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Supplemental Guidance for Radiological Consequence Analyses Using Alternative Source Terms

Comment On: NRC-2021-0106-0001

Supplemental Guidance for Radiological Consequence Analyses Using Alternative Source Terms

Document: NRC-2021-0106-DRAFT-0003

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General Comment

NEI Comments on Draft “Interim Staff Guidance (ISG) Supplemental Guidance for Radiological Consequence Analyses Using Alternative Source Terms,” Docket ID NRC-2021-0106

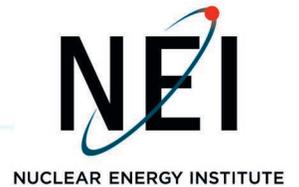
Attachments

06-21-21_NEI Letter to NRC with Industry Comments on ISG

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Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Program Management, Announcements and Editing Staff

Project Number: 689

Subject: NEI Comments on Draft "Interim Staff Guidance (ISG) Supplemental Guidance for Radiological Consequence Analyses Using Alternative Source Terms," Docket ID NRC-2021-0106.

Submitted via regulations.gov

Dear Program Management, Announcements and Editing Staff,

The Nuclear Energy Institute (NEI)¹, on behalf of our members, appreciates the opportunity to review and comment on the subject Draft "Interim Staff Guidance (ISG) Supplemental Guidance for Radiological Consequence Analyses Using Alternative Source Terms." The guidance found in this draft ISG will be used by NRC staff when reviewing LARs that request to increase the main steam isolation valve (MSIV) leakage allowed by technical specifications (TS) for boiling water reactors (BWRs).

Since the TID-14844 source term was first used to support licensing of the current fleet of nuclear power plants, a number of initiatives have reduced the need to provide additional margin for design-basis offsite radiological consequence analysis. Additionally, other safety analyses, such as the GSI-191 resolution or 50.46 LOCA analysis, have applied risk-informed or statistical approaches in order to provide more-realistic but bounding results while maintaining defense-in-depth. We appreciate the staff's efforts to include the application of risk-informed concepts in the development of this document and encourage the staff to continue to look for ways to apply risk-informed concepts to make the MHA dose analysis more consistent with other safety analyses.

¹ The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

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We trust that you will find the attached questions and comments useful and informative as you work on finalizing the draft ISG. If you have any questions or require additional information, please contact me at (202) 739-8132 or fap@nei.org.

Sincerely,

A handwritten signature in cursive script that reads "Frances A. Pimentel".

Frances A. Pimentel

Attachment

c: Jerry Dozier, NRR/DRA/ARCB, NRC
Mike Franovich, NRR/DRA

Attachment 1
Consolidated Comments on draft “Interim Staff Guidance (ISG) Supplemental Guidance for Radiological Consequence Analyses Using Alternative Source Terms.”

Section	Comment/Basis	Recommendation
Purpose/ Applicability	The text states: this ISG will help to resolve differences between the licensee’s methods and assumptions and those deemed acceptable to the NRC staff when reviewing license amendment requests (LARs) that propose an increase in the MSIV leakage allowed by technical specifications (TS) for boiling water reactors (BWRs). Why is this ISG not applicable to new plant designs that meet current regulations and guidance? New plants have in many cases more robust designs and should be allowed a similar approach.	Add words for anyone applying for a license such as for new reactor applications.
Background	When is SRP 15.0.1 expected to be updated and will it apply to new plant designs?	
Rationale	The licensing basis radiological analyses have typically been performed by deterministic evaluations with all inputs biased in the conservative direction for a very bounding result. Other safety analyses, such as the GSI-191 resolution or 50.46 LOCA analysis, have applied risk-informed or statistical approaches in order to provide more-realistic but bounding results while maintaining defense-in-depth. The application of risk-informed concepts from the ISG is a good start to make the MHA dose analysis more consistent with other safety analyses. In what other areas is the NRC considering risk-informing the licensing basis radiological dose analyses applying the Staff's LIC-206 process for multi-disciplinary risk insights?	
Rationale	There have been numerous seismic industry initiatives that demonstrated that SSCs have sufficient seismic capacities to withstand accelerations associated with the SSE and higher. All Exelon sites were evaluated to more modern seismic information as part of NTF Recommendations 2.1 and 2.3 from Fukushima Dai-Ichi accident which included plant walkdowns, expedited seismic evaluation programs (ESEPs) and Seismic Probabilistic Risk Assessments (SPRAs). These evaluations used the Seismic Hazard Curves (SHC) developed by EPRI in 2013. Some plants did a SPRA, some did a Seismic Margin Assessment (SMA) as documented in EPRI NP-6041-SL “A Methodology for Assessment of Nuclear Power Plant Seismic Margin.” Also, Individual Plant Examination of External Events (IPEEE) and Unresolved Safety Issue (USI) A-46, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors," results demonstrated that safe shutdown Structures, Systems, and Components (SSCs) are capable of withstanding accelerations in excess of SSE loading. All of these assessed a lot of Class 1 piping and structures, and selected safety related seismically qualified devices.	Clarify what risk-based criteria will be acceptable (i.e., level of earthquake, assessment type, etc.).

