

Isotopic Topics presents

T R T R

- NEWSLETTER -

ISSUE Q1 2023

Letter From - THE CHAIR -

Time is screaming by, we're already in March of 2023. In just about four months we'll be able to see each other in person again at the great meeting being put together by Amber Johnson and the team at the [Maryland University Training Reactor](#). This will also be an opportunity to meet with our colleagues from the international community as we are doing a joint meeting with the [International Group on Research Reactors](#). Most importantly, there will be [crabcakes](#).

Amber and Luke have assembled another outstanding Quarterly Newsletter. Doug Morrell, a longtime member of our community and Program Manager at Battelle Energy Alliance/Idaho National Laboratory, is able to provide support to keep these newsletters coming from his program. We appreciate all these contributions in time, effort, and financial support to keep everyone informed.

As many of you know, the non-power group at the Nuclear Regulatory Commission is working on an [Information Notice](#) (IN) describing the trending of violations within the U.S. RTR community that should be released in June or July this year for public comment. Amber and her team have done a parallel analysis of the violation notices for our facilities from the ADAMS records of inspection reports and other public records. There is something for all of us to learn in this analysis, and what the final version of the IN will contain, as we continue to work as a community to improve our operations.

The Regulator has been very busy generating items of interest that potentially impact our community significantly. For example, the potential exists for the NRC to revive the rulemaking effort to change our Security Plan requirements for facilities with [Category I, II, or III](#) levels of Special Nuclear Material. Another item of interest is the Executive Branch's effort to make all their agencies use the [Controlled Unclassified Information](#) (CUI) system for handling sensitive information. These, along with many other items emanating from the Agency and other parts of the Federal Government, can force us to change how we do our work as a community.

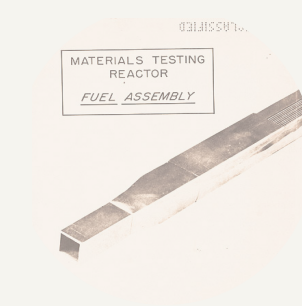


• *Featured In This Issue* •

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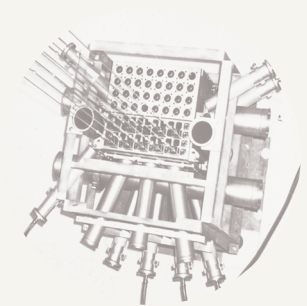
EVENTS



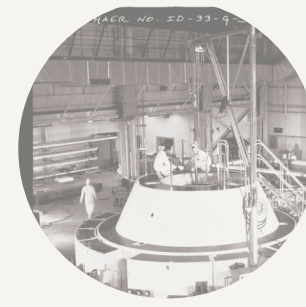
QUARTERLY CALL



NEWS



TTR & IGORR



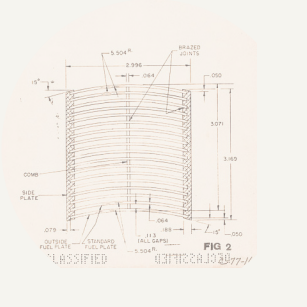
VIOLATION TRENDS



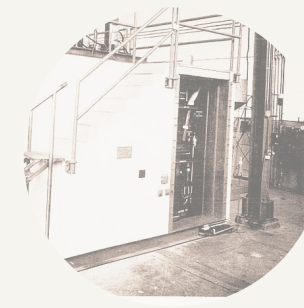
NEUP AWARDS



REPORTABLE OCCURRENCES



INSPECTION REPORTS



EVENTS

It would be difficult to keep up with all these items without the continued, important support of Hilary Lane and the [Nuclear Energy Institute](#). Please watch for the notices that Hilary sends out about public meetings and participate to the best extent you can. These meetings are our chance to have a voice and potentially limit or reduce the negative impacts to our operations.

Much of what I have discussed here is expressing my gratitude to all the people who contribute to efforts benefiting the entire TRTR community. Our loose association of facilities owes many people and organizations a very big "thank you!" Please remember that help and/or advice is almost always a phone call or email away. I know I have a list of facilities that I call on a fairly regular basis for something simple like "Hey, do you all have a procedure for [fill in the blank] that I can steal wholesale to save me from having to write one from scratch?" to something more complicated like "Uh oh." Chances are, there is someone who has gone through what your facility is experiencing, so use the listservs (trtr-list@ecn.purdue.edu for general things, or trtr-facilities@ecn.purdue.edu for items you don't want out to a larger audience), phone, or direct emails to get some advice.

See you all in June!

