November 21, 2016

MEMORANDUM TO: John Segala, Branch Chief
Advanced Reactor and Policy Branch
Division of Engineering, Infrastructure, and Advanced Reactors
Office of New Reactors

FROM: Jan Mazza, Project Manager **/RA/**
Advanced Reactor and Policy Branch
Division of Engineering, Infrastructure, and Advanced Reactors
Office of New Reactors

SUBJECT: SUMMARY OF OCTOBER 11, 2016 PUBLIC MEETING REGARDING NON-LIGHT WATER REACTOR DESIGN CRITERIA

On October 11, 2016, staff from the U.S. Nuclear Regulatory Commission (NRC) held a category 2 public meeting at the U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Rockville, Maryland, 20852. The purpose of the meeting was to engage the public on topics of significance regarding the NRC, "Draft - Advanced Non-Light Water Reactor (LWR) Design Criteria," Agencywide Documents Access and Management System (ADAMS) accession number ML16096A420, before the issuance of the Draft Regulatory Guide (RG).

The main objective of the meeting was to provide interested stakeholders with an update on NRC staffs views on some of the informal public comments received on the non-LWR design criteria during the comment period that closed on June 8, 2016. Over 350 comments from over 20 different commenters were received. The meeting focused on the areas that received the most interest and/or where NRC staff determined that additional interaction with stakeholders would be beneficial. At the beginning of the meeting, the NRC staff stated that the proposed revised wording presented during the meeting had not received final NRC management and the Office of the General Counsel (OGC) concurrence. After each topic presentation, members of the public had the opportunity to ask questions and provide comments during an open discussion with the NRC staff.

The meeting began with a presentation on comments received of a general nature, not pertaining to a specific design criteria or design feature. These topics included the intended use of the non-LWR design criteria RG, definition of important to safety and safety-related, risk informing the non-LWR design criteria, security design considerations, and schedule and next steps. There was a discussion on equipment that would be classified as important to safety but not necessarily safety-related. Stakeholders were encouraged to provide examples of structures, systems, and components (SSCs) that could be classified as safety-related and important to the safety to the Department of Energy (DOE).

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301-415-0498

The NRC would then use these examples to provide stakeholders information on the regulatory treatment of these SSCs. It was noted that a petition for rulemaking was submitted to the NRC to define "important to safety." The NRC is working to consider the comments received on the petition for rulemaking and will provide a recommendation to the Commission. The NRC intends to issue the security design considerations for informal public comment in a process similar to the non-LWR design criteria. The NRC plans to issue the non-LWR design criteria draft RG in early 2017.

The second topic on the agenda was control of chemical attack for modular high temperature gas-cooled reactors (mHTGRs). The NRC staff proposes to add provisions in mHTGR-DC 30 for detecting and monitoring air and moisture ingress into the reactor helium pressure boundary.

The third topic on the agenda was containment. The DOE report, "Guidance for Developing Principal Design Criteria for Advanced (Non-Light Water) Reactors," (ML14353A246 and ML14353A248) applied the functional containment concept to the advanced reactor design criteria (ARDC), sodium-cooled fast reactor design criteria (SFR-DC) and the mHTGR-DC. The NRC staff believes that the Commission has approved of the functional containment concept, but staff was instructed to develop performance requirements and criteria taking into account such features as core, fuel, and cooling systems design. NRC staff will clarify this in the mHTGR-DC 16 rationale.

The fourth topic on the agenda was single failure/redundancy. Several public comments noted that this should be removed in the digital I&C design criteria (ARDC 21, 22, and 24.) Although the Commission has agreed in SRM-SECY 03-0047, "Policy Issues Related to Licensing Non-Light-Water Reactor Designs," (ML031770124) that single failure criterion could be replaced with a probabilistic (reliability) criterion. The NRC staff noted that single failure and redundancy are solidified in IEEE Std. 603 which is part of the regulatory requirements. NRC staff also noted that efforts to modernize the digital I&C regulatory infrastructure are underway. Members of the public were encouraged to participate in this process.

The fifth agenda item was residual heat removal (RHR) and emergency core cooling system (ECCS). There was a lengthy discussion on the content of SFR-DC 34 regarding sodium boiling, chemical compatibility of the working fluids of the primary and RHR systems, and pressure differential between the primary and RHR systems. The NRC staff agreed that SFR-DC 34, should align with SFR-DC 70. There was also discussion about the need to have an ARDC 35 since non-LWR designs generally do not utilize injection for cooling. The NRC staff proposes to include a revised version of ARDC 35 in the draft RG acknowledging that it may never be needed.

The sixth agenda item was electric power. NRC staff proposes to adopt the version of ARDC 17 that was included in the DOE report. This version acknowledges that non-LWR designs are passive and may not require safety-related AC power.

The seventh agenda item was a discussion on the SFR specific design criteria (70, and 75-77). For SFR-DC 70 Intermediate coolant system, the NRC staff proposes to modify this design criteria to acknowledge that an intermediate coolant system may not be utilized for all SFR designs. The design criteria also discusses chemical compatibility and pressure differential between the primary and intermediate sodium systems.

The NRC staff noted that SFR-DC 75-77 were developed to ensure that the intermediate coolant boundary is designed to avoid brittle and rapidly propagating fracture modes, using quality standards, and to allow for inspection if applicable.

