



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

June 16, 2020

MEMORANDUM TO: John P. Segala, Chief
Advanced Reactor Policy Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Jordan P. Hoellman, Project Manager **/RA/**
Advanced Reactor Policy Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MAY 7, 2020, ADVANCED REACTOR
STAKEHOLDER PUBLIC MEETING

On May 7, 2020, the U.S. Nuclear Regulatory Commission (NRC) held a Category 2 public meeting with industry stakeholders, including the Nuclear Energy Institute (NEI) and the U.S. Nuclear Industry Council (USNIC), to discuss ongoing initiatives related to the development and licensing of non-light-water reactors (non-LWRs or advanced reactors). The staff has posted the meeting notice in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML20127J017 and the presentation slides at Accession No. ML20127H907. Enclosure 1 lists the meeting attendees who participated remotely.

NRC staff provided a discussion on promoting preapplication participation, including the various types of preapplication interactions and the expected value in terms of reliability, efficiency, and transparency. The staff discussed the current generic schedules and how preapplication interactions can substantially streamline NRC's review, consistent with implementing a staged licensing approach required by the Nuclear Energy Innovation and Modernization Act (NEIMA). The staff noted that the document they are developing would specify key preapplication activities, including topics for topical reports and papers and meetings.

The staff discussed NRC fee requirements under Title 10 of the Code of Federal Regulations (10 CFR) Part 170 and Part 171 and considerations to address annual fees for non-LWRs. The staff noted that a variable annual fees structure was established for light-water small modular reactors (SMRs) in June 2016 (81 FR 45963). The staff discussed possible considerations for non-LWRs, including a variable annual fee similar to the current SMR fee rule, a new annual fee policy for all non-LWRs, and evaluating microreactors separately. Industry stakeholders noted that the staff should consider much lower fees for microreactors and that the status quo is likely not preferred. The staff and industry agreed to discuss this topic in further detail at future stakeholder meetings.

Enclosure:
List of Attendees

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The staff provided a status of environmental activities in preparations for advanced reactor environmental reviews, including the interim staff guidance (ISG) for the environmental reviews of microreactors and the generic environmental impact statement (GEIS) for advanced reactors. The staff discussed that the ISG was issued for public comment on February 21, 2020, and that the comment period closes on May 11, 2020. The staff noted that the final ISG will be valid NRC staff guidance until the environmental standard review plan is updated. Regarding the GEIS for advanced reactors, the staff discussed that there would be scoping meeting on May 28, 2020, and that the scoping period ends on June 30, 2020. Industry stakeholders noted that the staff should try to complete the GEIS sooner than scheduled, especially since an application for a microreactor had already been submitted, and that the GEIS should consider moving away from a need for power analysis. The staff noted that stakeholder feedback is important to the staff and that they will consider stakeholder input in developing the GEIS.

NEI provided feedback on the draft non-LWR fuel cycle environmental Pacific Northwest National Laboratory (PNNL) reports (ADAMS Accession Nos. ML20084L390 and ML20076G075), which provide technology-neutral methodologies for use by an applicant and by NRC staff to determine the environmental impacts from the fuel cycle and from the transportation of fuel and wastes for all types of non-LWRs. NEI discussed that the staff should not assume that a different fuel form results in a substantially different environmental impact and that the staff should consider an evaluation to demonstrate non-LWR fuels are adequately characterized by the analysis of LWR fuel. NEI also noted that the staff should provide clarity on the appropriate level of detail requested on applicants. The staff noted that they would take the feedback into consideration as PNNL finalizes the reports.

The staff provided an overview of fuel qualification for advanced reactors and activities underway to develop fuel qualification guidance in accordance with NEIMA. The staff discussed that the fuel qualification framework considers a broad interpretation of fuel qualification and recognizes that many aspects of nuclear safety are impacted by the fuel. The scope of the fuel qualification guidance will focus on the identification and evaluation of safety relevant phenomena for fuel performance including the understanding of fuel life limiting failure and degradation mechanisms which occur as a result of irradiation during reactor operation. The staff discussed that the development of the fuel qualification framework uses a top-down approach to decompose the top-level goal of qualifying fuel for use into lower level supporting goals and that the lower level supporting goals are further decomposed until clear objective goals are identified that can be satisfied with direct evidence. The staff expects to complete the draft of the guidance in August 2020 and to discuss the guidance at a periodic advanced reactor stakeholder meeting in September 2020.

The staff discussed the status of the spent fuel reprocessing rulemaking, including a historical perspective that described how the staff arrived at the current status. The staff discussed that at a March 4, 2020, public meeting to seek stakeholder input on whether the staff should discontinue the rulemaking and what industry's interest in pursuing spent fuel reprocessing facilities. The staff noted that some industry representatives voiced support for continuing the rulemaking, but many organizations and members of the public opposed spent fuel reprocessing. The staff is planning to provide the Commission with a proposed path forward on the rulemaking in early 2021. Pending NEI comments regarding its position on reprocessing, the staff intends to inform the Commission in a COMSECY of its recommendation regarding the reprocessing rulemaking.