Jere Jenkins
TRTR Chair

Subscribe to our mailing list:
<https://www.trtr.org/join-our-mailing-list/>

2023 American Nuclear Society Student Conference

Knoxville, Tennessee
13-15 April 2023

European Research Reactor Conference

Antwerp, Belgium
16-20 April 2023

Nuclear and Emerging Technologies for Space

Idaho Falls, Idaho
7-11 May 2023

American Nuclear Society Annual Meeting

Indianapolis, Indiana
11-14 June 2023

U.S. Women in Nuclear Conference

Scottsdale, Arizona
23-26 July 2023

Modeling, Experimentation and Validation Summer School

Idaho Falls, Idaho
24 July - 4 August 2023

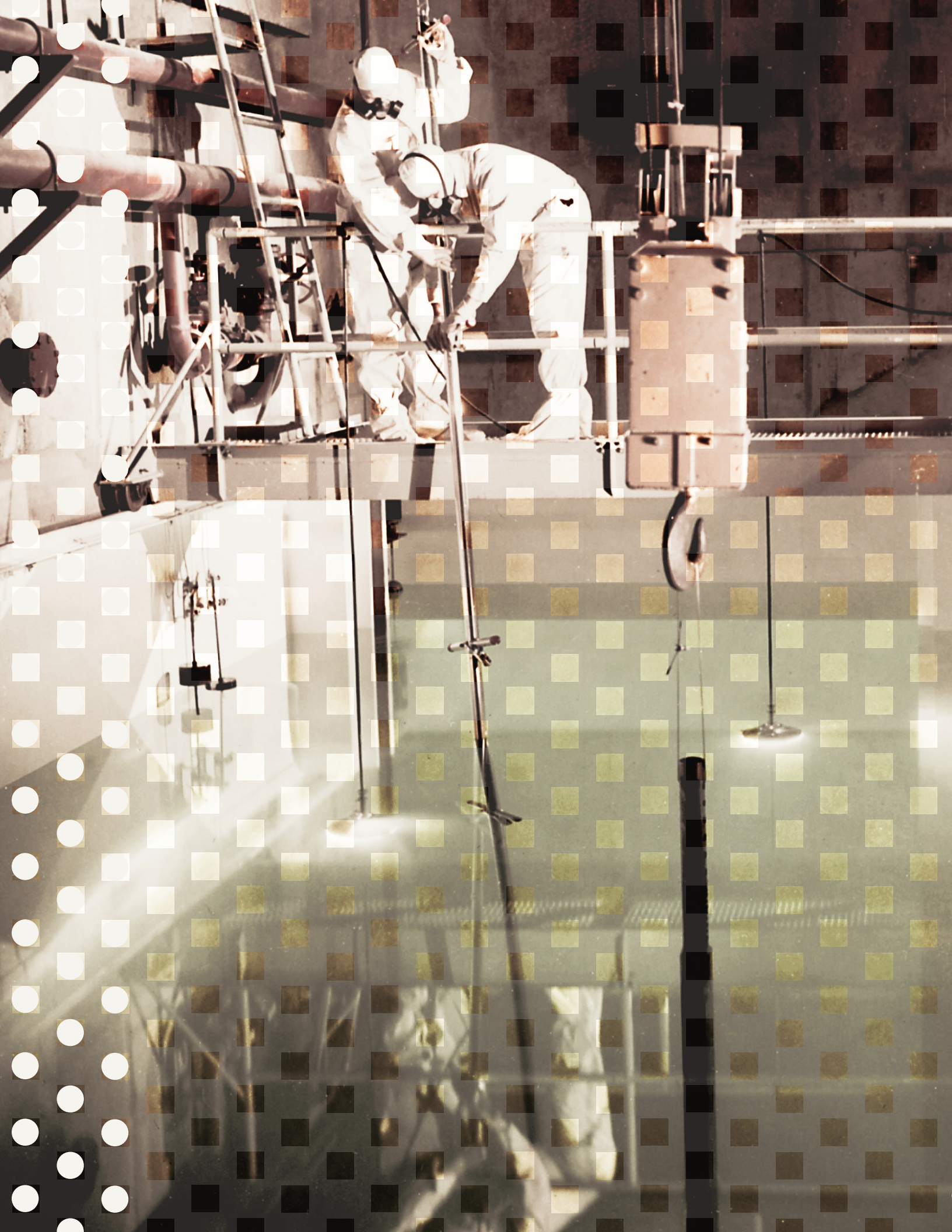
American Nuclear Society Winter Meeting and Technology Expo

Washington DC
12-15 November 2023

International Conference on Research Reactors: Achievements, Experience and the Way to a Sustainable Future

Dead Sea, Jordan
27 November - 1 December 2023

2023
TRTR & IGORR RESEARCH
REACTOR CONFERENCE
COLLEGE PARK MD USA
18-22 JUNE



• February 28 •

QUARTERLY CALL -SUMMARY-

The purpose of this meeting is to discuss with the National Organization of Test, Research and Training Reactors (TRTR) Executive Committee members, current issues related to operations at research and test reactors.

The meeting began with an explanation of file sharing over Box. Soon licensees will be able to view updates to the site access list in real time.

