



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

April 7, 2021

MEMORANDUM TO: Michael I. Dudek, Branch Chief
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

FROM: Gregory V. Cranston, Senior Project Manager */RA/*
Division of New and Renewed Licenses
New Reactor Licensing Branch
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE MARCH 31, 2021, PUBLIC MEETING
TO DISCUSS THE SMR, LLC, SMALL MODULAR
REACTOR SMR-160 LICENSING TOPICAL REPORT ON
ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT
ACCIDENT AND ESTABLISHMENT OF LOCA
ACCEPTANCE CRITERIA

On March 31, 2021, an Observation Public Meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and SMR, LLC, (a Holtec International Company) regarding their licensing topical report (LTR) HI-2201064R2, "Elimination of Large Break Loss-of-Coolant Accident (LOCA) and Establishment of LOCA Acceptance Criteria," (Agencywide Documents Access and Management Systems (ADAMS) under Accession No. ML21064A037). The meeting summary is provided in Enclosure (3). The public meeting notice can be found in ADAMS under Accession No. ML21088A161 and was also posted on the NRC's public Web site.

Enclosed are the meeting agenda (Enclosure 1), list of attendees (Enclosure 2), and meeting summary (Enclosure 3).

Docket No. 99902049

Enclosures:

1. Meeting Agenda
2. List of Attendees
3. Meeting Summary

CONTACT: Gregory Cranston, NRR/DNRL
301-415-0546

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ADAMS Accession Nos:

PKG: ML21092A158

MEMO: ML21092A159

HOLTEC MEETING NOTICE: ML21088A161 * via e-mail NRR-106

OFFICE	NRR/DNLR/NRLB: PM	NRR/DNRL/NRLB: LA	NRR/DNRL/NRLB: BC
NAME	GCranston*	SGreen*	MDudek*
DATE	04/07/21	04/07/21	04/07/21

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SUMMARY OF THE MARCH 31, 2021, PUBLIC MEETING TO DISCUSS THE SMR, LLC, SMALL MODULAR REACTOR SMR-160 LICENSING TOPICAL REPORT ON ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA

March 31, 2021

Meeting Agenda

<u>Time</u>	<u>Topic</u>	<u>Organization</u>
1:00 p.m. – 1:10 p.m.	Introductions and Opening Remarks	NRC and SMR, LLC
1:10 p.m. – 1:25 p.m.	SMR-160 Licensing Topical Report (LTR) Discussion – Open Session	NRC and SMR, LLC
1:25 p.m. – 1:30 p.m.	Break	
1:30 p.m. – 2:30 p.m.	SMR-160 Licensing Topical Report (LTR) Discussion – Closed session	NRC and SMR, LLC
2:30 p.m.	Adjourn	

**SUMMARY OF THE MARCH 31, 2021, PUBLIC MEETING TO DISCUSS THE SMR,
LLC, SMALL MODULAR REACTOR SMR-160 LICENSING TOPICAL REPORT ON
ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND
ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA**

March 31, 2021

List of Participants

Name	Affiliation
Tammy Morin	Holtec
Rajkumar, Joseph	Holtec
Barrett, Antonio	NRC
Basavaraju, Chakrapani	NRC
Brown, Christopher	NRC
Buford, Angie	NRC
Chowdhury, Prosanta	NRC
Clifford, Paul	NRC
Cranston, Greg	NRC
Dudek, Michael	NRC
Grady, Anne-Marie	NRC
Honcharik, John	NRC
Hsu, Kaihwa	NRC
Li, Yueh-Li	NRC
Manoly, Kamal	NRC
Mitchell, Matthew	NRC
Nolan, Ryan	NRC
Patton, Rebecca	NRC
Rudland, David	NRC
Scarbrough, Thomas	NRC
Stubbs, Angelo	NRC
Sugrue, Rosemary	NRC
Tregoning, Robert	NRC
Tsao, John	NRC
Tsirigotis, Alexander	NRC
Widrevitz, Dan	NRC
Wittick, Brian	NRC

