



L-2011-387
10 CFR 52.3

September 15, 2011

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Re: Florida Power & Light Company
Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
Response to NRC Request for Additional Information Letter No. 032
(eRAI 5889) Standard Review Plan Section 19 - Probabilistic Risk
Assessment and Severe Accident Evaluation

Reference:

1. NRC Letter to FPL dated July 20, 2011, Request for Additional Information Letter No.032 Related to SRP Section 19 - Probabilistic Risk Assessment and Severe Accident Evaluation for the Turkey Point Nuclear Plant Units 6 and 7 Combined License Application
2. FPL Letter to NRC dated August 19, 2011 Schedule for Response to NRC Request for Additional Information Letter No. 032 (eRAI 5889) - Standard Review Plan Section 19 Probabilistic Risk Assessment and Severe Accident Evaluation

Florida Power & Light Company (FPL) provides, as an attachment to this letter, its response to the Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI) 19-3 provided in Reference 1. FPL provided a schedule for the response to RAI 19-3 in Reference 2. The attachment identifies changes that will be made in a future revision of the Turkey Point Units 6 and 7 Combined License Application (if applicable).

If you have any questions, or need additional information, please contact me at 561-691-7490.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on September 15, 2011

Sincerely,

William Maher
Senior Licensing Director – New Nuclear Projects

WDM/RFB

Florida Power & Light Company

700 Universe Boulevard, Juno Beach, FL 33408

DO97
NRD

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Attachment: FPL Response to NRC RAI No. 19-3 (eRAI 5889)

cc:
PTN 6 & 7 Project Manager, AP1000 Projects Branch 1, USNRC DNRL/NRO
Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant 3 & 4

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NRC RAI Letter No. PTN-RAI-LTR-032

SRP Section: 19-Probabilistic Risk Assessment and Severe Accident Evaluation

Question for PRA and Severe Accidents Branch (SPRA)

NRC RAI Number: 19-3 (eRAI 5889)

In a letter dated August 23, 2010, regarding its requested AP1000 design certification, Westinghouse proposed a new COL information item related to site-specific features that may affect seismic margins. Please address this issue for the TPN site.

FPL RESPONSE:

The Turkey Point site seismic demand, based on the site Ground Motion Response Spectra (GMRS), as described in FSAR 3.7.1, is enveloped by the AP1000 Certified Seismic Design Response Spectra (CSDRS) as defined by Tier 1 criteria for SSE. Therefore, the Seismic Margin Assessment analysis documented in Section 19.55 is applicable to the Turkey Point Units 6 & 7 site.

The nuclear island (NI) for Turkey Point Units 6 & 7 is founded on approximately 20 feet of concrete fill underlain by about 80 feet of bedrock. For seismic stability of the NI, it was demonstrated that the Turkey Point Units 6 & 7 NI margins against sliding and overturning were greater than the limiting NI margins calculated for the standard AP1000 design cases. For seismic stability, the Seismic Margin Assessment analysis documented in DCD Section 19.55 is applicable to the Turkey Point Units 6 & 7 site.

For site-specific conditions relating to soil or rock-related failure modes, the demonstration of adequate seismic margin of the AP1000 design was performed for an earthquake of $1.67 \times \text{GMRS}$ for Turkey Point Units 6 & 7 for liquefaction potential and bearing capacity.

The liquefaction potential factor of safety was computed to be above the acceptable value of 1.25 except for four measurements in deep soil beneath the bedrock. Two were vertically adjacent measurements (within 0.1 foot of each other) in a CPT, the third was in another CPT, and the fourth was a shear wave velocity measurement in a borehole. In these four cases, the factor of safety immediately above and below the two adjacent measurements and the two single measurements was higher than 1.25, confirming that the four measurements were isolated measurements and that the factor of safety values lower than 1.25 would have no impact on soil stability. Thus, liquefaction potential was screened out as a contributor to design-specific plant-level High Confidence of Low Probability of Failure (HCLPF) capacity. Similarly, bearing pressure capacity to demand ratio demonstrated sufficient margin (factor of safety of 3) so that this potential failure mode was screened out as a contributor to design-specific plant-level HCLPF capacity.

This information will be included in a future revision of FSAR Sections 19.55.6.3 and 19.59.10.5 and FSAR Table 1.8-202 to address the new COL information item 19.59.10-6.

This response is PLANT SPECIFIC.

