

PMTurkeyCOLPEm Resource

From: Comar, Manny
Sent: Monday, May 21, 2012 8:18 AM
To: Butler, Rhonda; Comar, Manny; Galletta, Thomas; Habib, Donald; Hughes, Brian; Joshi, Ravindra; McGovern, Denise; Minarik, Anthony; Nagel, Cheri; Snyder, Amy; Tonacci, Mark; orthen, Richard; Raymond Burski; Steve Franzone; STEVEN.HAMRICK; TurkeyCOL Resource; William Maher; RidsAcrcAcnw_MailCTR Resource; RidsNroDnrILb4 Resource; RidsNroLAKGoldstein Resource; RidsOgcMailCenter Resource; RidsRgn2MailCenter Resource
Cc: Patel, Pravin; Thomas, Vaughn
Subject: REQUEST FOR ADDITIONAL INFORMATION LTR. No: 61 RELATED TO SRP: 3.07.01 SEISMIC DESIGN FOR THE TURKEY POINT UNITS 6 AND 7 COMBINED LICENSE APPLICATION
Attachments: PTN-ltr-61-rai6432.pdf

All:

Attached is the RAI letter No. 61 related to SRP Section 3.07.01 Seismic Design parameters for the Turkey Point Units 6 and 7 Combined License Application.

The Accession number is ML12138A466

If you have any further questions, please feel free to contact me,

Thanks

Manny Comar
Senior Project Manager
NRO/DNRL/NWE1
Nuclear Regulatory Commission
301-415-3863
<mailto:manny.comar@nrc.gov>

Hearing Identifier: TurkeyPoint_COL_Public
Email Number: 608

Mail Envelope Properties (377CB97DD54F0F4FAAC7E9FD88BCA6D092EA3D597B)

Subject: REQUEST FOR ADDITIONAL INFORMATION LTR. No: 61 RELATED TO SRP:
3.07.01 SEISMIC DESIGN FOR THE TURKEY POINT UNITS 6 AND 7 COMBINED LICENSE
APPLICATION

Sent Date: 5/21/2012 8:18:04 AM

Received Date: 5/21/2012 8:18:08 AM

From: Comar, Manny

Created By: Manny.Comar@nrc.gov

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Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	Size	Date & Time
MESSAGE	482	5/21/2012 8:18:08 AM
PTN-ltr-61-rai6432.pdf	104513	

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

TurkeyPointRAIsPEm Resource

From: Comar, Manny
Sent: Thursday, May 17, 2012 4:48 PM
To: TurkeyPointRAIsPEm Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LTR. No: 61 RELATED TO SRP: 3.07.01
SEISMIC DESIGN FOR THE TURKEY POINT UNITS 6 AND 7 COMBINED LICENSE
APPLICATION
Attachments: PTN-RAI-LTR-061.doc

Hearing Identifier: TurkeyPoint_COL_eRAIs
Email Number: 73

Mail Envelope Properties (377CB97DD54F0F4FAAC7E9FD88BCA6D092EA3D56E1)

Subject: REQUEST FOR ADDITIONAL INFORMATION LTR. No: 61 RELATED TO SRP:
3.07.01 SEISMIC DESIGN FOR THE TURKEY POINT UNITS 6 AND 7 COMBINED LICENSE
APPLICATION

Sent Date: 5/17/2012 4:48:25 PM

Received Date: 5/17/2012 4:48:26 PM

From: Comar, Manny

Created By: Manny.Comar@nrc.gov

Recipients:

"TurkeyPointRAIsPEm Resource" <TurkeyPointRAIsPEm.Resource@nrc.gov>

Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	Size	Date & Time
MESSAGE	8	5/17/2012 4:48:26 PM
PTN-RAI-LTR-061.doc	63994	

Options

Priority: Standard

Return Notification: No

Reply Requested: No

Sensitivity: Normal

Expiration Date:

Recipients Received:

May 17, 2012

Mano K. Nazar
Senior Vice President and Chief Nuclear Officer
Florida Power & Light Company
Mail Stop NNP/JB
700 Universe Blvd
Juno Beach, FL 33408-0420

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 061 RELATED
TO SRP SECTION.3.07.01 SEISMIC DESIGN PARAMETERS FOR THE
TURKEY POINT NUCLEAR PLANT UNITS 6 AND 7 COMBINED LICENSE
APPLICATION

Dear Mr. Nazar:

By letter dated June 30, 2009, as supplemented by letters dated August 7, 2009, September 3, 2010, December 21, 2010 and December 16, 2011, Florida Power and Light submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advanced passive pressurized water reactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 45 days of the date of this letter. If you are unable to provide a response within 45 days, please state when you will be able to provide the response. In the event the response submitted is incomplete, please indicate in the response when the complete response will be provided. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes. Your response should also indicate whether any of the information provided is to be withheld as exempt from public disclosure pursuant to 10 CFR 2.390.

If you have any questions or comments concerning this matter, you may contact me at 301-415-3863 or manny.comar@nrc.gov.

Sincerely,

/RA/

Manny Comar, Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-040
52-041

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me at 301-415-3863 or manny.comar@nrc.gov.