The NRC then stated the [final rule on Enhanced Weapons, Firearms Background Checks, and Security Event Notifications](#) will soon be published, then there will be a 300 day "implementation window". The provisions which apply to non-power reactors are those on Physical Security Event Notifications (10 CFR 73.1200), Physical Security Event Recordkeeping (10 CFR 73.1210), and Suspicious Activity Reporting (10 CFR 73.1215):

10 CFR 73.1200 describes categories of physical security events and the timeframes by which the licensee must notify the NRC of these events.

10 CFR 73.1210 addresses the recordkeeping of less significant physical security events and conditions adverse to security. It consolidates and clarifies the safeguards event log requirements into this new section.

10 CFR 73.1215 requires that licensees report suspicious activities to their LLEA, their FBI local field

office, the NRC, and the local FAA control tower (for suspicious activities involving aircraft), as soon as possible, but within 4 hours of the time of discovery.

TRTR has requested a non-power reactor specific workshop with the NRC to discuss the specific implementation of these new requirements.

The NRC Staff also continues to work on preparing an "options paper" for the Commissioners on Physical Protection Requirements for Category I, Category II, and Category III Quantities of Special Nuclear Material and Physical Protection and Safeguards Requirements for Alternate Nuclear Material. Many of the potential updates are based on the IAEA's findings in [Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities \(INFCIRC/225/Revision 5\)](#). Making no changes to the current requirements remains an option.

• Message from the Editor • Hello TRTR Friends!

In an effort to increase engagement on our website forums, Mat Brener, from the Armed Forces Radiobiology Research Institute, has graciously volunteered to help keep our forums on topic. I encourage you to make an account and post on the topics that are relevant to our community: <https://www.trtr.org/forum/>

In this issue, we have tabulated all the violations collected in the previous newsletters. Please review and let us know if we missed anything!

We also generated a map showing the total amount received by facility from 2011-2022 from NEUP grants. Console upgrades lead the way!

by **AMBER JOHNSON**
EDITOR

LUKE GILDE
CONTENT EDITOR

NEWS

ASSISTANT SECRETARY FOR NUCLEAR ENERGY VISITS NC STATE: Kathryn Huff spoke at NC State's Nuclear Engineering Distinguished Executive Lecture in addition to meeting with staff and students and touring the labs including the PULSTAR research reactor.

NEW CONSORTIUM ON NUCLEAR FORENSICS: University of Florida is leading a new consortium to develop the next generation of new technologies and insights in nuclear forensics.

AUTONOMOUS CONTROL ARCHITECTURE FOR MICROREACTORS: University of New Mexico, Purdue University, Argonne National Laboratory, and Curtiss-Wright are collaborating under a DOE grant to develop a physics-based, machine-learning, autonomous-control architecture for a microreactor. The autonomous control will be tested by remotely operating and controlling the PUR-I research reactor at Purdue University.

ACU HOSTS TOWN HALL ON NEW NUCLEAR REACTOR: Abilene Christian University hosted a town hall meeting to discuss their project to build a new molten salt reactor.

ULTRA SAFE NUCLEAR DESIGNS PROBE TO LOOK FOR MOON WATER: Ultra Safe Nuclear has received a NASA Institute for Advanced Concepts (NIAC) Phase I award for an XRF based probe using their EmberCore radioisotope ceramic.

ULTRA SAFE NUCLEAR PLANS NEW REACTOR IN FINLAND: Ultra Safe Nuclear Corporation has signed a memorandum of understanding with Lappeenranta University of Technology in Finland to explore the deployment of a Micro-Modular Reactor.



VIRGINIA TECH REACTORS: A brief history of the research reactors at Virginia Tech University.

80TH ANNIVERSARY OF CHICAGO PILE ONE: December 2022 marked the 80th anniversary of Chicago Pile One achieving criticality for the first time.

FISCAL YEAR 2023 BUDGET SUPPORTS REACTORS: The 2023 federal budget provides \$20 million for a "next generation" reactor at the University of Missouri, but does not provide any funding for the Versatile Test Reactor or new university research reactors.

GERMAN RESEARCH REACTORS WILL BE ALLOWED TO CONTINUE TO OPERATE: The research reactors in Germany will be allowed to continue to operate as the country's nuclear power plants are phased out.

FOSTERING A CULTURE OF INNOVATION AT THE REED RESEARCH REACTOR: THE REED RESEARCH REACTOR MAINTAINS A LARGE TRAINING AND EDUCATION PROGRAM.

US AND JAPAN COLLABORATING ON FUEL TESTING: The US and Japan are collaborating on a new fuel testing facility at the TREAT Reactor.

IPR-RI RESEARCH REACTOR RECEIVES NEW CONTROL EQUIPMENT: Brazil's IPR-RI TRIGA research reactor at the Centre for Nuclear Research in Belo Horizonte has received new neutron flux control equipment to upgrade the reactor.

URANIUM SILICIDE FUEL TO BE TESTED AT POLISH RESEARCH REACTOR: The National Centre for Nuclear Research in Poland will test new, accident-tolerant, fuel manufactured by the Korea Atomic Energy Research Institute.

