



RTR EXPLORER

NEWS AND NOTES FOR THE RESEARCH AND TEST REACTOR COMMUNITY
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Moly-99 Efforts in Full Swing

It has been a busy summer for the NRC RTR staff, as they are preparing to receive licensing applications for medical isotope production facilities. The staff has received letters of intent to pursue medical isotope technologies from MURR, GE Hitachi, Coqui Radiopharmaceuticals, and

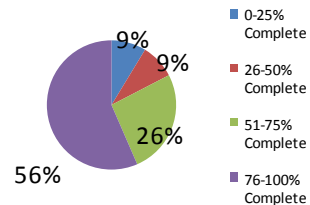
Babcock and Wilcox.

As part of the Global Threat Reduction Initiative, NNSA has awarded cost sharing cooperative agreements to Babcock and Wilcox, and GE Hitachi, each for a different technology. NorthStar and Morgridge/Phoenix will also receive cooperative

agreement funding to work on similar technologies.

The staff expects to receive at least two applications for construction permits in 2011, and two working groups have been feverishly preparing interim staff guidance against which they will review the applications.

RTR License Renewal Completion



RTR Licensees are well on their way to completing license renewal! Please contact your facility's project manager (PM) with any questions or concerns.

New Staff on board!

- **Jim McGovern** as RTR Projects Branch new hire!
- **Taylor Lichtatz** as RTR Projects Branch new hire!
- **Scott Sloan** as RTR Projects Branch transfer from NRC Region I!

NRC Participates in TRTR 2010

A number of NRC staff members and managers headed south for the 2010 joint meeting of the National Organization of Test, Research, and Training Reactors (TRTR) and the International Group on Research Reactors (IGORR) held September 19-23, in Knoxville, Tennessee.

both located at nearby Oak Ridge National Laboratory.

The NRC actively seeks out opportunities to interact with the licensee community and public stakeholders. While priding itself on being an independent regulatory agency, the NRC realizes that effective

regulation cannot occur in isolation. By being proactive in its outreach efforts, the agency can effectively address concerns and answer questions regarding the safety of the activities within its jurisdiction.



Conference topics included an NRC introduction delivered by NRR Office Director Eric Leeds, fuel conversion from high enriched uranium (HEU) to low enriched uranium (LEU), research reactor safety, the status of new reactors, and more. The highlight of the conference was a tour of the High Flux Isotope Reactor and Spallation Neutron Source,

The 2010 TRTR/IGORR joint meeting allowed the RTR community to discuss with NRC staff questions and concerns regarding many current initiatives, including the proposed fingerprinting rule for unescorted access to RTRs, medical isotope production facilities, and RTR incident response.

Mind Teasers

What event occurred in 1961 that will not occur again until 6009?

A hiker pitched a tent then hiked 5 miles south, turned and hiked 5 miles east, then turned and hiked 5 miles north to find a bear destroying his tent. What color was the bear?

				28
				30
				20
				16
?	19	20	30	

What is the missing number?

Did You Know?? In October 1989, the NRC Non-Power Reactor Directorate was formed. This initiative brought RTR regulatory activities into a single group in the NRC. Initially this involved project management and licensing, but later operator license examination and inspections were added. Under the new directorate, procedures and qualification requirements were established for NRC personnel.

Answers on the back

Recent Exposure Event Teaches Important Lessons

A research reactor facility recently experienced a radiation exposure event that, while not exceeding NRC exposure limits, serves as an important lesson regarding radiation safety. A Senior Reactor Operator (SRO) was pulling an irradiated sample in its aluminum sample rack, which had been irradiated at 500kW for 8 hours the previous day. Twelve hours had passed since the end of the irradiation when the SRO pulled the samples to one meter below the surface of the pool. Not observing anything unusual on the survey meter, the SRO pulled the loaded sample rack out of the pool in one motion, causing the meter to peg high at 50 R/hr. Within 12-15 seconds, the SRO had ejected the samples behind a beta shield and the sample racks behind a gamma shield. The SRO's whole body dose was measured at 147 mrem by a dosimeter, and his extremity dose was calculated to be 12.5-13 rem. Due to a number of considerations, the NRC dispatched a Special Inspection Team in response to this event, and the inspection report should be published in the near future. The licensee cited the inadequacy in the implementation of administrative or procedural controls as a contributing factor.

Fingerprinting Rule Update

The NRC has been hard at work developing a rule governing fingerprint-based background checks for personnel with unescorted access to vital areas within RTRs, with the objective of superseding the Commission's post-9/11 security enhancement orders. Many comments were received from the nonpower reactor community, and each is being addressed in the final rule package. The rulemaking package is on track to be published in mid 2011, becoming effective 120 days following publication in the *Federal Register*. Although the public comment period has ended, please contact Scott Sloan at (301) 415-1619, or scott.sloan@nrc.gov, with any questions, as comments received will be considered if it is practical to do so. Information can also be found at www.regulations.gov under Docket ID NRC-2008-0619.

RTR Incident Response

In preparation for the 2011 National Level Exercise, the NRC staff is working to update RTR incident response procedures. These updates account for the addition of the RTR projects branch, clarify responsibilities for project managers and branch chiefs, and provide actions to take when an event occurs that is below the threshold of an Emergency Action Level. Additionally, the staff recognizes that events at RTR facilities differ in many ways from events at other nuclear facilities, and another objective is to sensitize the NRC incident response team to the design and operations of RTRs. To achieve that objective, the staff will soon be rolling out updated incident response training. Once the procedures are updated, the RTR projects branch will hold training for NRC staff and management, and the NRC can provide training to licensee facilities upon request. If you have any questions or concerns regarding RTR incident response, or if you have ideas for improving RTR incident response, please contact Beth Reed at (301) 415-2130, email elizabeth.reed@nrc.gov, or Scott Sloan at (301) 415-1619, email scott.sloan@nrc.gov.

Fifty Years After SL-1—A Safety Moment

January 3, 2011, will mark the 50th anniversary of the catastrophic reactor accident at the US Army's Stationary Low-Power Reactor No. 1, SL-1, located at the Nuclear Reactor Testing Station just outside of Idaho Falls, Idaho. With the objective of providing heat and electricity for remote Arctic and Antarctic outposts, the US Army developed small nuclear power plants with a capacity of about 3 MWt and developed a rigorous training program for its operators.

The SL-1 reactor was being prepared for its first restart since undergoing a maintenance and holiday outage 11 days earlier. While attempting to attach the central control rod to its

drive mechanism, an operator manually withdrew the rod approximately 21 inches (as determined by post-accident analysis) - contrary to the maintenance procedure which called for the rod to be withdrawn only "a few inches." This poorly worded procedure, and the operators' failure to follow it, resulted in prompt criticality in the reactor, causing a large steam explosion which lifted the reactor pressure vessel off of its mounting. The reactor achieved a maximum power excursion of 20 GW in approximately 4

milliseconds, and all three operators were killed.

The SL-1 accident led to a change in design philosophy that remains in practice today—namely, a reactor shall not be able to achieve criticality with its most reactive rod fully withdrawn. Other lessons drawn from this tragedy include the importance of including the appropriate amount of specificity in maintenance and operating procedures, and the importance of personnel complying with procedure. The SL-1 accident serves as a grim reminder, for regulators and regulated alike, that nuclear safety must be the overriding priority in everything we do.

