

**From:** [Carolyn Lauron](#)  
**To:** [Justin Hawkins](#)  
**Cc:** [Greg Cranston](#); [Jordan Glisan](#); [Michael Dudek](#); [Andrew Brenner](#)  
**Subject:** NRC Staff Response to SMR (Holtec) Questions re: NonSafety Structures  
**Date:** Wednesday, February 22, 2023 11:00:00 AM

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Hi Justin –

Please find the NRC staff response to the subject question below.  
Please let us know if you need additional information.

Thanks,  
Carolyn

**Question:**

Are there regulatory considerations for structural acceptance criteria of non-safety related buildings that could affect safety related structures, systems, and components (SSCs)?

Context: The SMR-160 steam tunnel is a safety-related structure that sits below grade underneath the non-safety related Turbine Building. Are there additional considerations for structural acceptance criteria of the Turbine Building given this design, specifically against hypothetical automobile missile impacts borne from tornado and hurricane events per Regulatory Guides (RGs) 1.76 and 1.221?<sup>1, 2</sup>

**NRC Staff Response:**

RG 1.29 provides guidance used to establish the seismic design classification.<sup>3</sup> The structural acceptance criteria of the safety-related structures (Seismic Category I) are based on meeting the relevant requirements, including the following regulations: 10 CFR 50.55a, General Design Criteria (GDC) 2, 4, and 5 in Appendix A to 10 CFR Part 50, and 10 CFR Part 50, Appendices B and S.<sup>4, 5, 6, 7</sup> Staff Regulatory Guidance C.2 in RG 1.29 discusses the Seismic Category II or equivalent. Those portions of SSCs whose continued function is not required but whose failure could reduce the functioning or integrity of a Seismic Category I SSC to an unacceptable safety level or could result in incapacitating injury to occupants of the control room, should be designed and constructed so that the SSE would not cause such failure. Wherever practical, structures and equipment whose failure could possibly cause such injuries should be relocated or separated to the extent required to eliminate that possibility.

The non-safety related Turbine Building is not a Seismic Category I or II structure. Since the safety-related SMR-160 steam tunnel sits below grade underneath the non-safety related Turbine Building, the relevant requirements of GDCs 4 and 5 are applicable to the Turbine Building.

In addition, interactions of non-Seismic Category I structures with Seismic Category I structures need to be considered. Nearby structures are assessed or analyzed, if necessary, to ensure that there is no credible potential for interactions that could adversely affect the Seismic Category I structures.

GDC 4 requires SSCs important to safety to be appropriately protected against dynamic effects, including the effects of missiles among others, that may result from equipment failures and external environmental conditions (e.g., seismic, tornado, hurricane events) when such missile interactions with the important to safety SSC are possible or credible.

References:

1. U.S. NRC, Regulatory Guide 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," Revision 1, March 2007. (ML070360253)
2. U.S. NRC, Regulatory Guide 1.221, "Design-Basis Hurricane and Hurricane Missiles for Nuclear Power Plants," Initial Issuance, October 2011. (ML110940300)
3. U.S. NRC, Regulatory Guide 1.29, "Seismic Design Classification for Nuclear Power Plants," Revision 6, July 2021. (ML21155A003)
4. Title 10 of the Code of Federal Regulations (CFR), 50.55a, "Codes and Standards."
5. 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants."
6. 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."
7. 10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants."