

Gateway for Accelerated Innovation in Nuclear January 2018 Highlights Report

Funding Opportunities

January 24: **The 2016 Nuclear Energy Voucher Pilot Program Final Summary** was delivered to the GAIN Director, Rita Baranwal. The report provides the context of the NE Voucher Program and brief summaries of the projects completed for the eight recipients. In general, the NE Voucher pilot successfully met the objectives to facilitate access to the national laboratory expertise and infrastructure; to provide insights and technical guidance to the recipients; to implement a standardized contracting process; to increase understanding of national laboratory capabilities; and to foster relationships between national laboratories and the private sector.

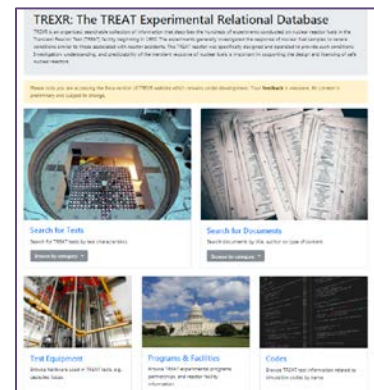
January 31: The first round application process closed for the **Department of Energy Industry Funding Opportunity Announcement (FOA)**. The FOA is focused on cost-shared projects to develop innovative, industry-driven reactor designs and accompanying technologies with high potential to advance nuclear power in the United States. The proposals are under review, with expected notification in mid-March. The next application submittal window is open through April 30, 2018.

January 31: The first round application process closed for the **FY 2018 NE Vouchers**, designed to assist advanced nuclear energy technology developers with access to world class expertise and capabilities available at DOE National Laboratories. The proposals are under review, with expected notification by March 16, 2018. The next application submittal window is open through April 30, 2018.

Legacy Information

January 5: After two years of development, with a major push from GAIN during the past six months, the **TREAT Experimental Relational (TREXR) Database** was activated. TREXR provides web access to valuable legacy information from past testing of nuclear fuels and materials in TREAT, including published articles, technical reports, and data from tests and post-test examinations.

TREXR is an organized, searchable collection of information that describes the hundreds of experiments conducted on nuclear reactor fuels in the Transient Reactor Test (TREAT) facility beginning in 1960. The experiments generally investigated the response of nuclear fuel samples to conditions that range from those in mild reactor transients to conditions associated with severe reactor accidents. The data from such transient experiments is vital for the design and licensing of nuclear reactors and advanced fuels.



Final updates were made to the TREXR website in December, including the addition of new features to enable better sorting, the inclusion of additional descriptive text, and the creation of additional links between related sets of information. These improvements will facilitate the search for information relevant to users' needs. Additionally, the access conduit was finalized for non-ANL users.

TREXR's completion is a significant accomplishment in GAIN's quest to provide the advanced reactor technology developers access to valuable test results, reports, and other significant documents. Initial access was granted to INL and ANL employees to review the website and to test its features and user interfaces.

Technical Advances

January 17: **TREAT Operations** completed the first temperature limited transient (TL-1), which generated a peak power level of 1.3 Gigawatts thermal (GWt) and an energy deposition of 740 Megajoules. All equipment operated properly, including the Nuclear Instruments and Automatic Reactor Control System. It was the first of three temperature-limited transients planned during the quarter that will complete validation of the equipment operability section of the TREAT Restart Plan. The completion of the TREAT Restart Plan will initiate unrestricted operations.

January 31: **HFIR Pressure and Temperature Test Assembly**. After review of ORNL's High Flux Isotope Reactor (HFIR) requirements and desired Advanced Measurement Systems Inc. (AMS) test conditions, the pressure and temperature test assembly was designed and fabricated for pressure and temperature sensor irradiation at HFIR. The assembly is designed to be prefilled with an inert gas, inserted into HFIR, and then heated to examine resiliency and functional response of sensors up to temperatures of 130 °C and 150 MRad. This irradiation is planned for the April 2018 timeframe.



