winter. As we move into the spring, it is encouraging to see a trend toward a return to a pre-pandemic lifestyle, with fewer restrictions on classes, tours, and outreach activities at our facilities. The fact that this shift is supported by an actual reduction in COVID caseload and severity, and is not simply a product of our collective weariness with the pandemic, is especially welcome.

Speaking of change, the TRTR webpage will soon be migrated to a new platform, designed and managed by our own Amber Johnson's company, Isotopic Topics. This new website will enable us to improve consistency, add new types of content, and reduce the cost of running the conference hosting web platform each year.

The 2022 annual meeting for our organization will be held from Tuesday, October 11th to Friday, October 14th in State College, PA. You will find a hotel link on the TRTR website, and you can make hotel reservations at this time. The conference registration and abstract submission forms will be posted later in the year, after we move to the new web platform. Please plan to share your recent research, facility improvements, and lessons learned at the conference. The NRC will be present as always to provide content during "NRC Day." As a reminder, they are asking for feedback about what types of information we would find interesting.

I look forward to seeing each of you in State College this fall.

Warmly,

Jeff Geuther
Chairman

Letter from the Editor

Amber Johnson
University of Maryland
Editor

Luke Gilde
University of Maryland
Content Editor

Hello TRTR Community,

I hope this edition of the newsletter finds you, your family and friends well! We took advantage of the wonderful weather this weekend to visit the #IfThenSheCan exhibit at the Smithsonian. It was inspiring to see the orange statues set against the Arts and Industries Building on the National Mall. Pictures from our trip appear on the backpage.

We are very excited to take on the task of making our website something relevant to you. If you should have any suggestions for what features you would like to see, please let us know at amber@isotopictopics.com.

Best,

Amber Johnson

News

War in Ukraine Destroys Neutron Source

The accelerator-driven subrcritical reactor neutron source at the Kharkiv Institute of Physics and Technology was destroyed in a Russian attack. No significant radiation releases are reported. [Read more]

Zaporizhzhia Nuclear Power Plant Taken Over

Russia has seized control of Ukraine's Zaporizhzhia nuclear power plant, the largest in Europe. Some of the reactors are continuing to operate. [Read more]

Russian forces seize Chernobyl

Shortly after their invasion of Ukraine, Russian forces seized control of the Chernobyl Nuclear Power Plant. The activity has led to increased radiation levels at the site. Ukraine also has 4 currently operational nuclear power plants. [Read more]

INL to Test Mobile Microreactor Prototype

The military's Project Pele mobile reactor will likely be tested at INL's Demonstration and Operation of Microreactor Experiments (DOME) in the former EBR-II reactor building. [Read more]

HFR to Remain Shutdown for Weeks

The High Flux Reactor in Petten, a major supplier of radioisotopes, will remain shutdown until at least March 17th following the discovery of a coolant leak on January 21st. [Read more]

Construction of ITER Reactor Halts

Construction of the ITER fusion reactor has been halted by the french nuclear regulatory agency until further safety analysis can be performed on the possible radiation exposure to employees. [Read more]

Cause of SL-1 Reactor Accident is Misattributed

Tami Thatcher, a former safety researcher at INL has found that the cause of the SL-1 reactor accident is frequently misattributed. [Read more]

Brief History of AECL

Jacquie Hoornweg writes a brief history of Atomic Energy Canada Ltd (AECL), the operator of Canada's Nuclear Laboratories, and the developer of the CANDU reactor for NEI. [Read more]

Former Research Reactor for Sale in Plainsboro NJ

The site of the former Industrial Reactor Laboratories reactor in NJ, including the reactor building is being offered for sale. [Read more]

NRC Denies Oklo License Application

The NRC denied the license application for the proposed Oklo Aurora reactor due to insufficient information provided by Oklo in the application process. Oklo intends to reapply for the license. [Read more]

Russian Gold Miner to use SMR

Seligdar, one of the largest gold producers in Russia, has signed an agreement with Rosatom to use approximately 35 MW of electricity from a RITM-200 reactor at the Kyuchus gold deposit in the Republic of Sakha. [Read more]

Egypt to Begin Construction on Nuclear Power Plant

Construction will begin on the El-Dabaa Nuclear Power Plant later this year. Egypt is working with Rosatom to build 4 VVER-1200 reactors. [Read more]

WSU's Reactor Pool Relined

A new lining is being installed in the pool of the Washington State University Reactor. [Read more]