The staff provided a discussion regarding Category II fuel cycle facility security, highlighting the current approach to use a risk-informed analysis on a case-by-case basis with site-specific license conditions, as appropriate to ensure that requirements are fairly and reasonably applied.

The staff discussed that through preapplication discussions, the staff expects an applicant to describe the facility setting and processes, types of materials, facility layout, and material transportation, storage, and use. The staff encourages applicants who will need Category II facilities to interact with the staff. Industry representatives noted that the staff should be open to developing generic guidance. The staff discussed that it is difficult to develop generic guidance because supplemental measures are site-specific and that security can be achieved in multiple ways that balance the need to detect, assess, and delay potential adversaries and effectively respond to potential threats.

The staff discussed in-service inspection programs for advanced reactors and the American Society of Mechanical Engineers (ASME), Boiler & Pressure Vessel Code, Section XI, Division 2 that has developed a probabilistic risk-based approach for establishing inspection and monitoring activities for advanced reactors. ASME has requested NRC review and endorse the ASME Section XI, Division 2 for Reliability and Integrity Management (RIM) in 10 CFR 50.55a. The staff provided an overview of the RIM process and noted that they are considering the ASME request. Before expending resources and initiating the review, the staff was interested in understanding industry's interest in using RIM in future application submittals.

The staff discussed their intention to place a contract to develop a new inspection and oversight framework document to support construction and operation of advanced reactors. The staff discussed challenges with the current inspection and oversight programs for potential advanced reactors, including microreactors and molten salt fueled reactors. The staff noted that advanced reactors within the scope of the contract would include non-LWRs, SMRs, and fusion reactors and provided examples of issues to be considered under the contract, including the use of risk insights and concepts from the Licensing Modernization Project process, risk-informed performance indicators, and considerations for advanced reactors that may be assembled in a factory and shipped to the site. The staff envisions work beginning in October 2020 and further stakeholder interactions in 2021. The final version of the inspection and oversight framework is expected to be provided to the NRC in December 2021.

The meeting ended with an open discussion. The NRC requested feedback about how these meetings can be more engaging and how to increase participation by prospective applicants. The next advanced reactors stakeholder meeting was scheduled for June 18, 2020.

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MEETING DATED: JUNE 16, 2020

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JSegala, NRR

JHoellman, NRR

ADAMS Accession No.: ML20162A163 *via e-mail NRR-106

OFFICE	NRR/DANU/UARP/PM*	NRR/DANU/UARP/BC*
NAME	JHoellman	JSegala
DATE	6/12/2020	6/15/2020

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PUBLIC MEETING
U.S. NUCLEAR REGULATORY COMMISSION
Thursday, May 7, 2020
10:00 a.m. – 2:00 p.m.

List of Attendees (on phone)	
Name	Organization
Amy Cabbage	NRC
Donald Palmrose	NRC
Jack Cushing	NRC
Jim Hammelman	NRC
Joe Sebrosky	NRC
John Segala	NRC
Jordan Hoellman	NRC
Kati Austgen	NEI
Ken Erwin	NRC
Jo Jacobs	NRC
Anthony Rossi	NRC
Tim Drzewiecki	NRC
Tim Harris	NRC
Ben Beasley	NRC
Tim Lupold	NRC
Aaron Dougmyer	Blackridge Corporation
Aaron Totemeier	Light Bridge Corporation
Alex Pavlak	Future of Energy
Alex Polonsky	Morgan Lewis
Alex Runner	Oklo
Alice Chang	NRC
Allison Rivera	NRC
Ally Chen	NRC
Andrea Jannetta	SMP Global
Andrea Kock	NRC
Andrew Yeshnik	NRC
Anne Webber	NRC
Antonio Feret	NRC
Archie Manoharan	PVA
Arlon Costa	NRC
Ben Beasley	NRC
Ben Carmichael	Southern Nuclear
Bill Horak	BNL
Bill Reckley	NRC
Blaze Cullen	Power
Bo Saulsbury	Pacific Northwest National Laboratory