January 31: The Nuclear Energy Voucher award with **Transatomic Power (TAP) Corporation** was recently completed, culminating with a summary article for publication in one of the Elsevier journals. The associated ORNL technical report, "Assessment of the Neutronic and Fuel Cycle Performance of the Transatomic Power Molten Salt Reactor Design," available via OSTI, has also received some very positive social media promotion by TAP, along with an article on their website (<http://www.transatomicpower.com/full-core-3d-modeling-from-ornl/>).



Outreach

January 10: John Jackson and Lori Braase attended a two-day meeting with Lightbridge, Framatome, and INL principle investigators, legal, and contracts personnel. The purpose of the meeting was to discuss the **Framatome-Lightbridge Joint Venture Project** relative to the recent Industry FOA and NE Voucher announcements.

January 23: Rita Baranwal met with **Ed McGinnis, Principal Deputy Assistant Secretary for DOE-NE**, to present the state of advanced reactor technology development. Shane Johnson, John Herczeg, Mike Worley, Sal Golub and other from DOE-HQ also attended.

January 23: Andrew Worrall made a presentation on GAIN to the **Knoxville / Oak Ridge American Nuclear Society chapter**. The GAIN overview highlighted the importance of private-public partnerships for nuclear innovation. The audience included a number of lab, university, and industry attendees.

January 25: Rita Baranwal visited **Virginia Commonwealth University (VCU)**, where she met with Nuclear Engineering students and professors and toured VCU’s Nuclear Engineering department. She also presented the GAIN initiative to a joint Virginia ANS-VCU ANS meeting that day.

January 30: Rita Baranwal attended the three-day **EPRI Nuclear Power Council Advisory Meeting**, including the EPRI Advanced Nuclear Technology (ANT) Action Plan Committee Meetings, where she heard about progress on ANT projects. On February 1, 2018, Rita presented the GAIN initiative at the NPC General Session, attended by executives from over 40 utilities. Questions from her session included those on funding opportunities and whether GAIN will become international.

GAIN Look Ahead

<i>FY 2018 Date(s)</i>	<i>Title</i>	<i>Location</i>	<i>GAIN’s Role</i>
February 7:	Advisory Committee on Reactor Safeguards (ACRS) Future Plant Designs Subcommittee, Advanced Reactor Design Criteria	NRC Headquarters, Rockville, MD	Technical Support
February 20-22:	Advanced Reactors Technical Summit V & Technology Trailblazers Showcase	Texas A&M, College Station, TX	Present, Booth
February 22:	ACRS Future Plant Designs Subcommittee, Containment Functional Requirements	NRC Headquarters, Rockville, MD	Technical Support
February 27-29:	NEAMS M&S Workshop for Molten Salt Reactor (MSR) TWG	ANL, Chicago, IL	Attend
March 6:	Nuclear Innovation Week: Third Way Advanced Reactor Summit	Longview Gallery, Washington DC	Attend
March 7:	Nuclear Innovation Week: NEI R&D Summit	Longview Gallery, Washington DC	Attend
March 8-9:	Nuclear Innovation Week: Enabling Advanced Reactors for the Market (GAIN Symposium)	GWU, Washington DC	Organize, Present, Manage
March 11-15:	TMS 2018 Annual Meeting & Exhibition	Phoenix Convention Center, Phoenix, AZ	Tech Chair, Booth
March 12:	NEI ARWG Meeting	North Bethesda Marriott, Bethesda, MD	Attend
March 13-15:	Regulatory Information Conference (RIC)	North Bethesda Marriott, Bethesda, MD	Present, Attend
March 27-28:	Int’l SMR & Advanced Reactor Summit	Westin Buckhead, Atlanta GA	Present, Attend, Booth
April 18:	GAIN Executive Advisory Committee (EAC) Meeting	INL Meeting Center, Idaho Falls, ID	Organize, Attend, Manage, Tours
April 25-26:	NRC-DOE Workshop on Advanced Reactors	North Bethesda Marriott, Bethesda, MD	Attend
May 2:	NRC Advanced Reactors Standards Workshop	North Bethesda Marriott, Bethesda, MD	Attend
May 10:	GAIN HTR Symposium	INL, Idaho Falls, ID	Organize, Attend

For questions or additional information, please contact Lori Braase, GAIN, lori.braase@inl.gov.