INSTALLATION OF MBIR RESEARCH REACTOR UNDERWAY: The reactor vessel for Russia's multi-purpose research reactor (MBIR) is being moved into place.

NEW ISOTOPE PRODUCTION REACTOR IN WALES: The Welsh government is developing plans for a new reactor based medical isotope production facility.

INSARR REVIEW OF CZECH REACTOR: The IAEA completed a four-day Integrated Safety Assessment of Research Reactor (INSARR) at the 10 megawatt LVR-15 reactor. The assessment found that a number of recommendations made during a 2020 review had been implemented, and made further recommendations about how to improve the program.

RADIOISOTOPES USED IN FARMING RESEARCH: Researchers at Murdoch University in Australia are using radioactive zinc to track the uptake of fertilizers in crops.

NEW SUBCRITICAL REACTOR IN CANADA: Ontario Tech University has begun its efforts to license a new subcritical reactor facility. The facility will be built using parts from a subcritical reactor originally at Polytechnique Montréal, and will be the only subcritical reactor in Canada.

IAEA LAUNCHES RESEARCH REACTOR HR TOOLS: The IAEA is releasing a new tool to help countries developing new research reactor programs determine the personnel that will be necessary.



• Jointly Presented by TRTR & IGORR •

RESEARCH REACTOR CONFERENCE

The Venue:

This year's meeting is The Hotel at the University of Maryland. To reserve your room, click [here!](#) Should you need to add additional nights to your stay, please contact [The Hotel](#) at: 301.277.7777

The Call for Abstracts:

Submit your abstract by 17 March 2023.

Some topics for your consideration are:

- Common Management Considerations
- Computer Modeling
- Experiments
- Instrumentation
- Advanced Reactors
- Operations and Maintenance
- Utilization
- Fuel Cycle
- And many more!

Learn more about how to submit for either an oral or poster presentation at this [link!](#)

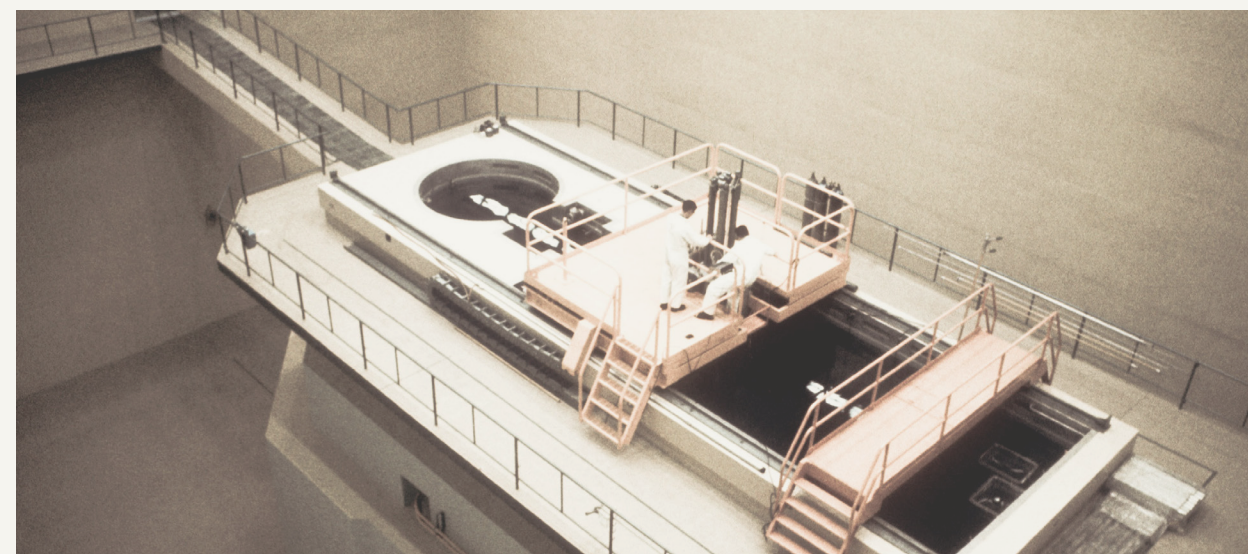
Participate in a Panel:

Currently, we have panels planned for: Security, Diversity & Inclusion, and Workforce Development. [Contact us](#) for additional information!

