

## NRR-PMDAPEm Resource

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**From:** Lyon, Fred  
**Sent:** Thursday, December 18, 2014 12:27 PM  
**To:** bhansher@oppd.com  
**Cc:** medwards@oppd.com  
**Subject:** Draft RAI (TAC No. MF4016)

Here's an RAI I'm preparing for you. Please share it with your folks and let me know if you need a clarifying call. I'll request a response 30 days from the date of the letter, but let me know if you need more time.  
Thanks, Fred

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the Omaha Public Power District (OPPD or the licensee) license amendment request (LAR) application dated April 25, 2014 (Agencywide Documents Access and Management System Accession Number ML14118A435), for Fort Calhoun Station (FCS), Unit 1. The LAR proposes to amend Section 5.11 and Appendix F of the FCS, Unit 1, updated safety analysis report (USAR) to allow the use of alternate seismic criteria and methodology (ASCM) floor response spectra in the design and evaluation of seismic Class I structures and structural elements attached to structures.

The NRC staff has determined that additional information requested below is needed to complete its review.

1. Section 2.0 of the LAR states the following:

"Reference 3.6 as identified in USAR, Appendix F is engineering analysis EA-FC-94-003, "Alternate Seismic Criteria and Methodologies," Revision 0, which has since been updated and is now Revision 1."

- a) Describe the content of engineering analysis EA-FC-94-003, "Alternate Seismic Criteria and Methodologies" and clarify its association with the information provided to the NRC staff at the time of review of FCS ASCM and preparation of the NRC safety evaluation, dated April 16, 1993.
  - b) Discuss whether the updates to EA-FC-94-003 affect any technical information that was provided to the NRC staff at the time of review of FCS ASCM and preparation of the NRC safety evaluation, dated April 16, 1993.
2. Regarding the proposed revision to the USAR, Section 5.11.3 and Appendix F, Section 2.1.4, included in Attachment 1 to the LAR:
- a. Provide clarification for the term "seismic "g" loading factor" and discuss the applicability of this term to the FCS seismic analysis of Class I structures.
  - b. Figures F-1 and F-2 shown in Appendix F of the FCS USAR are design basis ground response spectra for FCS. The two proposed alternatives, to determine seismic loading, one using ground response spectra and the other using ASCM floor response spectra are not consistent. In addition, the existing wording of the USAR, Section 5.11.3 refers to Appendix F where FCS seismic criteria are outlined. The proposed revision to Section 5.11.3 of the FCS USAR appears to be redundant.

Provide discussion relative to the proposed revision of the FCS USAR, Section 5.11.3 and reconcile the apparent inconsistency between the two proposed alternatives.

- c. The proposed revision to Appendix F, Section 2.1.4 of the FCS USAR states that "An alternative method of determining the seismic loads for a Class 1 structure and structural elements attached to structures is available using the ASCM floor response spectra provided in Reference 3.6. The maximum "g" value from the curve for the building floor at which the structure is anchored is to be used."

The second sentence "The maximum "g" value from the curve for the building floor at which the structure is anchored is to be used." is not consistent with the seismic analysis methods for piping and heating, ventilation, and air conditioning systems described in the NRC staff safety evaluation dated April 16, 1993. Provide further discussion and reconcile this apparent inconsistency.

3. The OPPD July 31, 1992 letter to the NRC included FCS, Unit 1 in-structure response spectra (ISRS) for the Auxiliary building, Containment building, and containment internal structures. Specifically, the ASCM ISRS in the vertical direction depict a pronounced second peak at the frequency range of approximately 12 Hertz to 18 Hertz.

The design basis vertical floor response spectra for the Reactor and Auxiliary buildings are shown in Figures F-22 through F-27 of Appendix F of the FCS USAR. There are several indications in Appendix F of the FCS USAR that for equipment, piping and electrical raceways, the spacing of restraints and support system was controlled to maintain the lowest vertical and horizontal natural frequencies of the component equal to or greater than 18 Hertz and 6 Hertz, respectively. Thus, limiting the acceleration used for the analysis to approximately zero period acceleration of the floor response spectra.

OPPD has indicated that the ASCM ISRS represent an updated and a more refined version of the FCS original design basis spectra. Provide information to reconcile the effects of the ASCM ISRS on the existing Class I systems and components, located in Class I structures.

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