UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 2, 2019

MEMORANDUM TO: Steven Lynch, Acting Chief
Advanced Reactor Licensing Branch
Division of Advanced Reactors
Office of New Reactors

FROM: Lucieann Vechioli, Project Manager **/RA/**
Advanced Reactor Licensing Branch
Division Advanced Reactors
Office of New Reactors

SUBJECT: SUMMARY OF MARCH 28, 2019, PUBLIC MEETING TO DISCUSS REGULATORY IMPROVEMENTS FOR ADVANCED REACTORS

On March 28, 2019, the U.S. Nuclear Regulatory Commission (NRC) held a Category 2 public meeting with stakeholders, including the Nuclear Energy Institute (NEI), to discuss ongoing initiatives related to the development and licensing of non-light water reactors (non-LWRs). The meeting notice can be found at Agencywide Documents Access and Management System (ADAMS) Accession No. ML19067A033. Enclosure 1 contains a list of meeting attendees and participants who joined via webinar. Enclosure 2 contains the meeting agenda. The presentation slides are available at ADAMS Accession No. ML19093B830.

John Segala, Chief of the Advanced Reactor and Policy Branch in the Office of New Reactors (NRO), provided an overview of recent organizational changes. Beginning April 2019, NRO reorganized into three divisions: the Division of Advanced Reactors (DAR), the Division of Engineering, Safety Systems, and Risk Assessment, and the Division of Licensing, Siting, and Environmental Analysis. The new DAR is comprised of three branches: the Advanced Reactor Licensing Branch, the Advanced Reactor Technical Branch, and the Advanced Reactor Policy Branch. This reorganization happens in advance of the merging of NRO and the Office of Nuclear Reactor Regulation (NRR), which is scheduled to happen in October 2019.

The NRC staff discussed the provisions and planned implementation of the Nuclear Energy Innovation and Modernization Act (NEIMA or the Act). The Act specifies three objectives: (1) to provide a revised framework for fee recovery by the NRC "to ensure the availability of resources to meet industry needs without burdening existing licensees unfairly for inaccurate workload projections or premature existing reactor closures;" (2) to support the development of expertise and regulatory infrastructure necessary to support the development and commercialization of advanced nuclear reactors; and (3) to foster "more efficient regulation of uranium recovery."

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The DAR staff is currently developing reports to Congress that will address the NEIMA provisions related to the regulatory framework of commercial advanced nuclear reactors. Staff from NRR's Research and Test Reactors Licensing Branch is also developing a report related to

NRC preparations for the licensing of research and test reactors within the existing regulatory framework to support advanced reactor licensing. To support the development of both reports, NRC staff is required to solicit input from "a diverse set of technology developers, and other public stakeholders." This public meeting provided a forum for the required stakeholder interactions. Once the reports are completed, the NRC staff will discuss progress toward implementation of the activities described therein during future periodic advanced reactors stakeholders' meetings.

Trevor Cook from Department of Energy (DOE) provided a status update on several DOE activities, such as the versatile test reactor project led by Tom O'Connor, work with Department of Defense on micro-reactors, and the digital instrumentation and controls projects.

The remaining portion of the meeting was focused on the NRC development of revised guidance on siting criteria related to population density and mechanistic source terms supporting the licensing of advanced reactors. These discussions were supported by Oak Ridge National Laboratory (ORNL) and Sandia National Laboratory (SNL), respectively.

Randy Belles from ORNL provided a presentation on regulatory improvements for advanced reactor designs. ORNL has developed a siting tool that provides insights on the challenges and benefits of deploying small modular reactors. This tool uses geographical information systems and spatial modeling techniques to visualize data.

Matthew Dennis, Dave Luxat, Andrew Clark, and Zac Jankovsky led the SNL presentation on the mechanistic source term study for non-LWRs. The goal of the analysis was to identify accident scenarios that could lead to off-site radiological releases for non-LWR design concepts. The presentation included accident scenarios for high-temperature gas reactors (HTGRs), sodium fast reactors (SFRs), and molten salt reactors (MSRs). Some of the overall conclusions of the study included that the four-factor approach to mechanistic source term may be applied across different reactor types and early releases were identified for each reactor type in a way that allows for further examination and quantification of risk.

The discussion about source term continued in presentations from each of the technology working groups (TWGs). Nicholas Smith of Southern Company represented the MSR TWG, and during his presentation he discussed several topics that included information about the Molten Salt Component Test Facility and the upcoming training on Nuclear Energy Advanced Modeling and Simulation (NEAMS) that will be held in Los Alamos National Laboratory during summer 2019. Jacob DeWitte from Oklo, Inc. presented the Fast Reactor TWG discussion and provided a SFR example for source term phenomena. The HTGR TWG presentation was led by Darrell Garner from Kairos Power LLC, who talked briefly about TRISO fuel and the interest of the TWG to meet on a monthly basis.

