NuScaleDCDocsPEm Resource

From: Chowdhury, Prosanta
Sent: Thursday, November 30, 2017 4:09 PM
To: NuScaleDCDocsPEm Resource
Subject: Summary of Forthcoming Revision 1 of EPZ Topical Report TR-0915-17772

In response to NRC staff's inquiry, NuScale provided the following summary of content of their next revision (Revision 1) – to be submitted by March 30, 2018 – of Topical Report "TR-0915-17772, "Methodology for Establishing the Technical Basis for Plume Exposure Emergency Planning Zones at NuScale Small Modular Reactor Plant Sites," Revision 0.

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From: Mirsky, Steven [mailto:smirsky@nuscalepower.com]
Sent: Tuesday, November 28, 2017 9:18 AM
To: Chowdhury, Prosanta <Prosanta.Chowdhury@nrc.gov>
Cc: Cranston, Gregory <Gregory.Cranston@nrc.gov>; Lee, Samuel <Samuel.Lee@nrc.gov>
Subject: [External_Sender] RE: RE: RE: NuScale EPZ Topical Report

Prosanta,

All of this summary can be considered public and is non-proprietary.

Regards
Steve

Steven Mirsky | NuScale Power | Manager, Regulatory Affairs | O: 240-833-3001 | M: 503-964-0348 | WEBSITE | NEWSLETTER | TWITTER | LINKEDIN

From: Chowdhury, Prosanta [mailto:Prosanta.Chowdhury@nrc.gov]
Sent: Tuesday, November 28, 2017 9:16 AM
To: Mirsky, Steven
Cc: Cranston, Gregory; Lee, Samuel
Subject: RE: RE: RE: NuScale EPZ Topical Report

Thank you, Steve. How much of this summary can and should be considered "public," if at all?

Prosanta

From: Mirsky, Steven [mailto:smirsky@nuscalepower.com]
Sent: Tuesday, November 28, 2017 8:23 AM
To: Chowdhury, Prosanta <Prosanta.Chowdhury@nrc.gov>
Cc: Cranston, Gregory <Gregory.Cranston@nrc.gov>; Lee, Samuel <Samuel.Lee@nrc.gov>
Subject: [External_Sender] RE: RE: NuScale EPZ Topical Report

Prosanta,

The following summarizes the contents of the revised EPZ topical report.

The structure of Revision 1 of NuScale's EPZ topical report is virtually identical to Revision 0. There are no completely new sections and from a technical perspective changes were kept to a minimum and only made when necessary to produce a complete method. However, there are a number of revisions within existing sections, which were made for the following five reasons:

1. To address feedback the NRC has given during public meetings and NRC RAIs;
2. To update for consistency with NuScale's DCA submittal;
3. To ensure that everything in the report is directly linked into the overarching EPZ methodology;
4. To reduce or remove anything that was not necessary; and
5. To incorporate also editorial changes that are being made to improve readability and reduce redundancy.

Sections 1 and 2 (introduction and background) are very similar to Revision 0. There is nothing contained within these sections that is subject to approval, instead they provide the reader with the purpose and scope of the report and information on past and related activities for EPZ and emergency planning. Primary revisions are made for consistency with Revision 1 of the report and updates for recent developments since Revision 0 was submitted.

Section 3 contains the methodology for screening accidents into the EPZ technical basis. Three portions of Section 3 (accident screening, defense-in-depth, and multi-module) were significantly revised in the latest RAI responses and Revision 1 largely maintains these sections. The section starts with a summary of the entire method, followed by a reminder of the assumptions and applicable dose criteria. All accident sequences (excluding seismic) are now all included in a single screening method, whereas the screening was only applied to internal events in the RAI response. Much more detail was added on how to group accident sequences prior to screening. The method to assess defense-in-depth was revised based on recent NRC feedback; it still follows the INSAG-10 criteria but is shown to be consistent with RG 1.174. Any discussion on seismic PRA was removed, and has been replaced with details and justification for the separate seismic screening criteria, which requires a seismic SMA and uses the high confidence low probability of failure (HCLPF) as the criteria (which was first presented in the RAI response for multi-module). The technical content of the multi-module section is virtually unchanged from the RAI response, however much of the section was determined to be an example application of the methodology and thus was moved into Appendix D. Only the methodology itself and technical details are kept in Section 3. The remainder of Section 3 is significantly reduced from Revision 0. All event types are now included in a single screening so specific sections such as low power and shutdown were not necessary. Discussion on specific modeling requirements were moved into Section 4, such as the discussion on the reactor building. The portions that remain are spent fuel pool accidents and severe accident phenomena, which are both concluded not to be applicable to EPZ determination for NuScale, and security, which is significantly reduced to reference work done for NuScale's DCA and conclude there are no additional EPZ considerations.

Section 4 had a number of revisions made in response to the first round of RAIs and is largely unchanged technically. The methods to perform source term and dose evaluations are the same. There were a number of portions that were not directly tied to the overall methodology that were removed. For example, there is no longer anything on code validation, and specific sections on bypass piping and reactor building models were incorporated into the overall modeling methods. Instead the report simply presents the necessary capabilities for the codes used. MACCS is required for dose

evaluation but there is no specific severe accident code required. It is recommended, but not required that a second thermal-hydraulic code be used for confirmation. The MACCS comparison inside 0.5 km is unchanged as is the method to perform uncertainty analysis (UA), however, the role of UA within the overall EPZ methodology has been clarified.

Section 5 is still on operation mitigation and maintains a similar structure, however operational procedures were still under development when Revision 0 was submitted and extensive revision was necessary to make it consistent with NuScale's DCA submittal. Additionally, it was clarified exactly what is required of an applicant when considering mitigation within the overall EPZ methodology.

There is still a summary in Section 6, which now reflects the updated Revision 1, but nothing new or technical is contained in this section. Appendices A and B have not been updated with new results. The existing results continue to serve as an example of application of the method. There were minor clarifications made concerning the role of the example results and a disclaimer that they will not necessarily be consistent with the final design. Appendix C was completely redone, as the methods for accident screening and defense-in-depth assessment are new. It now provides an example screening using PRA information from NuScale's DCA and an example assessment of defense-in-depth for a single accident. Appendix D, which is an example of multi-module effects, was previously added as part of an RAI response. The primary change to Appendix D, as discussed above, is that information that was more of a result than methodology detail was moved from Section 3 to the appendix.

I hope the above I sufficient for your needs. If you have further questions, please contact me.

Regards
Steve

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From: Chowdhury, Prosanta

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