Register Now:

Fees	Before 21 May	21 May-11 June	On-site
Student	\$400	\$500	\$550
General	\$800	\$900	\$950

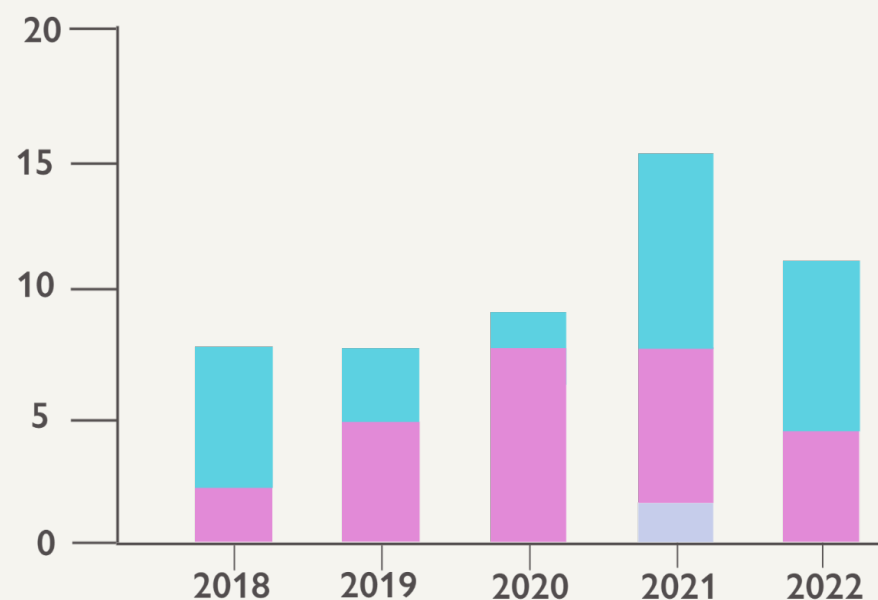
Please complete your registration at this [link!](#)
In addition to all the technical sessions, this fee includes a crab cake banquet in Annapolis MD!



- ON A -
MISSION FOR
Fission!

Notice of Violations

- Level III
- Level IV
- Non-Cited



• 2018-2022 •

VIOLATION TRENDS

A collection of inspection reports from 2018-2022 color-coded to match the level of violation. If a follow up report is available, it is linked after the description of the violation. Reports are also linked.

2018

[ML18043A170](#) Failure to conduct 50.59 screenings on changes to procedures.

[ML18178A092](#) Failure to audit the Emergency Plan and Physical Security Plan

at the required frequency. License amendment request was submitted to match the inspection frequency of the technical specifications to the Emergency Plan. [ML18227A143](#)

[ML18232A450](#)

Failure to conduct the required annual Emergency Drill. The drill was performed and incorporated into the training program. [ML18257A137](#)

[ML18296A658](#)

- Emergency Power System was disabled during a reactor operation. To prevent recurrence, generator hours are now logged at times when the reactor is shutdown and conducted training. [ML18078A298](#)
- Failure of a Control Rod Drive during operations. Reactor scrammed and switch repaired. [ML18164A027](#) Report [53433](#)

[ML18323A159](#)

- Required Power Channel inoperable due to noise. Startup checkout was revised to include a noise limit and verification of channel response.
- Reactor Console Key left at reactor console unattended.
- Reactor Operator violated the conditions of their license.

2019

[ML19114A479](#) Failure to properly complete a 50.59 review for a new digital console. License amendment request submitted. [ML19170A105](#)

[ML19296D152](#)

- Failure to submit an annual report at the required interval.
- Failure to complete radiation surveys of the facility at the required frequency.

[ML19337A436](#)

[ML19333B971](#)

- Operator who did not pass a requal exam was not removed from licensed duties.
- Operation of the reactor while the ventilation system was not operating properly.

[ML19340B199](#)

- Failure to maintain reactor confinement integrity while the reactor was not secured. [ML19197A042](#) Report [54149](#)
- Failure of an anti-siphon system while the reactor was operating. Procedures were modified.

- Failure of a Control Rod Drive during operations. Scrammed reactor and repaired rod drive; long term, a rod drive upgrade underway.

[ML19221B563](#)

2020

[ML20078L009](#) Failure to measure Control Rod drop times at the required intervals.

[ML20191A277](#) Failure to account for a pool leak in effluent calculations. Revised procedures and submitted effluent report. [ML20246G577](#)

[ML20196L821](#) Failure to measure control rod worths at the required interval.

[ML20237F406](#) Operation of reactor with ventilation system inoperable.

[ML20220A483](#)

- Security
- Security

[ML20240A252](#)

Radiation Safety Officer does not meet the qualifications described in the Technical Specifications. License amendment request was submitted. [ML20304A153](#)