SUMMARY OF THE MARCH 31, 2021, PUBLIC MEETING TO DISCUSS THE SMR, LLC, SMALL MODULAR REACTOR SMR-160 LICENSING TOPICAL REPORT ON ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA

March 31, 2021

Meeting Summary

On March 31, 2021, an Observation Public Meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and SMR, LLC (a Holtec International Company), regarding their licensing topical report (LTR) HI-2201064R2, "Elimination of Large Break Loss-of-Coolant Accident (LOCA) and Establishment of LOCA Acceptance Criteria," (Agencywide Documents Access and Management Systems (ADAMS) under Accession No. ML21064A037). SMR, LLC, is requesting that postulation of breaks at the steam generator (SG) to reactor pressure vessel (RPV) connection be excluded from the SMR-160 design basis and considered a break exclusion zone. This would allow breaks at that location to be considered a beyond design basis event and not within the scope of the NRC regulations. The purpose of the meeting was to inform SMR, LLC, that simply following the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section III, Subsection NB, even with reduced limits, does not alone provide a sufficient basis to declare that the combined vessel connection (SG to RPV vessel) a break exclusion area.

The meeting was divided into a public portion and a closed portion. However, there were no public participants and, therefore, there were no public comments. The public meeting was followed by a closed session to discuss the same topics in areas which included proprietary information.

The meeting commenced with opening remarks and an introduction of participants. A discussion between NRC and SMR, LLC, participants then commenced regarding ASME BPVC, Section III, Subsection NB, acceptance criteria, as described in the recently submitted Revision 2 to the subject LTR. NRC staff informed SMR, LLC, that even though SMR, LLC, has provided additional margin regarding application of the ASME codes, that application of these codes alone, even with additional margins applied, would not be sufficient for NRC to classify the combined vessel connection as a break exclusion zone. Specifically, simply following the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section III, Subsection NB, with reduced primary and secondary stress intensity limits, combined with a reduction in the maximum allowed cumulative usage factor, does not alone provide a sufficient basis to declare the combined vessel connection (SG to RPV vessel) a break exclusion area, which would eliminate the requirement to include a large break LOCA as a design basis-accident.

NRC staff stated that additional information will be needed to show the basis for why the reduced primary and secondary stress intensity limits and the reduction in the maximum allowed cumulative usage factor, provide a sufficiently low probability of failure of the combined vessel connection to be able to declare the combined vessel connection a break exclusion zone and a beyond design basis event, such that the event is not within the scope of the NRC regulations.

Also discussed was the SG riser to tube sheet welded connections. The SG riser identified in the LTR Section 3.4 is described as an integral part of the SG. The associated piping connection between the SG and RPV passes through the SG to RPV combined vessel connection. The SG riser is also part of the reactor coolant pressure boundary and forms the boundary of the SG. Therefore, a rupture at this location can cause a large reactor coolant inventory release that bypasses the containment.

Regulations cited at the meeting that need to be addressed, regarding compliance with or exemption from, included: Title 10 of the Code of Federal Regulations (10 CFR) 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors" and 10 CFR Part 50, Appendix A, "General Design Criteria (GDC) for Nuclear Power Plants," GDC 4, "Environmental and Dynamic Effects Design Bases," GDC 14, "Reactor Coolant Pressure Boundary," and GDC 35, "Emergency Core Cooling." These regulations are applicable to the reactor RPV to SG combined vessel connection and the SG tube sheet and riser locations and need to be addressed irrespective of how the locations are categorized regarding a break.

NRC staff reiterated that additional information will be required to determine whether the combined vessel connection can be classified as a break exclusion zone and to determine what limitations or conditions may need to be applied and if exemptions are needed. Also, additional information will be required on the SG tube sheet to tube welds. The additional information will be requested by NRC staff using requests for additional information that will be submitted to SMR, LLC, as part of the review process.