The meeting concluded with a final opportunity for public comment/questions for the NRC. The meeting agenda and list of attendees are included in Enclosures 1 and 2. The NRC's meeting announcement is available through ADAMS. The ADAMS accession number for the NRC's meeting announcement and presentation slides is ML16285A176 and ML16280A452 respectively.

ADAMS is the system that provides text and image files of NRC's public documents. Documents are available electronically at the NRC's Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html. If you do not have access to ADAMS or have problems accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) staff at 1-800-397-4209, 301-415-4737, or pdr@nrc.gov.

Please direct any inquiries to me at 301-415-0498, email: Jan.Mazza@nrc.gov, or John Segala at 301-415-1992, email: John.Segala@nrc.gov.

Project No.: 0814

Enclosure:
1. Agenda
2. List of Attendees

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1. Agenda
2. List of Attendees

DISTRIBUTION:
PUBLIC via GovDelivery
RidsNRODeiaResource
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ADAMS ACCESSION NO.:ML16314B333 **NRO-002**

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NAME	JMazza	JSegala
DATE	11/09/2016	11/21/2016

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PUBLIC MEETING
ADVANCED REACTOR DESIGN CRITERIA
Tuesday, October 11, 2016
9:00 a.m. – 4:00 p.m.

Agenda

TIME	TOPIC	SPEAKER
9:00 AM -9:15 AM	Welcome, Instructions, Introductions	NRC
9:15 AM – 9:30 AM	Opening Remarks	NRC
9:30 AM –10:10 AM	General Public Comments – Risk Informing Non-LWR DC, Important to Safety Definition, Intended Use of Reg. Guide, Schedule, Security Design Considerations etc.*	NRC
10:10 AM- 10:30 AM	Control of Chemical Attack – Moisture and Air Ingress Detection and Monitoring for mHTGRs*	NRC
10:30 AM – 10:45 AM	Break	ALL
10:45 AM- 11:30 AM	Containment – ARDC SFR-DC 16, and mHTGR-16*	NRC
11:30 AM - 12:00PM	Single Failure/Redundancy – ARDC 21, and 24*	NRC
12:00 PM – 1:30 PM	Lunch	
1:30 PM -2:00 PM	Residual Heat Removal and ECCS – ARDC, SFR-DC and mHTGR-DC 34 and 35*	NRC
2:00 PM- 2:30 PM	Electric Power – GDC 17 and 18*	NRC
2:30 PM – 3:00 PM	SFR Specific Design Criteria – SFR-DC 70, 75-77*	NRC
3:00 PM -3:15 PM	Break	ALL
3:15 PM – 3:45 PM	Opportunity for Public Comment	ALL
3:45 PM – 4:00 PM	Closing Remarks	ALL
4:00 PM	Adjourn	ALL

*Opportunity for public discussion after each topic.

ENCLOSURE

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ADVANCED REACTOR DESIGN CRITERIA
Tuesday, October 11, 2016
9:00 a.m. – 4:00 p.m.

List of Attendees
PUBLIC MEETING REGARDING NON-LIGHT WATER REACTOR DESIGN CRITERIA

NAME	AFFILIATION
Kati Austgen	NEI
Bob Fitzpatrick	NRC
John Adams	NRC
Michelle Hart	NRC
Diane Jackson	NRC
Debbie Jackson	NRC
Steven Downey	NRC
Matthew Mitchell	NRC
N. Prasad Kadambi	Self
Stu Rubin	Numark
Kieth Cosani	Self
Amy Hull	NRC
Shah Malik	NRC
Tim Drzewiecki	NRC
Craig Harbuck	NRC
Patricia Campbell	GEH
Trevor Cook	DOE
Joe Ashcraft	NRC
Steven Unikewicz	Nuscale
Lucieann Vechioli	NRC
Jan Mazza	NRC
Fred Silady	INL
Mark Holbrook	INL
Wayne Moe	INL
Dimitri Lutchenkov	X-Energy
Steve Frantz	MLB
Jim Kinsey	INL
John Segala	NRC
Tom O'Connor	DOE
Peter Hastings	Oklo
Nicholas McMurray	NRC
George Flanagan	ORNL
Jim Strnisha	NRC
Amir Afzali	SNC
Craig Welling	DOE
Jeff Merrifield	Pillsbury
Mark Caruso	NRC
Martin Stutzke	NRC
Sheila Ray	NRC
Russ Bell	NEI
Farshid Shahrokni	Areva
Heath Dehn	

PUBLIC MEETING
ADVANCED REACTOR DESIGN CRITERIA
Tuesday, October 11, 2016
9:00 a.m. – 4:00 p.m.

NAME	AFFILIATION
Michael Garrett	TerraPower
Per Peterson	UCB
Stephen Smith	Transatomic
Thomas Fanning	
Kathy Gibson	NRC
Jong Suek Park	
Nicholas Hansing	
Christian Marciulescu	EPRI
Adam Reichenbach	Duke
Arlon Costa	NRC
Jana Bergman	
Tim Beville	DOE
Brian Green	NRC
Amy Cubbage	NRC
Nobuyuki Tsukabe	JAEA
Peter Gaillard	TerraPower
Randy Belles	ORNL
Rita Baranwal	INL
Robert Sisk	Westinghouse
Steven Dolley	Platts
Art Wharton	
Joe Williams	NRC
Gary Ruf	