HFR Restart Delayed

The High Flux Reactor at Petten in the Netherlands, a major producer of medical isotopes, has had its restart delayed following a refueling outage due to a coolant leak. [Read more]

MARIA to Produce Mo-99

The MARIA reactor in Poland has increased production of Mo-99 to help offset shortages caused by the unexpected shutdown of the HFR in the Netherlands in January. [Read more]

DOE Secures New TRIGA Fuel

The Department of Energy has agreed to a 9-year contract with TRIGA International to purchase new fuel elements for TRIGA reactors. [Read more]

LANL Workers Contaminated

2 workers became contaminated with plutonium following a glovebox leak at Los Alamos National Laboratory. One of the workers was given chelation therapy for the contamination. [Read more]

European SHINE Isotope Plant Secures Funding

SHINE Technologies has secured funding to begin designing a medical isotope production facility in the Netherlands. [Read more]

Molten Salt Reactor Experiment Upgraded

The DOE has made several upgrades to the Molten Salt Reactor Experiment facility in order to ensure its safety until it is fully decommissioned. [Read more]

3D Printing Finds Use in Nuclear Reactors

Ultra Safe Nuclear Corporation has licensed 3D printing technology from Oak Ridge National Laboratory in order to more efficiently manufacture components for its proposed reactor. [Read more]

Review Requested of NRC Preparedness on Advanced Reactors

U.S. Senator Shelley Moore Capito and Congresswoman Cathy McMorris Rodgers have called on the U.S. Government Accountability Office (GAO) to performa review of the Nuclear Regulatory Commission's ability to review and approve advanced nuclear reactor license applications. [Read more]

Fukushima Fish Still Exceed Radioactivity Limits

Rockfish caught near Fukushima have exceeded the limits for radiocesium concentrations. [Read more]

Robots Used to View Fuel at Fukushima

For the first time, robots have been able to view the melted fuel at Fukushima Unit 1 for the first time since the meltdown in 2011. [Read more]

Prototype Microreactor Built

An electrically heated prototype for the MARVEL Microreactor at INL has been built and will be used to validate the simulations used in the reactor design. [Read more]

Russian PIK Reactor Upgraded

The PIK research reactor has been upgraded with new fuel that will allow for greater intervals between refueling. [Read more]

South Africa Seeks Proposals for New Research Reactor

South Africa is seeking proposals for a new reactor to replace the aging Safari-1 reactor which is scheduled to be retired in 2030. [Read more]

TVA Pursues new SMR

The TVA has allocated $200 million to license a small modular reactor at their Clinch River site. [Read more]

NuScale to Build SMRs in Poland

Nuscale has signed an agreement with KGHM Polska Miedź SA to work towards building a VOYGR power plant in Poland. [Read more]

Power Plant License Extension Revoked

The NRC has revoked the extensions of the Turkey Point Nuclear Power Plant and Peach Bottom Atomic Station licenses to an 80 year terms. The Environmental Impact Reports for these reactors do not consider the extension of the license term beyond 60 years. [Read more]

March 8-10, 2022

34th Regulatory Information Conference

Virtual Conference

March 24-25, 2022

Nuclear Innovation Conference

Amsterdam, Netherlands

April 11-13, 2022

Council on Ionizing Radiation Measurements and Standards

Virtual Conference

25–28 April 2022

International Conference on Fast Reactors and Related Fuel Cycles: Sustainable Clean Energy for the Future

Beijing, China

May 15–20, 2022

International Conference on Physics of Reactors 2022

Pittsburgh, PA, United States

May 23-26, 2022

Women In Nuclear Global Annual Conference

Tokyo, Japan

June 12-16, 2022

American Nuclear Society Annual Meeting

Anaheim, CA, United States

July 25-27, 2022

U.S. Women in Nuclear

Richmond, VA, United States

September 16-17, 2022

International Conference on Nuclear Research Reactors

Rome, Italy

October 11-14, 2022

Test, Research and Training Reactors (TRTR) 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

Upcoming Events

NRC Inspections

Purdue University Research Reactor

July 30-October 12, 2021

The NRC conducted a follow-up inspection regarding the operation of the Purdue University Research Reactor above licensed power levels between February 26th and February 28, 2021. No Notice of Violation was issued as the event occurred as part of the corrective actions being taken for an earlier violation of operating the reactor in excess of its maximum license power level for which the NRC had already cited Purdue.

