

PMFermiCOLPEm Resource

From: Govan, Tekia
Sent: Tuesday, July 02, 2013 11:35 AM
To: 'Michael K Brandon'; 'Ryan C Pratt'
Cc: FermiCOL Resource
Subject: FW: Draft RAI
Attachments: RAI_7170.doc

The RAI has been revised to remove an error in the question.

Tekia

From: Govan, Tekia
Sent: Tuesday, July 02, 2013 9:54 AM
To: 'Michael K Brandon'; 'Ryan C Pratt'
Subject: Draft RAI

Mike/Ryan:

Please find attached the Draft RAIs in response to your submittal regarding the mark- up of section 3.7.1 of the FSAR. Please let me know by Friday (7/5) if a clarification call is needed.

Thanks
Tekia

Hearing Identifier: Fermi_COL_Public
Email Number: 1231

Mail Envelope Properties (F5A4366DF596BF458646C9D433EA37D70100EBEA5E99)

Subject: FW: Draft RAI
Sent Date: 7/2/2013 11:34:37 AM
Received Date: 7/2/2013 11:34:39 AM
From: Govan, Tekia

Created By: Tekia.Govan@nrc.gov

Recipients:
"FermiCOL Resource" <FermiCOL.Resource@nrc.gov>
Tracking Status: None
"Michael K Brandon" <brandonm@dteenergy.com>
Tracking Status: None
"Ryan C Pratt" <prattrc@dteenergy.com>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	Size	Date & Time
MESSAGE	448	7/2/2013 11:34:39 AM
RAI_7170.doc	34298	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Request for Additional Information

Issue Date:

Application Title: Fermi Unit 3 - Docket Number 52-033

Operating Company: Detroit Edison

Docket No. 52-033

Review Section: 02.05.02 - Vibratory Ground Motion

Application Section:

QUESTIONS

10 CFR Part 100, Appendix A requires the determination of the static and dynamic engineering properties of the materials underlying the site, which should include properties needed to determine the behavior of the underlying material during earthquakes and the characteristics of the underlying material in transmitting earthquake-induced motions to the foundations of the plant. FSAR Section 3.7.1.1.4.1.1 (provided as markups of FSAR Section 3.7.1, April 26, 2013) describes the dynamic properties of the engineered granular backfill above the bedrock; however, in order to satisfy the requirements of 10 CFR Part 100, Appendix A, please provide the information described below.

- (a) In FSAR Section 3.7.1.1.4.1.1 you state that the shear-wave velocity values for the engineered granular backfill are based on empirical relationships for angular-grained material from Richart et al. (1970) and for sandy gravelly soils from Menq (2003). However, the FSAR only states that the lower range (LR) and upper range (UR) profiles represent the envelope of the six shear-wave velocity profiles described above for the empirical relationships of Richart et al. (1970) and Menq (2003). Please provide details regarding how the UR and LR profiles are each developed from these six individual shear-wave velocity profiles, which is not described in the FSAR.
- (b) . Please provide electronic versions of the six individual profiles shear-wave velocity ~~profiles as well as the associated calculation package(s) which details how the six individual shear-wave velocity profiles are developed.~~
- (c) Please provide the standard deviation [i.e. $\sigma \ln(V_s)$] for UR, IR, and LR shear-wave velocity profiles
- (d) FSAR Figure 3.7.1-203 presents the modulus and damping relationships for the various depth ranges (i.e. between 0 ft and 36 ft) for the Menq (2003) shear modulus reduction and damping curves, which represents the LR, as well as the EPRI (1993), which represents the UR, shear modulus reduction and damping relationships. Please provide these curves electronically.
- (e) FSAR Figure 3.7.1-210 shows the site response logic tree used to compute the mean amplification functions. According to this figure, the LR velocity profile (paired with the Menq (2003) shear modulus reduction and damping curves) is assigned a weight of 0.15, the IR velocity profile (paired with the average of the UR and LR curves) is assigned a weight of 0.50, and the UR velocity profile (paired with the EPRI (1993) curves) is assigned a weight of 0.35. Please provide a justification for this weighting scheme.