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

September 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: Joseph M. Sebrosky, Senior 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 AUGUST 27, 2020, PUBLIC MEETING TO DISCUSS TECHNOLOGY INCLUSIVE CONTENT OF APPLICATION PROJECT, ADVANCED REACTOR CONTENT OF APPLICATION PROJECT, AND CONSTRUCTION PERMIT GUIDANCE

On August 27, 2020, the U.S. Nuclear Regulatory Commission (NRC) held a Category 2 public meeting with stakeholders, to discuss the technology inclusive content of application project (TICAP), the advanced reactor content of application project (ARCAP), and construction permit (CP) guidance. The meeting notice is available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML20239B034, and the presentation slides are available at ADAMS Accession No. ML20239A957. This was a teleconference meeting, and an attempt was made to capture a list of the attendees as they called into the meeting. The Enclosure to this summary provides the attendees for the meeting as captured by the operator that helped to facilitate the meeting.

Meeting Highlights

Technology Inclusive Content of Application Project

The meeting began with a discussion of the industry-developed fundamental safety function[1] (FSF) mapping report (ADAMS Accession No. ML20219A650), and the NRC staff's feedback on the report (ADAMS Accession No. ML20233A510). The objective of the industry developed FSF mapping report was to demonstrate that the existing design requirements contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 50 and 52 (and regulations referenced by those parts) are in place to substantiate that one or more FSFs are met.

The NRC noted that the overall conclusions of the industry's report align with the NRC staff's expectations that the NRC's existing regulations for light-water reactors ensure that the FSFs are fulfilled. As described in industry's report, the regulations provide that assurance by defining various high-level performance requirements as well as prescriptive requirements for some

[1] Fundamental safety functions are defined as: 1) limiting the release of radioactive material, 2) removing decay heat from the reactor and waste stores, and 3) controlling reactivity.

structures systems, and components and related programmatic controls. The NRC staff noted that it was not endorsing the industry's report for use as guidance, but the NRC staff is comfortable with an approach based on developing an affirmative safety case based on the FSFs and other elements of Revision 1 of NEI 18-04, "Risk-Informed Performance-Based Guidance for Non-Light Water Reactor Licensing Basis Development" (ADAMS Accession No. ML19241A336). The industry and NRC staff agreed that the objective of the mapping report had been met and that no further revisions or discussions associated with the report were needed.

Industry then provided the current status of the TICAP effort including the development of the structure for the safety analysis report (SAR), and the status of the tabletop exercises that would be used to demonstrate aspects of the TICAP process. There was a discussion of the principle design criteria (PDC) and complimentary design criteria (CDC). Industry defined PDCs as supporting demonstration of the performance objectives for the FSFs. The CDCs support plant functions related to risk significance or defense-in-depth. Industry provided examples of PDCs and CDCs. The NRC staff noted that while it understood the steps to develop PDCs and CDCs and that such work was insightful, the NRC staff questioned whether the concept of PDCs and CDCs was necessary for TICAP since the licensing modernization project (LMP) did not include these terms. Industry stated that it would consider the NRC staff feedback on PDCs and CDCs and whether there was a need to use these concepts in the TICAP guidance document that is under development.

Regarding the status of tabletop exercises to demonstrate aspects of the TICAP process, industry noted that it was still working on the logistics for the exercises. Both industry and the NRC staff agreed that it would be beneficial to have NRC staff observe portions of the exercises and the NRC staff noted that it's observation of the exercises should not impede the ability to perform the exercises. Industry noted that publicly available reports would be developed and provided to the NRC staff highlighting the results of the exercises.

Light Water Small Modular Reactor Construction Permit Guidance

The NRC staff noted that it was continuing to develop light water small modular reactor (SMR) construction permit guidance based on industry's identification that such guidance would be useful. Both the Nuclear Energy Institute (NEI) and U.S. Nuclear Industry Council (USNIC) supported the development of such guidance. NEI stated that it was developing a position paper on the topic that it hoped to provide to the NRC staff in December of 2020.

Advanced Reactor Content of Application Project

The NRC staff noted that as a result of feedback from the July 31, 2020, ARCAP meeting, the NRC ARCAP team met and developed a roadmap document describing that ARCAP will provide high-level guidance that will provide pointers to advanced reactor guidance that is under development (e.g., TICAP, security and emergency planning rulemaking) and provide guidance for areas that are not being addressed under an advanced reactor activity. Details regarding the ARCAP guidance document proposal can be found in ADAMS at Accession No. ML20231A563. A fundamental assumption is that it has never been the intention of ARCAP to develop an approach similar to the guidance found in the standard review plan (NUREG-0800) for large light water reactors or the guidance found in thousands of regulatory documents (e.g., regulatory guides, NUREGs, etc.) that have been developed over the last 50 plus years for large light-water reactors. The proposed structure of the ARCAP guidance document would be in the form of a roadmap that would list various parts of an application and

point to where guidance is being developed outside of ARCAP (e.g., TICAP, emergency planning and security rulemaking) and would contain appendices for portions of the application for which ARCAP is providing standalone guidance.

The NRC staff provided a table that listed the portions of the application (using the INL-developed annotated structure available at ADAMS Accession No. ML20107J565) and how the ARCAP would address the guidance. Industry and the NRC staff agreed that the approach would be discussed further in future ARCAP meetings.