[ML20237F588](#) Security

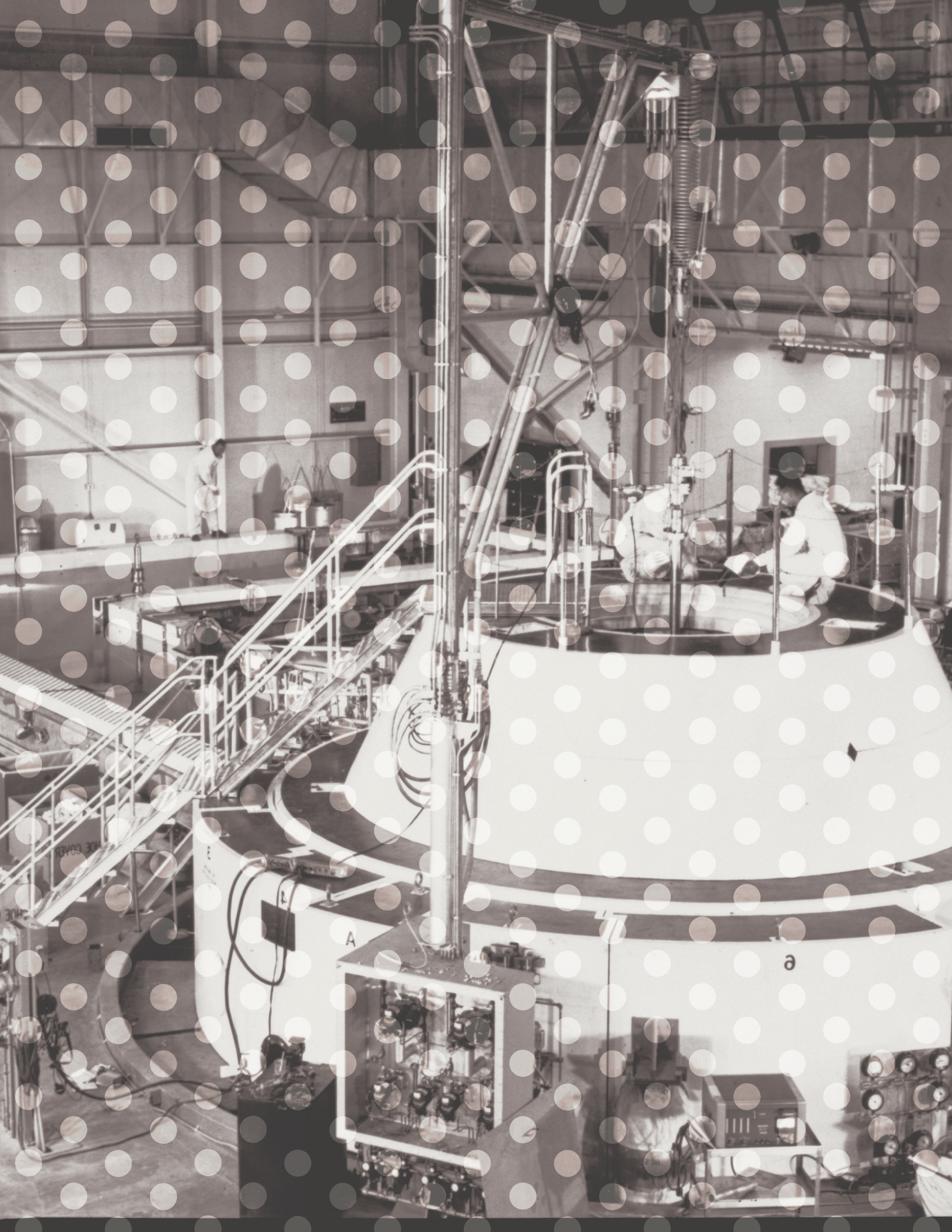
[ML20352A452](#) Security

2021

[ML20356A227](#) Security

[ML21035A348](#) Reactor exceeded maximum licensed power level / Failure to calibrate neutron instruments. Report [54958](#)





2022

2021 Violations continued

[ML20322A365](#) Failure of a control rod drive during operations. [ML19036A612](#) Report [53841](#)

[ML20309A811](#)

- Security
- Security

[ML20304A216](#) Reactor startups performed without Reactor Supervisor present.

[ML21118B022](#) Reactor Console Key left at reactor console unattended. Attached key to large, highly visible, key chain; added flag system to clearly display key status. [ML19106A359](#) Report [53983](#)

[ML21134A127](#) Failure of 2 operators to complete the requal program.

[ML21186A005](#) Security

[ML21189A289](#) Failure to measure and properly report Ar-41 releases.

[ML21202A433](#) Failure to meet minimum staffing requirements after retirement of only licensed operator.

[ML21238A395](#) Security

[ML21225A086](#) 2 operators did not receive required physical.

[ML21245A237](#) Pool water conductivity exceeded limit. Report [55399](#)

[ML21294A279](#) Reactor exceeded maximum licensed power level. Report [55359](#)

[ML21305A916](#)

- Nuclear Safety and Review Board failed to meet at required intervals.
- Did not test CAM at required intervals.

[ML21322A341](#)

- Dose in unrestricted area exceeded 2 mRem/hr. [ML21217A298](#)
- Failure of a Control Rod Drive during operations. [ML21221A325](#) Report [55380](#)
- Failure of a Primary Coolant Pressure monitoring channel. [ML21298A197](#) Report [55516](#)

[ML22046A200](#) Failure of a Control Rod to scram.

