Nuclear Operating Company

South Texas Project Electric Generating Station 4000 Avenue F – Suite A Bay City, Texas 77414

November 22, 2010
U7-C-STP-NRC-100252

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville MD 20852-2738

South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Response to Request for Additional Information

Reference: Letter, Scott Head to Document Control Desk, "Response to Request for Additional Information," dated May 4, 2010, U7-C-STP-NRC-100103.

This letter supplements the previous response to Request for Additional Information (RAI) 19-31 provided in the Reference. Attachment 1 to this letter addresses the following RAI:

19-31, Supplemental Response

When a change to the COLA is indicated, it will be incorporated into the next routine revision of the COLA following NRC acceptance of the RAI response.

With this Supplemental Response, COM 19.9-4, Action 2, to establish HCLPF values for site-specific SSCs whose failure may affect the plant response to seismic events and which are not included in the analyses described in Appendix 19H, is complete. A summary of remaining commitments is attached.

If you have any questions regarding this submittal, please contact me at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

STI 32789023

D091
NRO

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

Executed on 11/22/10

Scott Head
Manager, Regulatory Affairs
South Texas Project Units 3 & 4

dws

Attachments:

1. RAI 19-31, Supplemental Response
2. Summary of Commitment 19.9-4

cc: w/o attachment except*
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RAI 19-31, Supplement 1

QUESTION:

In accordance with the ABWR DCD COL License Information Item 19.9.4, the applicant is required to evaluate the HCLPF capacities of standard plant and site-specific SSCs for updating the PRA. The staff requests that the applicant confirm that this COL License Information Item includes an update of the system model (seismic accident sequences) developed in DCD to incorporate capacity reductions due to site-specific effects (soil liquefaction, slope failure, etc.) and site-specific SSC (Ultimate Heat Sink (UHS), Service Water System (RSW) including Pumphouse, Cooling Tower and Water Reservoir), and determines whether site-specific soil failures control the seismic HCLPF capacities of SSCs associated with the seismic accident sequences. Based on the result of the update, the applicant is requested to demonstrate the sequence- and plant-level seismic HCLPF capacity. The staff needs this information to ensure that the STP's PRA-Based Seismic Margin Analysis complies with pertinent requirements of 10 CFR 52.79(a)(46) and 10 CFR 52.79(d)(1).

SUPPLEMENTAL RESPONSE:

The original response to this RAI, which was sent with Letter U7-C-STP-NRC-100103 dated May 4, 2010, committed that the High-Confidence Low Probability of Failure (HCLPF) values for site-specific SSCs (UHS/Pump House/Cooling Tower structure, RSW Piping Tunnel, Diesel Generator Oil Storage Vault and Cooling Tower fans) whose failure may affect the plant response to seismic events and which are not included in the analyses described in Appendix 19H will be established. This supplemental response provides that information.

In accordance with the DC/COL-ISG-20 (Interim Staff Guidance on Implementation of a Probabilistic Risk Assessment-Based Seismic Margin Analysis for New Reactors), HCLPF values were determined using the Conservative Deterministic Failure Margin (CDFM) approach used for seismic margin studies.

The CDFM approach is summarized in the EPRI NP-6041-SL report (A methodology for Assessment of Nuclear Power Plant Seismic Margin, Revision 1, August 1991). The approach taken for deriving the HCLPF values is consistent with the methods described in EPRI NP-6041-SL. The HCLPF values for the above listed SSCs are summarized in the Table below.

Site-specific SSC	Governing Failure Mode	Governing HCLPF	Ratio to GMRS PGA
UHS/Pump House/Cooling Tower Structure	Structural failure	**0.20 g**	**2.0**
RSW Piping Tunnel	Stability (Overturning)	**0.22 g**	**2.2**
Diesel Generator Fuel Oil Storage Vault	Stability (Sliding)	**0.26g**	**2.65**
Service Water Cooling Fans	Functional Failure During the Earthquake	**0.20 g**	**2.0**

As can be seen from the above table, the requirement specified in ISG-20 that the HCLPF value be equal to or greater than 1.67 times the site-specific Ground Motion Response Spectrum (GMRS) Peak Ground Acceleration (PGA=.098g, see COLA Part 2, Tier 2, Table 2.5S.2-21) is met.

COLA will be revised as shown below as a result of this response.

19.9.4 Confirmation of Seismic Capacities Beyond the Plant Design Basis

The following standard supplement addresses COL License Information Item 19.4.

The High-Confidence Low Probability of Failure (HCLPF) values for site-specific SSCs (UHS/Pump House/Cooling Tower structure, RSW Piping Tunnel, Diesel Generator Oil Storage Vault and Cooling Tower fans) whose failure may affect the plant response to seismic events and which are not included in the analyses described in Appendix 19H have been established, see Table 19H-1a.

In accordance with the DC/COL-ISG-20 (Interim Staff Guidance on Implementation of a Probabilistic Risk Assessment-Based Seismic Margin Analysis for New Reactors), HCLPF values were determined using the Conservative Deterministic Failure Margin (CDFM) approach used for seismic margin studies.

The CDFM approach is summarized in the EPRI NP-6041-SL report (A methodology for Assessment of Nuclear Power Plant Seismic Margin, Revision 1, August 1991). The approach taken for deriving the HCLPF values is consistent with the methods described in EPRI NP-6041-SL.

