June 11, 2021 Docket No. 99902078

U.S. Nuclear Regulatory Commission
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SUBJECT: NuScale Power, LLC Submittal of Presentation Materials Entitled "NRC Public Meeting: NuScale's Proposed Responses to RAI 9828 on the NuScale Emergency Planning Zone (EPZ) Licensing Topical Report, Revision 2," PM-103595, Revision 0

REFERENCE: Letter from NuScale Power, LLC to NRC, "NuScale Power, LLC Submittal of 'Methodology for Establishing the Technical Basis for Plume Exposure Emergency Planning Zones,' TR-0915-17772, Revision 2," dated August 4, 2020 (ML20217L422)

NuScale Power, LLC (NuScale) has requested a meeting with the NRC technical staff on June 15, 2020, to discuss the NuScale responses to NRC Request for Information (RAI) 9828 on the Emergency Planning Zone topical report (Reference).

The purpose of this submittal is to provide presentation materials to the NRC for use during this meeting.

The enclosure to this letter is the nonproprietary presentation entitled "NRC Public Meeting: NuScale's Proposed Responses to RAI 9828 on the NuScale Emergency Planning Zone (EPZ) Licensing Topical Report (LTR), Revision 2."

This letter makes no regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions, please contact Liz English at 541-452-7333 or at eenglish@nuscalepower.com

Sincerely,

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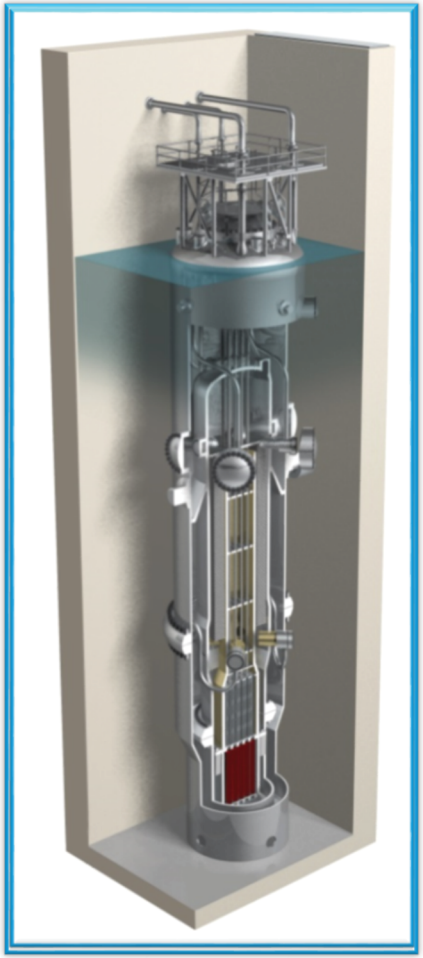
Enclosure : "NRC Public Meeting: NuScale's Responses to RAI 9828 on the NuScale Emergency Planning Zone (EPZ) Licensing Topical Report (LTR), Revision 2," PM-103595, Revision 0

Enclosure:

"NRC Public Meeting: NuScale's Responses to RAI 9828 on the NuScale Emergency Planning Zone (EPZ) Licensing Topical Report (LTR), Revision 2,"
PM-103595, Revision 0

NRC Public Meeting



NuScale's Proposed Responses to RAI 9828 on the NuScale Emergency Planning Zone (EPZ) Licensing Topical Report (LTR) Revision 2

June 15, 2021

PM-103595
Revision: 0

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Template #: 0000-21727-F01 R7

Presenters

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RAI 01.05-46

Issue: Technical Adequacy of the Advanced Light Water Reactor (LWR) Probabilistic Risk Assessment (PRA)

- Need for PRA peer review (NEI 17-07)
- Evaluate hazards/modes where NRC-endorsed Standards do not exist
- PRA developed using Regulatory Guide (RG) 1.200 for Capability Category II
- Combined operating license applicant to identify and justify any exceptions (e.g., inability to perform walkdowns)

Response:

- Section 3.1 of the EPZ LTR requires a technically adequate PRA for use in the risk-informed EPZ methodology.
  - RG 1.200 describes one approach for determining whether a base PRA is sufficient to be used in regulatory decisionmaking; it defines PRA acceptability in terms of an acceptable base PRA, conformance with national consensus standards, and the peer review process.
  - NEI 17-07 provides guidance for conducting and documenting a PRA peer review using the ASME/ANS PRA Standard.

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RAI 01.05-46 (continued)

Continued Response:

- Section 3.4 of the LTR specifies that the EPZ methodology requires a site-specific PRA that addresses all internal and external events, and all operating modes.
  - In cases where there is not a current NRC endorsed PRA standard for a specific hazard or mode, applicants need to document the bases for why the method employed is technically adequate.
  - It is recognized that a nuclear plant *design* PRA may not satisfy each technical requirement of ASME/ANS PRA standard to meet current good practice (i.e., Capability Category II). However, as outlined in RG 1.200, for some applications Capability Category I may be acceptable for some requirements, with justification.
  - Sections 2.4 and 3.7 of the EPZ LTR require a qualitative plant-level evaluation of defense-in-depth to account for PRA uncertainties to confirm that design features and the safety strategy employs successive compensatory measures to prevent accidents or mitigate consequences.

