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August 24, 2022

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: SMR, LLC Preapplication Meeting Materials for August 31, 2022 (Project No. 99902049)

SMR, LLC is pleased to submit presentation materials (Enclosure 1) for a preapplication meeting regarding loss-of-coolant analyses to support the construction permit application for the SMR-160 design on August 31, 2022.

If you have any questions or require any additional information, please contact Justin Hawkins, SMR-160 Director of Licensing, at j.hawkins@holtec.com, (O) 856-797-0900 x3452, or (C) 609-941-5765.

Respectfully,

Justin Hawkins

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Date: 2022.08.24 12:14:14 -04'00'

Justin Hawkins
Director of Licensing, SMR, LLC

Enclosure:

1. SMR, LLC Preapplication Meeting Presentation Materials for August 31, 2022

CC:
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J. Fleming (Holtec International, LLC, Vice President of Licensing, Regulatory Affairs & PSA
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NRC Public Meeting Regarding SMR-160 Licensing Questions - LOCA

August 31, 2022

Holtec's SMR-160 Technology

Safe, Secure, Reliable, Flexible, Economical

Clean Energy to Support the World's Energy Needs

Purpose

Discuss with the NRC staff questions, and the context for these questions, that the SMR-160 licensing group has concerning applicable LBLOCA regulations, definitions, guidance, and previous RAIs on LTR HI-2201064

Receive feedback from the NRC staff on the questions, context, and answers/NRC positions

Question #1

Is the term design-basis accident (DBA) defined in NRC regulations?

The NRC website defines DBA as “a postulated accident that a nuclear facility must be designed and built to withstand without loss to the systems, structures, and components necessary to ensure public health and safety.”

Context

We are trying to understand the relationship between the terms postulated and design-basis accident (DBA).

Question #2

Is the term beyond DBA (BDBA) defined in NRC regulations?

The NRC website defines BDBAs as “This term is used as a technical way to discuss accident sequences that are possible but were not fully considered in the design process because they were judged to be too unlikely. (In that sense, they are considered beyond the scope of design-basis accidents that a nuclear facility must be designed and built to withstand.) As the regulatory process strives to be as thorough as possible, "beyond design-basis" accident sequences are analyzed to fully understand the capability of a design.”

Context

We are trying to understand the NRC’s threshold for transitioning from DBA space to BDBA space.

Question #3

Loss of coolant accidents (LOCAs) are defined in the introduction to 10 CFR 50 App A as "LOCAs mean those **postulated** accidents that result from the loss of reactor coolant at a rate in excess of the capability of the reactor coolant makeup system from breaks in the reactor coolant pressure boundary, up to and including a break equivalent in size to the double-ended rupture of the largest pipe of the reactor coolant system."

LOCAs is also defined in 10 CFR 46(c)(1) as "**hypothetical** accidents that would result from the loss of reactor coolant, at a rate in excess of the capability of the reactor coolant makeup system, from breaks in pipes in the reactor coolant pressure boundary up to and including a break equivalent in size to the double-ended rupture of the largest pipe in the reactor coolant system." **Are the terms "postulated" and "hypothetical" interchangeable in the definition of a LOCA?**

Context

We are trying to understand the relationship between the words in the definition of a LOCA and the words in the definitions of DBA and BDBA. Understanding the link will help us inform any potential exemption or exclusion from the LOCA requirements based on our design.

Question #4

Do the "postulated events" (such as accidents or pipe ruptures) discussed in the introduction to the GDCs, GDC 4, and 50.46, only include design basis events, or do they include both design basis and beyond design basis events?

Context

- Similar to the first three questions, we are seeking to understand the link between the term postulated and design basis. (If an event or accident is postulated then is that design basis space only…)

Question #5

RAI 9832 states that "**Special circumstances** may be justified to exclude postulating a LOCA at the specified locations from the design basis if Holtec can provide appropriate justification and conservative acceptance criteria that demonstrates a sufficiently low likelihood of failure at the subject locations with acceptably low consequences. Excluding postulating a break from the design basis and/or design basis accident analyses entirely would, in part, require meeting the minimum necessary for exclusion of the dynamic effects and additional considerations that demonstrate that the probability of fluid system piping rupture is sufficiently low (i.e., beyond "extremely low") to determine that reasonable assurance of adequate protection is provided."

Why would "Special circumstances" (exemption) be necessary, in this case, if it could be proven that the probability of a break at a specified location was sufficiently low (i.e., beyond "extremely low")? Wouldn't this "sufficiently low" determination designate a break at this location as a BDBE?

Context

We are trying to determine the relationship between extremely low, sufficiently low, DBE and BDBE. If BDBE, do LOCA rules apply?

Question #6

Has an exemption ever been approved for GDC 35 and/or 10 CFR 50.46, specifically related to postulated LOCA break sizes or loss of coolant rates?

Context

- We are trying to determine if the NRC has ever considered an exemption request involving LOCA break sizes based in part on postulated breaks in certain locations being of ‘sufficiently low’ likelihood.

Question #7

How do prior RAI histories, such as on Licensing Topical Reports, affect or relate to future applications related to the same technology? For example, do RAIs 9832, 9843, and 9846 have any practical bearing or relation to a future Construction Permit Application for an SMR-160?

Context

- We would like to understand how our past attempt at justifying a potential exclusion from the LOCA rules will impact our future attempts at potentially justifying an exemption to the LOCA rules.

Additional Questions and Follow-up Discussions Regarding This Topic