Enclosure

Bob Fitzpatrick	NRC
Bout Miller	DMS
Bradley Williams	EPW
Brandon Waits	Southern Company
Brandon Williams	ATW
Brian Lata	High rose Galler
Brian Smith	NRC
Brian Thomas	NRC
Bruce Lin	NRC
Caroline Cocoran	Oklo
Chantal Morin	CNSC
Cheng Xu	Power
Chris Robinson	Y12 National Security Complex
Chris Van Wert	NRC
Dale Fulton	Southern Nuclear
Dayna Dority	NRC
Daniel Carlton	Terrestrial Energy
Daniel Stout	TN Valley Authority
Darlene Cochran	OKLO
Darrell Gardner	Kairos Power
Dave Goodman	PNNL
Davis	Pegasis Group
Dayton Christianson	Idaho National Laboratory
Deb Luchsinger	NU Scale Power
Dolf Reckley	RC
John Monninger	NRC
Donald Palmrose	NRC
Donna Williams	NRC
Doug Miller	CNSC
Edward Davis	Pegasis Group
Edwin Linman	UCS
Eric Oesterle	NRC
Everett Redmond	NEI
Farshid Shahrokhi	Framatome
Frank Akstulewicz	Contractor
George Cicotte	United States Army
George Flanagan	ORNL
George Wadkins	GEH
Gil Brown	OSM
Glenn Neisis	Burns and McDonald
Cyril Draffin	USNIC
Amir Afzali	Southern
Hassan	Consultant

Ismael Garcia	NRC
Hunt Than	NRC
Ian Jung	NRC
Jack Cushing	NRC
Jacob Ewicks	
Jake Zimmerman	NRC
James Corson	NRC
James Corso	NRC
James Rubenstone	NRC
James Soo	NRC
James Vollmer	Terra Power
Jan Mazza	NRC
Jana Berdman	Curtis Wright
Janise Stoliarova	FEMA
Jason Christensen	Idaho National Laboratory
Jill Monahan	Westinghouse
Jim Anderson	Excel Services
Jim Hammelman	NRC
Jim Tompkims	Kairos Power
Joe Giacinta	NRC
John Hanson	Oklo
John Monninger	NRC
John Tappert	NRC
Jose Evirds	NRC
Joy	NRC
Julie Ego	NRC
Kelvin Montague	
Ken Erwin	NRC
Ken Hammelman	NRC
Kenneth Armstrong	NRC
Kevin Deyette	NuScale Power
Kun Mo	Argonne National Laboratory
Lane Howard	Southwest Research Institute
Laura Andrews	Canadian Nuclear Safety Commission CNSC
Laura Schartz	ITTA
Lauren Hughes	Washington Policy and Analysis
Lauren Lathen	Southern Company
Lisa Matis	Tetra Tech
Lucas Kyriazidis	NRC
Lucia	NRC
Lucia Becoly	NRC
Mallecia Sutton	NRC
Margett Elinson	Kairos Power

Maria Makitka	DOE
Marilyn Diaz	NRC
Mark Cox	Idaho National Lab
Mark Diles	Dominion
Mark Jergerson	Clean Tech Energy Inc
Marc Nichol	NEI
Martin O'Neil	NEI
Maryam Khan	NRC
Maryline Diez	NRC
Meraj Rahimi	NRC
Michael Keller	Hybrid Power Technologies
Michelle Catts	GE Hitachi
Michelle Hart	NRC
Michelle Haze	NRC
Mike Poore	ORNL
Mitchlle Catts	*
Jim Kinsey	Idaho National Laboratory
Mo Sadollah	NRC
Murray Medlock	Southern Nuclear
Nan Valliere	NRC
Nathan See	ORNL
Neil Haggerty	EXCEL Service Corporation
Nicholas Hand	NRC
Nicholas Hansing	NRC
Nicholas McMurray	Clear Path
Nicole Lahay	Pacific Northwest National Lab
Nicole Lahaye	Pacific Northwest National Lab
Olivia Mikula	NRC
Pete Gaillard	Terra Power
Peter Hastings	Kairos Power
Peyton Daub	NRC
Pranab Samanpa	Brooke Haven National Lab
Ray Rothrock	Venture Capitalist
Redmen	NEI
Regina Melrose	CBA
Richard Chang	NRC
Ricardo	NRC
Richard Rivera	NRC
Rick Paese	Westinghouse
Robert Hill	Argon National Lab
Robert Sthaas	NRC
Robert Sweeny	ABEX
Robert Taylor	NRC

Robin Rickman	Terrestrial Energy
Roche Robert	NRC
Russell Felts	NRC
Mo Sadollah	NRC
Scott Bussey	NRC
Sean Biyey	NRC
Sorouche Mirmiran	Sennovoima
Stephanie Herstead	CNSC
Steve Maharris	ENNL
Steven Nesbit	LMNT Consulting
Steven Reeves	DOE
Stuart McGruder	NRC
Sven Bader	Federal Services
Tammy Morin	Holtec International
Tanju Sofu	Argonne National Laboratory
Tara Neider	Terra Tower
Thericia Dokoun	NRC
Thomas Fanning	Argonne National Laboratory
Thomas Hicks	Idaho National Lab
Tim Lupold	NRC
Travis Chapman	X Energy
Wayne Moe	Idaho National Laboratory
Wendy Reed	NRC
William	BNO
William Orders	NRC
Yawar Faraz	NRC
Ye Pong	China Atomic Energy
Yuris Yahfrance	NRC