[ML22056A237](#) Security

[ML22140A392](#) Security

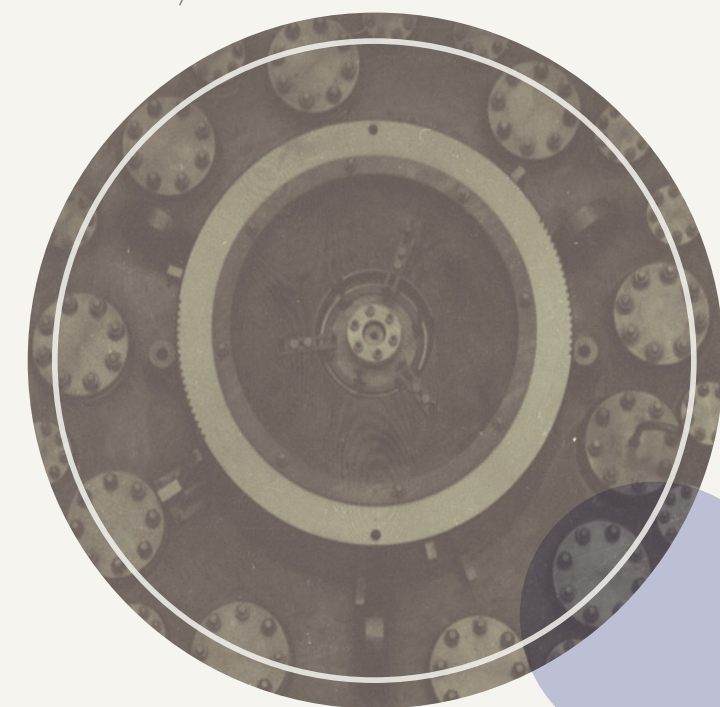
[ML22158A237](#) Reactor exceeded maximum licensed power level. Report [55632](#)

[ML22174A404](#)

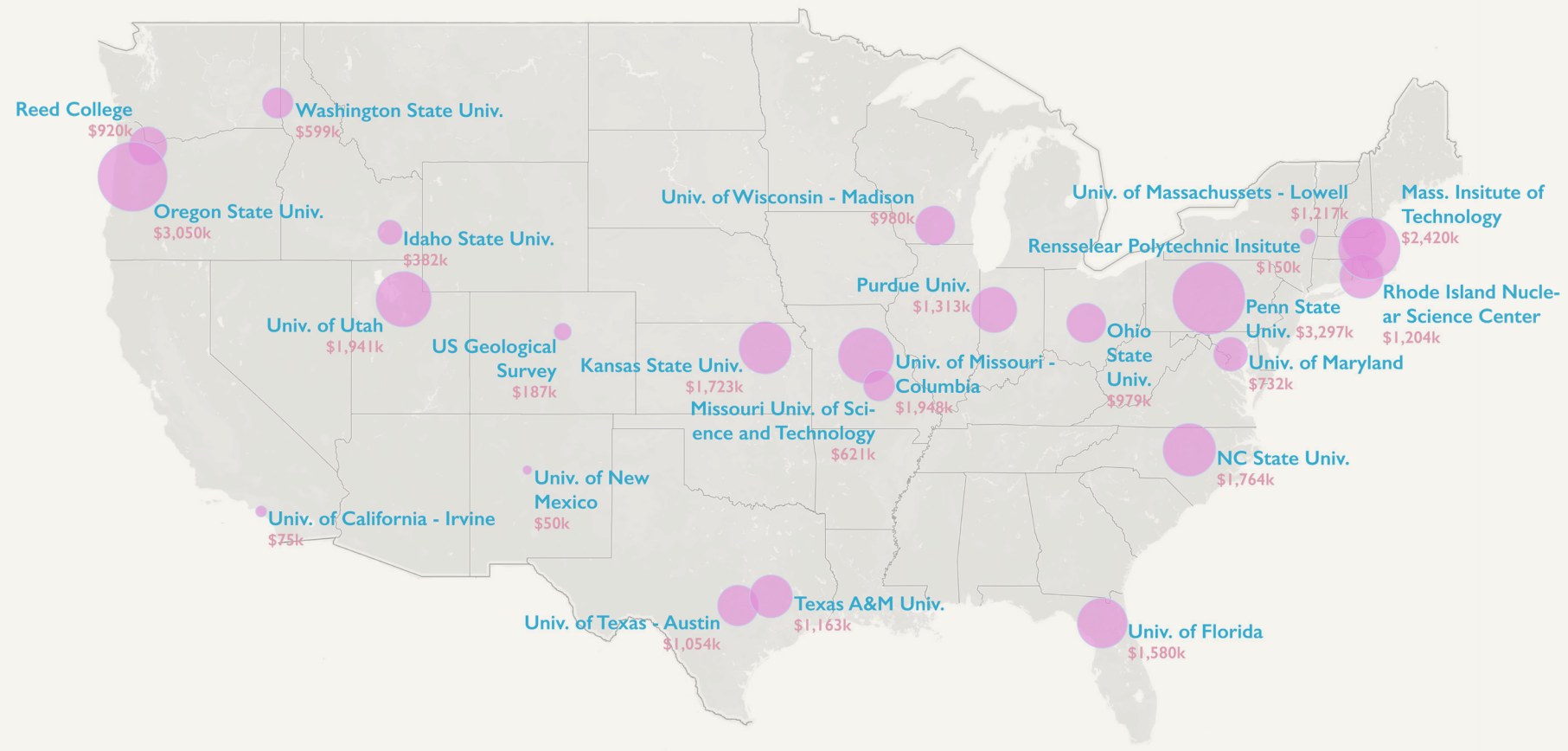
- 3 operators did not receive required physical.
- Changes to core configuration without measuring excess reactivity, control rod worth, and shutdown margin afterwards.