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RAI 01.05-43

Issue: Justify that the aggregate of screened-out sequences does not cause the quantitative health objectives (QHOs) to be exceeded.

Response:

- Emergency planning (EP) is a defense-in-depth feature that does not impact the assessment of large release frequency (LRF), as recognized in the Safety Goal Policy Statement.
- SECY-2013-0029 states that if the LRF is less than 1E-6 per year, the QHOs are met; the LRF "guideline is inherently more conservative than the QHOs."
- Commission policy is that Safety Goal objectives apply to all designs; therefore, any applicant for a plant license, including a user of the NuScale EPZ LTR methodology, would need to demonstrate the LRF is satisfied independent of EP considerations.
- Section 3.2 of the LTR states that an applicant is expected to show the risk to the public already meets the QHOs; therefore, an implicit condition of use for the EPZ methodology is that the plant design is already consistent with the QHOs.
- Because any applicant or licensee is expected to satisfy the Safety Goals without consideration of EP, the screened-out sequences under the EPZ methodology cannot cause the QHOs to be exceeded.

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RAI 01.05-44

Issue: Justify the technical basis for screening external events differently from internal events, and why external events that could exceed the QHOs are not being screened.

Response:

- As described in Section 3.4 of the LTR, the PRA used in the methodology must be full-scope, covering all internal events, external events, and operating modes, consistent with the guidance in the 1995 PRA Policy Statement, SECY-04-0118, and RG 1.174.
- Existing guidance for other risk-informed activities, such as RG 1.174 and RG 1.201, allow hazards and operating modes to be treated differently from one another and allow the use of non-PRA methods for certain hazards in addition to the internal events PRA.
- Absent NRC guidance on the range of external initiators to consider for the purpose of determining EPZ size, NuScale judged an exceedance frequency of 1E-5 per year, consistent with the NRC's determination of a "credible" earthquake for decommissioning EPZs, to be appropriate.
- As discussed in the response to question 01.05-43, any design that has progressed to evaluating EPZ size has already been shown to meet the QHOs; therefore, the 1E-5 per year external event screening in the EPZ methodology does not impact the design's ability to meet the QHOs.

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RAI 01.05-45

Issue: Discuss how numerical uncertainties (e.g., parameter uncertainty, model uncertainty) are to be considered against the numerical thresholds.

Response:

- Addressing uncertainty is a key element of a technically adequate PRA; uncertainty requirements are included in each part of the ASME/ANS PRA standard and would be confirmed to be acceptable in the PRA supporting the application.
- As part of having a technically adequate PRA, the PRA used to support the EPZ methodology would include documentation of sources of uncertainty and assumptions and their impact on the use of risk results and insights.
- The impact of uncertainties in the application of the PRA on sequence screening are also addressed through deterministic aspects of the EPZ methodology that are required to be evaluated independent of the results of the screening:
  - Section 3.3 of the LTR requires that the offsite design-basis source term (DBST) is evaluated for offsite dose.
  - Section 3.7 of the LTR requires that a qualitative, plant-level defense-in-depth analysis is performed.
- Therefore, the final EPZ distance is always based on dose consequence representative of the design and the demonstration of maintained defense-in-depth.

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RAI 01.05-48

Issue: Address the evaluation of potential radiological releases due to non-core damage events in the EPZ methodology.

Response:

- Section 3.3 of the LTR requires the DBST (representing both core damage [CD] releases and non-CD releases) to be evaluated.
- Any other releases outside the DBST are the result of a beyond-design-basis event (BDBE).
- Section 3.4 of the LTR describes the evaluation of BDBEs that are CD events from the PRA.
- Any BDBEs that are non-CD and outside the PRA are considered other risks, and are evaluated consistent with Section 3.5 of the LTR.

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Acronyms

BDBE	beyond-design-basis event
CD	core damage
DBST	design-basis source term
EP	emergency planning
EPZ	emergency planning zone
LTR	licensing topical report
LWR	light water reactor
NRC	U.S. Nuclear Regulatory Commission
PRA	probabilistic risk assessment
QHOs	quantitative health objectives
RG	regulatory guide

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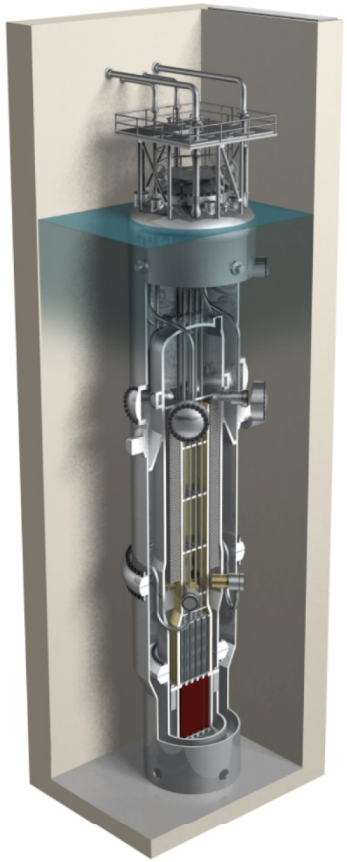

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