



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

May 21, 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, Project Manager */RA/*
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE APRIL 21, 2021, PUBLIC MEETING TO
DISCUSS THE SMR, LLC, SMALL MODULAR REACTOR
SMR-160 REQUEST FOR ADDITIONAL INFORMATION ON
LICENSING TOPICAL REPORT: "ELIMINATION OF LARGE
BREAK LOSS-OF-COOLANT ACCIDENT AND ESTABLISHMENT
OF LOCA ACCEPTANCE CRITERIA"

On April 21, 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 request for additional information regarding licensing topical report 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. ML21103A326 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

SUBJECT: SUMMARY OF THE APRIL 21, 2021, PUBLIC MEETING TO DISCUSS THE SMR, LLC, SMALL MODULAR REACTOR SMR-160 REQUEST FOR ADDITIONAL INFORMATION ON LICENSING TOPICAL REPORT: "ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA" DATED: MAY 21, 2021

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ADAMS Accession Nos:

PKG: ML21117A416

MEMO: ML21117A417

MEETING NOTICE: ML21103A326

*** via e-mail**

NRR-106

OFFICE	NRR/DNLR/NRLB: PM	NRR/DNRL/NRLB: LA	NRR/DNRL/NRLB: BC
NAME	GCranston*	SGreen*	MDudek*
DATE	04/27/21	04/28/21	05/21/21

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SUMMARY OF THE APRIL 21, 2021, PUBLIC MEETING TO DISCUSS THE SMR, LLC, SMALL MODULAR REACTOR SMR-160 REQUEST FOR ADDITIONAL INFORMATION ON LICENSING TOPICAL REPORT: “ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA”

April 21, 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. – 2:30 p.m.	SMR-160 Licensing Topical Report Discussion – Open Session	NRC and SMR, LLC
2:30 p.m.	Adjourn	

**SUMMARY OF THE APRIL 21, 2021, PUBLIC MEETING TO DISCUSS THE
SMR, LLC, SMALL MODULAR REACTOR SMR-160 REQUEST FOR
ADDITIONAL INFORMATION ON LICENSING TOPICAL REPORT:
“ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND
ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA”**

April 21, 2021

List of Participants

Name	Affiliation
Hickey, Kevin	Holtec
Morin, Tammy	Holtec
Rajkumar, Joseph	Holtec
Trotta, Rick	Holtec
Barrett, Antonio	NRC
Buford, Angie	NRC
Clifford, Paul	NRC
Cranston, Greg	NRC
Donoghue, Joseph	NRC
Dudek, Michael	NRC
Honcharik, John	NRC
Hsu, Kaihwa	NRC
Huang, Jason	NRC
Li, Yueh-Li	NRC
Manoly, Kamal	NRC
Mitchell, Matthew	NRC
Nolan, Ryan	NRC
Patton, Rebecca	NRC
Rudland, David	NRC
Scarbrough, Thomas	NRC
Tsao, John	NRC
Tsirigotis, Alexander	NRC

SUMMARY OF THE APRIL 21, 2021, PUBLIC MEETING TO DISCUSS THE SMR, LLC, SMALL MODULAR REACTOR SMR-160 REQUEST FOR ADDITIONAL INFORMATION ON LICENSING TOPICAL REPORT: "ELIMINATION OF LARGE BREAK LOSS-OF-COOLANT ACCIDENT AND ESTABLISHMENT OF LOCA ACCEPTANCE CRITERIA"

April 21, 2021

Meeting Summary

On April 21, 2021, an Observation Public Meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and SMR, LLC (a Holtec International Company), regarding a request for additional information (RAI) for 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 of 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. The purpose of the meeting was to clarify what is expected from SMR, LLC, in response to a RAI regarding classifying the combined vessel connection (SG to RPV vessel) a break exclusion zone before the final RAI is submitted.

The meeting commenced with opening remarks and an introduction of participants. There were no public participants and there were no public comments.

A discussion between NRC and SMR, LLC, participants commenced regarding American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section III, Subsection NB, acceptance criteria, as described in the recently submitted Revision 2 to the subject LTR. The discussion focused on two areas: whether the vessel to vessel connection should be treated as a vessel or a pipe; and what codes and regulations are applicable.

SMR, LLC, stated that they consider the vessel to vessel connection to be a fabricated vessel and not a pipe joining the two vessels. Therefore, since no piping exists between the two vessels, a postulated pipe break is not credible. The staff stated that NRC considers the vessel to vessel connection, including the connection to the SG riser, to function as a pipe and, therefore, failures of the connection should be considered within the licensing basis of the facility and should be subject to the regulations identified below. However, the staff discussed that the RPV/SG vessel to vessel connection is sufficiently unique such that it could warrant special consideration with respect to the treatment of its configuration should SMR, LLC, provide an adequate justification. The staff continued the discussion by stating that it is the staff's current interpretation that the primary function of the vessel to vessel connection is to act as a fluid coupling to transfer water between the SG to the RPV and, therefore, it is more appropriate for the vessel to vessel connection to be treated as a pipe within the context of 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."

NRC staff also stated that it is not adequate for SMR, LLC, to simply following the ASME BPVC, Section III, Subsection NB, with respect to reduced primary and secondary stress intensity limits to provide additional margin, combined with a reduction in the maximum allowed cumulative usage factor, because it does not alone provide a sufficient basis to

declare the vessel to vessel connection a break exclusion zone; thereby eliminating the requirement to include a large break LOCA as a design basis-accident. The basis for the value of the additional margin that SMR, LLC, identifies needs to be provided to be able to justify that the probability of failure of the connection is beyond "extremely low" to determine that reasonable assurance of adequate protection is provided. As such, any proposed topical report acceptance criteria must allow the NRC staff to have a similar level of reasonable assurance of adequate protection that has been provided by the reactor coolant pressure boundary and emergency core cooling system designs that have been previously reviewed and approved.

Therefore, in addition to addressing the applicable ASME codes, even when applying additional margin, NRC stated that compliance with, or an exemption from, applicable regulations also needs to be addressed. Associated regulations discussed included: 10 CFR 50.46 and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," 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 connection and need to be addressed irrespective of how the locations are categorized regarding a break.

Additionally, during the meeting, the second proposed break exclusion location, i.e., the SG riser to tube sheet welded connection, was discussed. SMR, LLC, is postulating that the SG riser identified in the LTR is described as an integral part of the SG. The associated piping connection between the SG and RPV passes through the vessel to vessel connection. The SG riser is also part of the reactor coolant pressure boundary and forms the boundary of the SG. Therefore, the staff's current interpretation is that a rupture at this location can cause a large reactor coolant inventory release that bypasses the containment.

The NRC staff reiterated that additional information will be required to determine whether the vessel to 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 the NRC staff using RAIs that will be submitted as part of the review process.