The requirement specified in ISG-20 that the HCLPF value be equal to or greater than 1.67 times the site-specific Ground Motion Response Spectrum (GMRS) Peak Ground Acceleration (PGA=.098g, see Table 2.5S.2-21) is met for all the listed site-specific SSCs.

The following additional actions will be taken (COM 19.9-4) and the FSAR updated in accordance with 10 CFR 50.71(e) based upon the results of these analyses:

1. The High-Confidence Low Probability of Failure (HCLPF) values for the important plant-specific/as-built components corresponding to the generic components defined in Subsection 19H.4.3 shall be determined. The values will be compared to the assumed HCLPF values given in Tables 19H-1 or 19I-1. This will be completed prior to fuel load.

~~2. HCLPF values for site-specific SSCs (UHS/Pump House structure, Cooling Tower, RSW Piping Tunnel, and Diesel Generator Oil Storage Vault) whose failure may affect the plant response to seismic events and which are not included in the analyses described in Appendix 19H will be established. This will be completed by September 2010 and included in the COLA at the next scheduled update in accordance with 10 CFR 50.71(e) to incorporate these HCLPF values into Appendix 19H.~~

~~3.~~2. The investigation for the potential for seismic induced soil failure at 1.67 times the PGA of the GMRS ~~site-specific SSE~~ will be completed prior to fuel load.

~~4.~~3. The system model (seismic accident sequences) developed in the DCD will be updated to incorporate capacity reductions due to site-specific effects (soil liquefaction) and site-specific SSCs (Ultimate Heat Sink (UHS), including Reactor Service Water (RSW) Pumphouse, Cooling Tower, RSW Piping Tunnel, and Diesel Generator Oil Storage Vault). Then, it will be determined whether site-specific soil failures control the seismic HCLPF capacities of SSCs associated with the seismic accident sequences. Based on the result of the update, the sequence- and plant-level seismic HCLPF capacity will be determined. This activity will be completed prior to the fuel load.

~~5.~~4. The remainder of the actions specified in Appendix 19H.5 will be completed prior to fuel load.

Add new Tables 19H-1a and 19I-1a as shown below.

Table 19H-1a: HCLPF Values for Site-Specific SSCs

Site-specific SSC	Governing Failure Mode	Governing HCLPF	Ratio to GMRS PGA
UHS/Pump House/Cooling Tower Structure	Structural failure	**0.20 g**	**2.0**
RSW Piping Tunnel	Stability (Overturning)	**0.22 g**	**2.2**
Diesel Generator Fuel Oil Storage Vault	Stability (Sliding)	**0.26 g**	**2.65**
Service Water Cooling Fans	Functional Failure During the Earthquake	**0.20 g**	**2.0**

Table 19I-1a: HCLPF Values for Site-Specific Systems and Components

Site-specific SSC	Governing Failure Mode	Governing HCLPF	Ratio to GMRS PGA
UHS/Pump House/Cooling Tower Structure	Structural failure	**0.20 g**	**2.0**
RSW Piping Tunnel	Stability (Overturning)	**0.22 g**	**2.2**
Diesel Generator Fuel Oil Storage Vault	Stability (Sliding)	**0.26 g**	**2.65**
Service Water Cooling Fans	Functional Failure During the Earthquake	**0.20 g**	**2.0**

SUMMARY OF COMMITMENT COM 19.9-4

The description of Action 2 and Action 3 is updated, and the status of Action 2 is taken to "Complete" in the following Summary of Commitment 19.9-4 table.

Commitment	Description	Completion Date
COM 19.9-4 CR 07-14004 Action 1	The High-Confidence Low Probability of Failure (HCLPF) values for the important plant-specific/as-built components corresponding to the generic components defined in Subsection 19H.4.3 shall be determined. The values will be compared to the assumed HCLPF values given in Tables 19H-1 or 19I-1	Prior to fuel load
COM 19.9-4 CR 07-14004 Action 2	HCLPF values for site-specific SSCs (UHS/Pump House structure, Cooling Tower structure, RSW Piping Tunnel, Diesel Generator Oil Storage Vault, and Cooling Tower Fans) whose failure may affect the plant response to seismic events and which are not included in the analyses described in Appendix 19H will be established	Complete
COM 19.9-4 CR 07-14004 Action 3	The investigation for the potential for seismic induced soil failure at 1.67 times the PGA of the GMRS.	Prior to fuel load
COM 19.9-4 CR 07-14004 Action 5	The system model (seismic accident sequences) developed in the DCD will be updated to incorporate capacity reductions due to site-specific effects (soil liquefaction) and site-specific SSCs (Ultimate Heat Sink (UHS), including Reactor Service Water (RSW) Pumphouse, Cooling Tower, RSW Piping Tunnel, and Diesel Generator Oil Storage Vault). Then, it will be determined whether site-specific soil failures control the seismic HCLPF capacities of SSCs associated with the seismic accident sequences. Based on the result of the update, the sequence- and plant-level seismic HCLPF capacity will be determined.	Prior to fuel load
COM 19.9-4 CR 07-14004 Action 4	The remainder of the actions specified in Appendix 19H.5.	Prior to fuel load