ML21294A279

University of California-Davis McClellan Nuclear Research Center

October 11-14, 2021

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, surveillance, and emergency preparedness. No violations were identified.

ML21300A392

University of Massachusetts - Lowell Research Reactor

November 2-4, 2021

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.

ML21316A099

November 2-4, 2021

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

ML21337A209

Armed Forces Radiobiology Research Institute Reactor Facility

November 29-30, 2021

The NRC conducted a follow-up inspection regarding the response to the Chilled Environment Letter issued to AFRRI in 2018 and the corrective actions taken in response. The inspection found that AFRRI was properly complying with the Confirmatory Action Order issued to them.

ML21362A766

Texas A&M University Nuclear Science Center

November 29-December 2, 2021

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, emergency planning, maintenance logs and records, and fuel handling logs and records. No violations were identified.

ML21344A200

University of Texas at Austin Nuclear Engineering Teaching Laboratory

November 16-19, 2021

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.

ML22004A203

Ohio State Exhaust Fan Failure

A reportable occurrence occurred at the Ohio State Research Reactor on 2/15/22 when the reactor a required exhaust fan failed during operations when a conduit carrying its power was accidentally cut through while a sink was being replaced.

55739

NC State NI Failure

A Technical Specification violation occurred at the NC State Pulstar Reactor on 2/17/22 when one of the power channels dropped to a reading of 20% while the reactor was operating at 95%.

55747

The NRC has issued the Reg Guide 2.8, and given a 'clean endorsement' to NEI 21-06 Rev 1, "Guidelines for 10 CFR 50.59 Implementation at Non-power Production and Utilization Facilities." NEI21-06 was prepared by the Nuclear Energy Institute with input from staff members at a number of non-power reactors. It includes information on how 10 CFR 50.59 interacts with other regulations for non-power reactors, how the terminology used in 10 CFR 50.59 is defined for non-power reactors, as well as guidance and examples on how to conduct 50.59 Screenings and Reviews.

The NRC endorses this document as the appropriate guidance for the method of performing 10 CFR 50.59 screenings and reviews at Research Reactors.

University of California - Irvine Nuclear Reactor Facility

December 6-9, 2021

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.

ML22004A203

Rensselaer Polytechnic Institute - Walthousen Reactor Critical Facility

October 4-7, 2021

The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and reviews, and transportation activities. Two severity level IV violations were identified for failure to perform required tests and calibrations for the CAM and failure of the Nuclear Safety and Review Board to meet at the required frequency.

ML21305A916

Know More Nukes

University of Massachusets - Lowell

Drew Lajeunesse – Senior Reactor Operator

What year did your reactor first go critical? The initial NRC license was received December 24, 1974 and the first critical operation was on January 2, 1975.

What is the reactor license number? Power level? The license number is R-125. Currently, we are licensed for 1MW.

What is your position at the reactor? How long have you held that position? I have been part of the full-time staff as a Senior Reactor Operator for a little more than 12 years now.

Have any major changes/modifications, such as conversion, power upgrade, etc..., been done? During my time at the UMLRR, the most

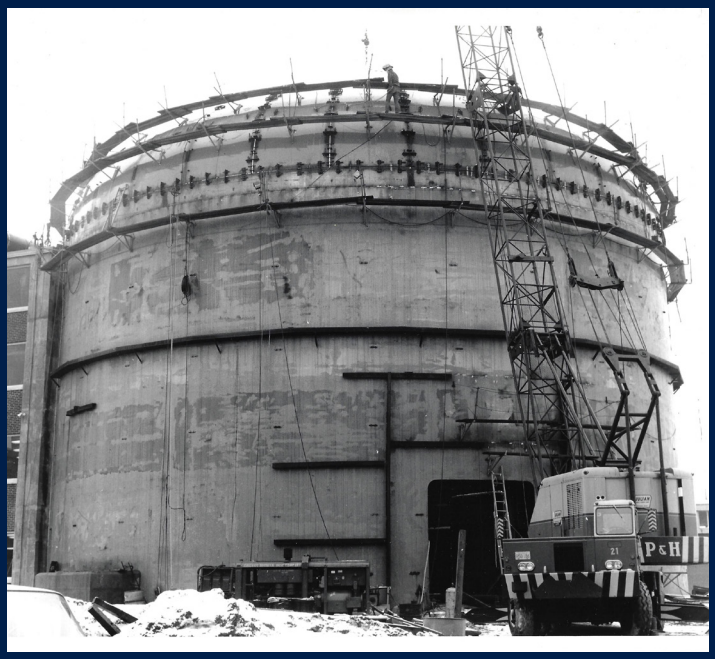
significant change was probably the installation of new control blades. Although the material is essentially the same, the fabrication is different. It had no impact on operations or reactivity, but all the work involved with the upgrade was significant…and fun, too.