The NRC staff and Idaho National Laboratory (INL) staff[2] provided an update on the status of developing a performance-based approach for portions of an advance reactor application. The INL staff noted that it had previously provided proposed guidance for the liquid and gaseous effluent portions of Chapter 8, "Control of Routine Plant Radioactive Effluents and Solid Waste." Stakeholders were informed that the NRC and INL staff are developing a performance-based approach for other portions of an advanced reactor application including:

- Chapter 2, "Site Information,"
- Chapter 8, Section 8.3, "Solid Waste," and
- Chapter 9, "Control of Occupational Dose."

The NRC staff noted that it was targeting discussing this additional guidance in more detail at the next ARCAP meeting that is tentatively scheduled for September 24, 2020.

Enclosure:
Attendance List

[2] Idaho National Laboratory staff are supporting development of ARCAP guidance through an NRC contract.

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OFFICE	NRR/DANU/UARP/PM *	NRR/DANU/UARP/BC *	NRR/DANU/UARP/PM *
NAME	JSebrosky	JSegala	JSebrosky
DATE	9/9/2020	9/15/20	9/16/20

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August 27, 2020, Public Meeting to Discuss Technology Inclusive Content of Application Project, Advanced Reactor Content of Application Project, and Construction Permit Guidance Attendance List

NAME	AFFILIATION	NAME	AFFILIATION
Anna Bradford	NRC/NRR/DNRL	Marc Nichol	Nuclear Energy Institute (NEI)
Bob Caldwell	NRC/NRR/DNRL	Kati Austgen	NEI
Mike Dudek	NRC//NRR/DNRL/NRLB	Mike Tschiltz	NEI
Carolyn Lauron	NRC/NRR/DNRL/NRLB	Martin O'Neill	NEI
John Segala	NRC/NRR/DANU/UARP	Jeff Merrifield	Pillsbury Law Firm
Maryam Khan	NRC/NRR/DANU/UARP	Cyril Draffin	US Nuclear Industry Council
Eric Oesterle	NRC/NRR/DANU/UARP	Denis Henneke	GE Hitachi
Bill Reckley	NRC/NRR/DANU/UARP	Steven Nesbit	LMNT Consulting
Amy Cubbage	NRC/NRR/DANU/UARP	Karl Fleming	KNF Consulting
Joe Sebrosky	NRC/NRR/DANU/UARP	Frank Akstulewicz	A to Z Reactor Consulting Services
Nan Valliere	NRC/NRR/DANU/UARP	George Wadkins	GE Hitachi
Jordan Hoellman	NRC/NRR/DANU/UARP	Martin Owens	GE Hitachi
Chris Van Wert	NRC/NRR/DANU/UART	Farshid Shahrokhi	Framatome
Jim Kinsey	Idaho National Laboratory (INL)	Darrell Gardner	Kairos Power
Wayne Moe	INL	James Tomkins	Kairos Power
Tom Hicks	INL	Caroline Cochran	Oklo
Tom King	INL	Jacob Gabcwitez	Oklo
Amir Afzali	Southern Company	Tammy Morin	Holtec International
Brandon Chisholm	Southern Nuclear	Gary Becker	NuScale
Jason Redd	Southern Nuclear	Steve Schilthelm	BWXT
Ben Carmichael	Southern Company	Pete Dillard	Terra Power
Ryan Henderson	Southern Company	John Bolan	General Atomics
Clint Medlock	Southern Company	Jill Monahan	Westinghouse
Gracen Ray	Southern	Tim Lucas	X Energy
Stu Magruder	NRC/NRR/DANU/UARL	Bill Horak	Brookhaven National Laboratory
Adrian Muniz	NRC/NRR/DANU/UARL	Christopher Chwasz	INL
Michelle Hart	NRC/NRR/DANU/UART	Jason Christensen	INL
Ian Jung	NRC/NRR/DANU/UART	David Holcomb	Oak Ridge National Lab (ORNL)
Michelle Hayes	NRC/NRR/DANU/UART	Mike Poore	ORNL
Bob Fitzpatrick	NRC/NRR/DEX/EENB	Jason Andrus	INL
Nadim Khan	NRC/NRR/DEX/EENB	Rory Stanley	US Senate Environment and Public Works (EPW)
Eric Bowman	NRC/COMM/OCMKS	Brad Williams	US Senate EPW

Enclosure

NAME	AFFILIATION	NAME	AFFILIATION
Shakur Walker	NRC/COMM/OCMDW	Ed Wallace	GNBC
Valerie Gray	NRC/OCHCO/ADHRTD/ NRANB	Prasad Kadambi	Consultant
Hayden Brundage	NRC/OCHCO/ADHRTD/ NRANB	Jenna Bergman	Curtiss-Wright
Derek Widmayer	NRC/ACRS	Donald Helton	NASA
Casper Sun	NRC/RES/DSA/RPB	Alan Levin	Public
Donald Palmrose	NRC/NMSS/RESS	Karen Cochran	Public
Scott Bussey	NRC/OCHCO/ADHRTD/ RTTB	Alex Hashemian	AMS
Rob Burg	Engineering Planning and Management Inc.	Alice Reener	Hopewell Inc.
Bruce Weir	Dubose National Energy	April Rice	PLS
Stacey Wheeler	Public	Don Hulting	NBS National Labs