References:

None

ASSOCIATED COLA REVISIONS:

The contents of FSAR Section 19.55 will be revised as shown and identified via LMA as PTN COL 19.59.10-6:

This section of the referenced DCD is incorporated by reference with ~~no~~ **the following** departures **and/or** supplements

19.55.6.3 Site Specific Seismic Margin Analysis

The Turkey Point site seismic demand, based on the site Ground Motion Response Spectra (GMRS), as described in FSAR 3.7.1, is enveloped by the AP1000 CSDRS as defined by Tier 1 criteria for SSE. Therefore, the Seismic Margin Assessment analysis documented in Section 19.55 is applicable to the Turkey Point Units 6 & 7 site.

The nuclear island (NI) for Turkey Point Units 6 & 7 is founded on approximately 20 feet of concrete fill underlain by about 80 feet of bedrock. For seismic stability of the NI, it was demonstrated that the Turkey Point Units 6 & 7 NI margins against sliding and overturning were greater than the limiting NI margins calculated for the standard AP1000 design cases. For seismic stability, the Seismic Margin Assessment analysis documented in DCD Section 19.55 is applicable to the Turkey Point Units 6 & 7 site.

For site-specific conditions relating to soil or rock-related failure modes, the demonstration of adequate seismic margin of the AP1000 design was performed for an earthquake of 1.67 x GMRS for Turkey Point Units 6 & 7 for liquefaction potential and bearing capacity.

The liquefaction potential factor of safety was computed to be above the acceptable value of 1.25 except for four measurements in deep soil beneath the bedrock. Two were vertically adjacent measurements (within 0.1 foot of each other) in a CPT, the third was in another CPT, and the fourth was a shear wave velocity measurement in a borehole. In these four cases, the factor of safety immediately above and below the two adjacent measurements and the two single measurements was higher than 1.25, confirming that the four measurements were isolated measurements and that the factor of safety values lower than 1.25 would have no impact on soil stability. Thus, liquefaction potential was screened out as a contributor to design-specific plant-level High Confidence of Low Probability of Failure (HCLPF) capacity. Similarly, bearing pressure capacity to demand ratio demonstrated sufficient margin (factor of safety of 3) so that this potential failure mode was screened out as a contributor to design-specific plant-level HCLPF capacity.

The following paragraph will be added to the end of Subsection 19.59.10.5 and identified via LMA as STD COL 19.59.10-6 and PTN COL 19.59.10-6:

As discussed in Subsection 19.55.6.3, it has been confirmed that the Seismic Margin Analysis (SMA) documented in DCD Section 19.55 is applicable to the site. The site-specific effects (i.e., soil-related failure modes, etc.) have been evaluated and it was concluded that the plant-specific plant-level HCLPF value is equal to or greater than 1.67 times the site-specific GMRS peak ground acceleration.

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The contents of FSAR Table 1.8-202 will be revised as shown to include COL Item 19.59.10-6:

Table 1.8-202 (Sheet 9 of 9)
COL Item Tabulation

COL Item	Subject	DCD Subsection	FSAR Section(s)	COL Applicant (A), Holder (H), Or Both (B)
17.5-8	Operational Reliability Assurance Program Integration with Quality Assurance Program	17.5.8	17.5 17.7	A
18.2-2	Design of the Emergency Operations Facility	18.2.6.2	18.2.1.3 18.2.6.2	A
18.6-1	Plant Staffing	18.6.1	13.1.1.4 13.1.3.1 13.1.3.2 18.6 18.6.1	A
18.10-1	Training Program Development	18.10.1	13.1.1.3.2.5 13.2 18.10 18.10.1	A
18.14-1	Human Performance Monitoring	18.14	18.14	A
19.59.10-1	As-Built SSC HCLPF Comparison to Seismic Margin Evaluation	19.59.10.5	19.59.10.5	H
19.59.10-2	Evaluation of As-Built Plant Versus Design in AP1000 PRA and Site-Specific PRA External Events	19.59.10.5	19.59.10.5	B
19.59.10-3	Internal Fire and Internal Flood Analyses	19.59.10.5	19.59.10.5	H
19.59.10-4	Implement Severe Accident Management Guidance	19.59.10.5	19.59.10.5	H
19.59.10-5	Equipment Survivability	19.59.10.5	19.59.10.5	H
19.59.10-6	Confirm that the Seismic Margin Assessment analysis is applicable to the COL site	19.59.10.5	19.55.6.3 19.59.10.5	A

(a) COL Items 1.9-2 and 1.9-3 are not numbered in the DCD.

ASSOCIATED ENCLOSURES:

None