Section	Comment/Basis	Recommendation
	If those risk-based approaches are used to credit the robustness of the MSIV leakage alternate pathway SSCs, will the NRC accept these assessments or will they request implementation of a backfit for a more updated PRA quality assessment (i.e., RG 1.200, ASME/ANS Joint Standard) be performed, including updated SHCs or Ground Motion Response Spectra (GMRS)?	
Rationale	This section discusses four approved LARS from 2019 that increased MSIV leakage. What if other plants in the future want to do the same - what would industry need to submit to ensure future applications can get credit for the risk insight included in the ISG?	
Rationale	This section of the ISG provides why the ISG was developed and that the technical assessment identified the PCS as a realistic and available hold-up volume for fission products. The ISG also concludes that there is high confidence in the SSCs in the PCS to provide a volume for holdup and retention of fission products. The question is, why isn't the Staff incorporating this well thought out, risk-informed methodology into RG 1.183. Why is this method being limited for use only by the NRC Staff when reviewing AST LARs?	
Rationale	How can we get credit for other risk insights mentioned in this ISG? Why are these not being considered for incorporation in the future revision of RG 1.183.	
Applicability	Does the ISG apply to RG 1.183 Rev. 0 or Rev. 1 or both?	
Applicability	Can the ISG be applied to new reactors? New reactors may have additional pathways available.	
Appendix A	The end of the first paragraph discusses that this ISG is a structured evaluation of the acceptability of dose consequence analyses for MSIV leakage when the requirements of the regulations are satisfied and the method of analysis conforms with accepted practices, but uncertainties remain in input parameter used in the deterministic dose calculations. Which input parameters had challenges due to uncertainty? Please provide more detail.	
Appendix A Section 2.1	In this section, the ISG references PRAB-02-O 1, Assessment of BWR Main Steam Line Release Consequences, John N. Ridgely, October 2002. This document indicates that MSIV leakage rate orders of magnitude higher than what is currently allowed would be necessary to result in exceeding the dose limits associated with the Commission's Safety Goal Policy Statement (51 FR 30028 (August 21, 1986)). Specifically, in the conclusion it states, "The second objective was to determine the leakage rate which, if achieved in a plant, should result in some additional investigation by the NRC and the licensee as to the potential consequences of a postulated accident concurrent with the increased leakage. [...] Given the factor of conservatism being greater than 20, the	

Section	Comment/Basis	Recommendation
	<p>conclusion is made that there should be no regulatory concern if the leakage past the best sealing valve in the main steam line is less than 10,000 scfh.”</p> <p>Based on this assessments conclusion, why doesn’t Staff approve and allow the industry to utilize higher MSIV leakage values in our calculations associated with source term?</p>	
Appendix A	<p>Is EPRI 3002017583 and 3002012988 “Alternative Approaches for Addressing Seismic risk in 10CFR50.69 Risk-Informed Categorization,” July 2018 an acceptable option for justifying credit for the alternate pathway?</p> <p>This graded (alternate) approach developed by EPRI is based on comparison of the site SSE and the latest GMRS from Seismic Hazard Analysis.</p>	Discuss the EPRI seismic alternate approach and its use as an acceptable option.
Appendix A Section 2.3	<p>Appendix A points out that RG 1.183 itself is inconsistent in that it allows credit for the condenser, which is a non-safety-related SSC, without any additional information or analysis from the licensee related to the “seismic robustness” at a plant’s SSE for the deterministic dose analysis for the rod drop accident. However, the same RG does not credit the condenser without further analysis for “seismic robustness” at a plant’s SSE for the deterministic dose analysis for the MHA. Since there is no reason for the different treatment, why doesn’t the Staff revise the RG to allow credit for the condenser for the MHA based on the risk-informed conclusions provided by the ISG technical assessment?</p>	