What is a unique feature of your reactor? It's quite a big building for a relatively low power reactor. It is one of the few reactors with a true containment building.

What is a fun fact about your reactor? It is a nuclear reactor on a university campus. Isn't that enough?

What is the biggest challenge facing your reactor? Aging equipment and lots of it. I am a big proponent of maintenance as opposed to replacement. While it is far easier to just replace electronics, I prefer to keep and maintain the old mechanical equipment because it is often true that they just don't make it like they used to.

What is the most unusual request someone has had to use your reactor? I don't often interact with customers, so I don't get to hear all the requests. The one that stands out to me



is irradiating grass seed in order to produce a variety which stays short and never requires mowing.

What drew you to your current position? The oddity of the job. The fact that research reactors exist and there aren't many. Also that the job allows me to perform a variety of work such as training, calibrating equipment, technical writing, mechanical maintenance…

What has been your favorite project? I can't say I have a favorite project, but I do have a favorite work category. I call it, "When Things Break". I love it when things break. Why do I love it? Mostly, I enjoy it because I'll learn more about how something works and it provides some unique training for new students.

Before working at your reactor, what was the most unusual or interesting job you've ever had? I think the only thing I have done that qualifies here is some work I performed in high school since so few have done this. I went to a technical high school and I worked with two clients to design two different houses. Both were built. That may not mean much nowadays given that computer software makes it far easier, but back in my day (I suppose I'm old now) we

were taught to draft by hand, so I had to draw framing, cross sections, floor plans, elevations, etc…

What do you find the most challenging at your reactor?
Staying organized. I'm good, but I could be better.

What advice would you give to new reactor operators?
Trust no one. Hold on…let me explain. Overly confident operators may often provide an answer to an operator-in-training without verifying in our documentation either their answer or explanation. I tell everyone to verify answers for certainty and because if you do not know the answer, you should know where to find it. "Trust No One" is catchier than "Verify Everything".

What are three career lessons you've learned thus far?
First, a little communication can prevent a lot of trouble. Second, the importance of basic technical writing. Third, don't rush something unless there is a very good reason.

Anything else??? I'm a professional, I promise.

Aerotest Decommissioning

On December 6th, 2021 the Nuclear Regulatory Commission amended the license of the Aerotest Radiography and Research Reactor (ARRR) to to remove the authority to operate the ARRR, and to authorize possession-only status of the reactor and fuel, allowing Aerotest to begin the decommissioning process. The ARRR was a 250 kW TRIGA reactor that began operations in 1965.

Aerotest officially requested the change in license status on March 21, 2019, but the reactor had been declared permanently shutdown in December 2018, and had not been routinely operated since October 15, 2010 due to issues involving foreign ownership of the reactor. The fuel was unloaded from the reactor and placed into storage in 2012, at which time 22 damaged fuel elements were identified.

Aerotest's final Decommissioning Plan has not yet been approved by the NRC, so only limited decommissioning activities may be carried out at this time. The Decommissioning Plan submitted to the NRC estimates the cost to complete the process as approximately $2.9 million to release the site.

The 2 most recent facilities to have shut down and completed the decommissioning process are the University of Arizona and Worcester Polytechnic Institute.

The University of Arizona decided to decommission its 110 kW TRIGA Reactor due to the expiration of its operating license. The reactor was last operated on May 18, 2010. The reactor was defueled before the license expired on May 21st, and the spent fuel was shipped to Idaho National Lab on December 23rd. Decommissioning contractors completed removal of all radioactive materials from the site by August 2011, and the facility license was terminated on February 28, 2012. The final cost for the decommissioning was less than $2 million.

Worcester Polytechnic Institute terminated its nuclear engineering program in 2007 and ceased operations of its 10 kW MTR reactor on June 30th, 2007. The reactor license was amended to possession only status on August 26th, 2011. Physical dismantling of the reactor was completed in late 2012, and final surveys were completed in 2013. The reactor's license was terminated on December 10, 2014.

Photos from the [If/Then She Can Exhibit] at the Arts + Industries Building, the Smithsonian Castle, and the adjacent Enid A. Haupt Garden.