[ML22229A483](#) Security

[ML22347A311](#) Failure of the Nuclear Reactor Committee to review changes to reactor systems.



NEUP AWARDS 2011-2022



Awards totals tracked by facility from 2011-2022. More information can be found at: neup.inl.gov

LARGEST AWARD:
KANSAS STATE 2015
\$1,495,954.00
FOR A
CONSOLE UPGRADE

REPORTABLE OCCURRENCES

Missouri University Research Reactor - [Event Number 56296](#)

An operator's license renewal application was not submitted in time for timely renewal provisions to take effect. The operator's license then expired, but they continued to perform licensed duties. Follow-up report: [ML23017A207](#)

Reed Research Reactor - [Event Number 56308](#)

An exhaust fan failed during the movement of irradiated fuel causing the ventilation system to become inoperable.

University of California, Davis McClellan Nuclear Research Center - [Event Number 56331](#)

Tritium concentrations in the pool water were found to be in excess of license limits. This was due to an incorrect tritium analysis during the relicensing process having led to the limit for tritium being set too low to be achieved. UC Davis is submitting a License Amendment Request ([ML23039A207](#)) to rectify the situation.

Texas A&M University Nuclear Science Center Reactor

Self reported a violation ([ML23018A129](#)) of 10 CFR 20 requirements after finding that samples awaiting shipment led to an unposted High Radiation Area in the facility, and radiation levels in excess of 2 mRem/hr in unrestricted areas outside of the facility.

University of New Mexico AGN201 - [Event Number 56313](#)

High Power Scram caused by operator error. The event was not classified as Reportable Occurrence.



ML22299A226

WASHINGTON STATE UNIVERSITY NUCLEAR SCIENCE CENTER

The inspection included a review of security compliance. **No violations were identified.** August 23-24, 2022

ML22304A704

RHODE ISLAND NUCLEAR SCIENCE CENTER

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 surveillance. **No violations were identified.** September 12 – 15, 2022



ML22237A305

UNIVERSITY OF CALIFORNIA-DAVIS McCLELLAN NUCLEAR RESEARCH CENTER

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.** July 25 – 28, 2022



ML22347A311

UNIVERSITY OF TEXAS AT AUSTIN, NUCLEAR ENGINEERING TEACHING LABORATORY

A special inspection was performed to investigate the operation of the reactor with aluminum clad fuel elements in the core, contrary to the reactor license. **One Severity Level IV violation for failure of the Reactor Safety Committee to review changes to the facility was identified. One apparent violation was identified for the operation of the reactor with an aluminum clad fuel element in the core.** November 7 – December 8, 2022



ML22269A557

UNIVERSITY OF WISCONSIN NUCLEAR REACTOR LABORATORY

The inspection included a review of security compliance. **No violations were identified.** August 15-17, 2022



ML23032A389

UNIVERSITY OF FLORIDA TRAINING REACTOR

The inspection included a review of health physics, design changes, committees audits and reviews, emergency planning, fuel handling logs and records, and transportation activities. **No violations were identified.** December 12-14, 2022



Some archaic nuclear terminology from the collection by Francois Kertesz:

FELT HAT INCIDENT

A term for a loss of cooling flow caused by an object dropped into a swimming pool reactor that is sucked into the fuel elements blocking flow, hypothetically a felt hat.

HOT GARDEN

Underground storage for radioactive materials.

REACTOR ON THE ROCKS

The Sequoyah Nuclear Power Plant which utilizes an ice condenser containment building.



ML23025A228

MASSACHUSETTS INSTITUTE OF TECHNOLOGY REACTOR

The inspection included a review of operator licenses, requalification, and medical examinations, effluent and environmental monitoring, experiments, organization and operations and maintenance activities, review audit and design change functions, procedures, fuel movement, surveillance, emergency preparedness, radiation protection, and transportation activities. **No violations were identified.** October 24-27, 2022

ML23032A410

UNIVERSITY OF CALIFORNIA, IRVINE NUCLEAR REACTOR FACILITY

The inspection included a review of procedures, experiments, health physics, design changes, committees, audits and reviews, and transportation activities. **No violations were identified.** December 13-15, 2022





Brookhaven High Flux Beam Reactor