William Reckley of the NRC ended the meeting with an update on each of the NRC's advanced reactor licensing strategies and other topics, such as the status of the different policy issues that the NRC staff is currently working on. The next Advanced Reactors Stakeholder Meeting is scheduled for June 27, 2019.

Enclosures:
1. List of attendees
2. Agenda

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OFFICE	NRO/DAR	NRO/DAR
NAME	LVechioli*	SLynch
DATE	04/15/2019	05/02/19

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Attendance List – Attended at least part of meeting in person		
Name		**Organization**
Kati	Austgen	NEI
Steven	Kraft	Kraft-Contente, LLC
Farshid	Shahrkhi	Framatome
Dave	Grabaskas	ANL
Tanju	Sofu	ANL
Wayne	Moe	INL
Christian	Rabiti	INL
Jason	Redd	SNC
Darrell	Gardner	Kairos Power
Jill	Monahan	Westinghouse
Amy	Cubbage	NRC
Lucieann	Vechioli	NRC
Steven	Lynch	NRC
Jordan	Hoellman	NRC
John	Segala	NRC
N.P.	Kadambi	Consultant
Jane	Accomando	Morgan Lewis
Stewart	Magruder	NRC
Bo	Saulsbury	PNNL
Nick	Smith	Southern Co.

Attendance List – Webinar Attendees		
Name		Organization
Randy	Dins	DOE
Matthew	Bucknor	ANL
Edwin	Lyman	UCS
Andrew	Clark	SNL
Salman	Haq	NRC
Zachary	Jankovsky	SNL
Nanette	Valliere	NRC
Michelle	Hayes	NRC
Brian	Anderson	
Michelle	Gonzalez	NRC
chantal	Morin	CNSC

Bob	Meyer	
Mohammad	Sadollah	NRC
Jason	Schaperow	NRC
Alan	Jelalian	EPM Inc.
Tom	Newton	NIST
Amir	Afzali	Southern Co.
Alex	Popova	Oklo Inc.
John	Monninger	NRC
Randall	Gauntt	SNL
Mark	Holbrook	INL
Jon	Barr	NRC
Hanh	Phan	NRC
Steve	Bajorek	NRC
Keith	Compton	NRC
Brian	Robinson	DOE
Steven	Kline	BECHTEL
Daniel	Carleton	Terrestrial Energy USA
Jim	Kinsey	INL
Adrian	Muniz	NRC
Jan	Mazza	NRC
Arlon	Costa	NRC
Robert	Beall	NRC
Jim	Hammelman	NRC
Nicholas	McMurray	NRC
Jana	Bergman	Curtiss Wright
Kenneth	Thomas	NRC
Robert	Fitzpatrick	NRC
Rob	Burg	EPM Inc.
Elijah	Dickson	NRC
Trevor	Cook	DOE
James	Corson	NRC
Michelle	Hart	NRC
Steve	Philpott	NRC
Daniel	Cronin	University of Florida
Bill	Reckley	NRC
Thomas	Steinfeldt	NRC
Suzanne	Dennis	NRC
Donald	Palmrose	NRC
Joe	Williams	
Ken	Muramatsu	Tokyo City University

Pranab	Samanta	BNL
Gordon	Clefton	
Caleb	Ward	NIC
Randy	Belles	ORNL
Jaeger	Wells	Westinghouse
Derek	Widmayer	NRC

AGENDA

Advanced Reactors Stakeholder Meeting

Nuclear Energy Institute
1201 F. Street NW, Suite 1100
Washington, DC

Thursday, March 28, 2019

TIME	TOPIC	LEAD
9:00 – 9:15am	Opening remarks and agenda	NRC/NEI
9:15 – 10:00am	Nuclear Energy Innovation and Modernization Act	All
10:00 – 10:15am	DOE/Office of Nuclear Energy	DOE/NE
10:15 – 11:30pm	Break	All
10:30 – 12:00pm	Siting Criteria related to Population Density	NRC/ORNL/NEI
12:00 – 1:00pm	Lunch	All
1:00 – 2:30pm	Mechanistic Source Term	NRC/SNL
2:30 – 2:40pm	Break	All
2:40 – 3:30pm	Mechanistic Source Term (if needed)	TWGs/NEI/Others
3:30 – 4:30pm	Status updates, planning for future meetings and public discussion	All