Gateway for Accelerated Innovation in Nuclear
November 2017 Highlights Report

GAIN Executive Advisory Committee

The GAIN Executive Advisory Committee (EAC) met on November 7, 2017 at the INL office in Washington, DC. Among the agenda items discussed were the Versatile Fast Neutron Source and strategic activities for GAIN in 2018. The next face-to-face EAC meeting is planned for April 18, 2018 at INL.

Technology Advances at INL Materials and Fuels Complex

On November 15, 2017, the U.S. Department of Energy's Idaho National Laboratory's Transient Reactor Test (TREAT) Facility resumed operations. The facility was shut down in 1994 and has remained in standby status. "The Department of Energy's decision to restore transient testing capability at INL is part of our efforts to revitalize the nation's nuclear energy capacity," said Ed McGinnis, Principal Deputy Assistant Secretary for Nuclear Energy. "By investing in innovative fuel cycle infrastructure, we can advance nuclear as a key source of clean, resilient power and maintain U.S. leadership in developing advanced nuclear technologies."

TREAT is designed specifically to test nuclear reactor fuels and materials under extreme conditions. It can produce sudden bursts of energy that are more than five times more powerful than a commercial power plant—allowing scientists to examine fuel performance. This capability is an important asset to nuclear scientists and engineers as they work to increase the safety and performance of current and future nuclear reactors.

"Over the next several months, INL will prepare for reactor transient operations and performance of the first new transient experiments in 2018. U.S. Department of Energy Press Release.

Regulatory

INL conducted reviews of selected draft advanced reactor design criteria (ARDC) that were released by the NRC for stakeholder comments and recommendations. These design criterion are a part of the NRC's development of Draft Regulatory Guide DG-1330, "Guidance for Developing Principle Design Criteria for Non-Light Water Reactors." The team's reviews were related to ARDC 17, "Electrical Power Systems" and ARDC 26, "Reactivity Control Systems." Team comments/recommendations were collected and provided to the NRC staff. This input was discussed in detail during the subsequent NRC public meeting held on November 2, 2017.

On November 2, 2017, INL participated in an NRC-sponsored Advanced Reactor Stakeholders meeting. Highlights of the meeting included the following:

> NRC Development of Regulatory Roadmap
> The NRC plans to complete its draft regulatory roadmap white paper by the end of December 2017. This document will provide developers with guidance for interfacing with the NRC,

including expected interactions and outcomes based on the level of available design detail, with an emphasis on pre-application reviews.

Higher Assay Low Enriched Uranium

NEI provided a presentation addressing the future needs for higher assay LEU for advanced reactor designs. Discussions addressed an NEI white paper on the subject that will be submitted to the NRC before the scheduled December 14th NRC public meeting. Other discussions included the importance of related criticality issues and the need to resolve issues in the near term in order to support expected advanced reactor timelines.

Regulatory Engagement Plans

NEI presented an update regarding NEI's development of guidance to assist advanced reactor designers create Regulatory Engagement Plans (REPs). These optional plans serve as project management tool to improve the efficiency of early interactions with the NRC regarding a new advanced reactor project. NEI intends to have this guidance completed by the end of 2017.

Advanced Reactor Design Criteria

NRC completion and formal issuance of Draft Regulatory Guide DG-1330 reflecting Advanced Reactor Design Criteria is pending. Revisions to ARDC 17, "Electrical Power Systems" and ARDC 26, "Reactivity Control Systems" were discussed to address industry stakeholder comments. Subsequently, the proposed Regulatory Guide will be reviewed by the Advisory Committee on Reactor Safeguards (ACRS) in February/March 2018.

Licensing Modernization Project (LMP)

The NRC continues to engage with the Nuclear Energy Institute and the industry-led Licensing Modernization Project to establish agreed upon technology-inclusive risk informed-performance based processes for the selection of events; classification of structures, systems, and components; and application of defense-in-depth. The NRC staff presented some preliminary comments on the LMP's white paper on safety classification of structures, systems, and components (SSCs) during the meeting; a more complete submittal of the NRC staff's comments will be transmitted to the LMP in the near term.

Functional Containment

NRC has commenced work on a Commission (SECY) paper summarizing existing policy and staff recommendations on the topic of functional containment and its applicability to for advanced non-light water reactor technology. The NRC expects this paper to be completed prior to the Thanksgiving holiday. This paper will be discussed during the next public meeting.

The Joint Use of Modular Plants (JUMP) concept is an initiative that proposes joint use of the planned NuScale plant as a cost-effective way of bolstering the primary mission of the INL, i.e., the research, development, and demonstration of new nuclear technology. INL evaluated the regulatory implications and challenges associated with the JUMP concept and provided a requested licensing strategy that could support the lab's access to electricity and process heat for a subset of NuScale reactor modules for the purpose of laboratory research and development.

GAIN Look Ahead

FY 2018 Date(s)	Title	Location	GAIN's Role
December 6:	NEI ARWG Meeting	NEI, Washington DC	Present, Attend
December 7:	NEAMS Executive Advanced Reactor Industry Council (NEARIC) Meeting	NEI Office, Washington DC	Support, Attend
December 11-13:	Deep Decarbonization Symposium	San Francisco, CA	Present, Attend
December 14:	NRC Public Meeting on Advanced Reactors	NRC, Bethesda, MD	Attend
December 19:	GAIN Presentation and Tour	University of Pittsburg, Pittsburg, PA	Present, Attend Tour
January 29-Feb 1:	Nuclear Power Council Bi-Annual Meeting	EPRI, Charlotte, NC	Present
February 20-22:	Advanced Reactors Technical Summit V & Technology Trailblazers Showcase	Texas A&M, College Station, TX	Present, Booth
March 6:	Innovation Week: Third Way Event	Longview Gallery, Washington DC	Attend
March 7:	Innovation Week: NEI Event	Longview Gallery, Washington DC	Attend
March 8-9:	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	Attend
March 27-28:	Int'l SMR & Advanced Reactor Summit	Westin Buckhead, Atlanta GA	Present, Attend, Booth
April 17:	NRC Advanced Reactors Standards Workshop	North Bethesda Marriott, Bethesda, MD	Attend
April 18:	GAIN Executive Advisory Committee (EAC) Meeting	INL Meeting Center, Idaho Falls, ID	Organize, Manage, Tours
April 25-26:	NRC-DOE Workshop on Advanced Reactors	North Bethesda Marriott, Bethesda, MD	Attend

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

@GAINnuclear

gain.inl.gov