Sincerely,

/RA/

Manny Comar, Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-040
52-041
eRAI Tracking No. 6432

Enclosure:
Request for Additional Information

Distribution:

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		VThomas

NRO-002

OFFICE	SEB1/BC	LB4/PM	LB4/L-PM
NAME	MShams*	MComar*	MComar*
DATE	4/27/12	5/01/12	5/17/12

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

Request for Additional Information No. 6432

5/17/2012

Turkey Point Units 6 and 7
Florida P and L
Docket No. 52-040 and 52-041
SRP Section: 03.07.01 - Seismic Design Parameters
Application Section: 3.7.1

QUESTIONS from Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

03.07.01-14

In Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report") Figure 3.1-2 shows the lean concrete bridging mat extending approximately 30 ft beyond the reinforced concrete base mat of the NI. The staff believes that including the unreinforced bridging mat in the SSI analysis as a continuous 'structure' can result in an increase in the translational impedance of the SSI system of roughly 50% as well as a large increase in the rocking impedance. If in fact the material is 'non-structural' and cracks at the face of the NI, the resulting stiffness (and frequency) of the NI/soil system may be significantly overstated by the modeling approach used.

The staff requests that the applicant demonstrate that the stresses are sufficiently low in the supporting mat to preclude cracking of the mat or provide an assessment of the affect of potential cracking of the mat on the SSI responses computed for the NI structures.

03.07.01-15

In Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report") Figures 2.1-3 through 8 show the response spectra at the foundation level. These spectra have zpa values that are less than the 0.1g at the foundation depth that is required by Appendix S to 10 CFR Part 50. (Note that this issue was previously identified in a question on Figure 2.5.2-252 regarding the input motion at Elevation -35). The response spectra shown in those figures form the basis of the input motions that are used to compute the in-structure response spectra (ISRS) from the SSI analyses. Meeting the Appendix S requirements would appear to require adjusting the input motions upward which would result in margins, as compared to the DCD ISRS at the six key locations, to reduce significantly from those indicated in the tables mentioned above. Additionally, it is noted in the AP1000 DCD that the CSDRS is at finished grade. Since the input motion at the foundation level is less than the minimum required by Appendix S, the surface spectra shown in Appendix 3JJ, which neglect any adjustment required to satisfy Appendix S, appear to be understated. Thus, the applicant is requested to provide a discussion as to how the results provided in Appendix 3JJ and Figures 2.1-3 through 8 meet the Appendix S to 10 CFR Part 50 requirements for minimum seismic input at the foundation level.

03.07.01-16

In Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report") A Poisson's ratio of 0.48 is used in the SSI analyses, as indicated in the third paragraph in Section 3JJ.3, "Strain-Compatible Soil Property Profiles." History has shown that high levels of Poisson's ratio often lead to unreliable results when used in the SASSI Computer Program. As a result, staff is requesting that the applicant provide a verification problem that demonstrates the validity of the SASSI solution for Poisson's ratios that are as high as 0.48 for foundation sizes that are consistent with the NI. This should be part of the Software V&V package since the V&V problems should be applicable to the range of parameters for which the software is to be used.

03.07.01-17

In Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report") the second paragraph in Section 3JJ.4, "Spectral Matching of Acceleration Time Histories," indicates that the required value of the zero-lag cross correlation should be 0.3. Section 3.7.1 of the SRP requires that each pair of time histories considered to be statistically independent if the absolute value of their correlation coefficient does not exceed 0.16. The applicant is requested to reconcile this difference in requirements or, alternatively, provide the basis for the value of 0.3.

03.07.01-18

There are no transfer functions of the AP1000 six key locations in Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report.") Transfer functions are needed for the staff to determine the technical adequacy of the SSI analyses presented in the FSAR. The applicant is requested to provide the transfer functions for the six key locations.

03.07.01-19

In Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report") the third paragraph in Section 2.5.4.7.3.3, "Shear modulus and Damping for Rock," states that the damping for rock is taken as 1%. The damping shown in Figure 2.5.2-249 which describes the soil properties used to develop the GMRS indicates that a damping value of ½% was used in the analyses. The applicant is requested to provide clarification as to the actual level of damping used in the analyses, including the SSI analyses, and provide basis for selection considering the large variability in RQD shown in Figure 2.5.4-215.

03.07.01-20

In Revision 3 of the applicant's FSAR, (aka. TPG-1000-S2R-802, "Turkey Point Site-Specific Seismic Evaluation Report") the second paragraph in Section 2.5.4.7.3.4, "Dynamic Properties of Structural Fill," states that a large coefficient of variation (COV) of 1.5 was used for the fill to accommodate uncertainties associated with the fill material. However, in Section 2.5.2.5.1 of the FSAR, "Base Case Site-specific Column and Uncertainties," it is stated that a COV of 0.5 was used to provide upper and lower bounds on the dynamic properties of the site-specific soil column. Section 3.7.1.1.1.2, "Strain-Compatible Soil Property Profiles," indicates that the results of the soil

amplification analysis were used to develop strain-compatible properties used in Appendix 3JJ inferring that the COV used in the SSI analyses is consistent with the 0.5 value used in developing the soil amplification functions.

Given the uncertainties associated with the fill, for which a COV of 1.5 was recommended in Section 2.5.4.7.3.4, a justification is needed for the use of a COV of 0.5 for both the development of soil amplification functions and for the SSI analyses. The staff requests that the applicant provide an evaluation of the significance of the larger uncertainty on the computed soil amplification functions and on the responses computed in the SSI analyses, including the effect on estimated relative displacements between the NI and adjacent structures.