Nuclear Operating Company
South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

November 17, 2008
U7-C-STP-NRC-080064

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
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South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Response to Request for Additional Information

Attached are responses to NRC staff questions included in Request for Additional Information (RAI) letter number 67, related to Combined License Application (COLA) Part 2, Tier 2, Section 2.3S. Attachments 1 and 2 include responses to the RAI questions 02.03.01-12 and 02.03.01-13, which comprise a complete response to RAI letter number 67.

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

There are no commitments in this letter.

If you have any questions regarding these responses, please contact me at (361) 972-7206, or Bill Mookhoek at (361) 972-7274.

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

Executed on 11/17/08

Mark A. McBurnett
Vice President, Oversight and Regulatory Affairs
South Texas Project Units 3 & 4

rhb

Attachments:

1. Response to Question 02.03.01-12
2. Response to Question 02.03.01-13

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NRO

STI 32397102

cc: w/o attachment except*
(paper copy)

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RAI 02.03.01-12:

QUESTION:

FSAR Tier 1 Chapter 5.0 (Site Parameters) includes a site-specific supplement which shows revisions to some of the ABWR Tier 1 Site Parameter values. Why weren't these same changes made to the ABWR Tier 2 Site Parameter values presented in FSAR Tier 2 Chapter 2.0? Why doesn't FSAR Tier 1 Chapter 5.0 provide a basis for the revised ABWR Tier 1 Site Parameter values?

RESPONSE:

The changes related to site-specific departure STP DEP T1 5.0-1 in Tier 1 Table 5.0 "ABWR Site Parameters" were also made in Tier 2 Table 2.0-2 "Comparison of ABWR Standard Plant Site Design Parameters and STP 3 & 4 Site Characteristics." Therefore, please refer to Tier 2 Table 2.0-2 for clarification.

The basis for the revisions to Tier 1 Table 5.0 is provided in the departure summary for STP DEP T1 5.0-1 in COLA Part 7 and in Tier 2 Chapter 2. For example, the changes to the maximum 1% and 0% exceedance temperature values are discussed in site-specific supplemental Tier 2 Section 2.3S.1.5 "Design Basis Dry- and Wet-Bulb Temperatures."

FSAR Table 2.0-1 will be revised to reflect the changes to Tier 1 Table 5.0 as shown below.

Table 2.0-1
Envelope of ABWR Standard Plant Site Design Parameters

Site Design Parameter	ABWR Standard Plant		STP 3 & 4 Site-Specific ‡‡
Maximum Ground Water Level:	61.0 cm below grade		
Extreme Wind:	Basis Wind Speed: 177 km/h* / 197 km/h†		
Maximum Flood (or Tsunami) Level:‡	30.5 cm below grade		442.0 cm above nominal plant grade
Tornado:	– Maximum Tornado Wind Speed:	483 km/h	
	– Maximum Rotational Speed:	386 km/h	
	– Translational Velocity:	97 km/h	
	– Radius:	45.7 m	
	– Maximum Pressure Drop:	13.827 kPaD	
	– Rate of Pressure Drop:	8.277 kPa/s	
	– Missile Spectra:	Spectrum I[f]	
Precipitation (for Roof Design):	– Maximum Rainfall Rate:	49.3 cm/h**	50.3 cm/h**
	– Maximum Snow Load:	2.394 kPa	
Ambient Design Temperature:	1% Exceedance Values		***
	– Maximum: 37.8°C dry bulb		
	25°C wet bulb (coincident)		26.3°C
	26.7°C wet bulb (non-coincident)		27.3°C
	– Minimum: –23.3°C		
	0% Exceedance Values (Historical limit)		
	– Maximum: 46.1°C dry bulb		
	26.7°C wet bulb (coincident)		
	27.2°C wet bulb (non-coincident)		29.1°C
	– Minimum: –40°C		
Soil Properties:	– Minimum Static Bearing Capacity:	718.20 kPa††	
	– Minimum Shear Wave Velocity:	305 m/s‡‡	†††
	– Liquification Potential:	None at plant site resulting from site specific SSE ground motion	

Table 2.0-1
Envelope of ABWR Standard Plant Site Design Parameters (Continued)

Site Design Parameter	ABWR Standard Plant		STP 3 & 4 Site-Specific ##
Seismology:	– SSE Peak Ground Acceleration:	0.30 g *ff*	
	– SSE Response Spectra:	per RG 1.60	
	– SSE Time History:	Envelope SSE Response Spectra	
Hazards in Site Vicinity:	– Site Proximity Missiles and Aircraft	$\leq 10^{-7}$ per year	Missiles: None Aircraft Hazard: 1.16×10^{-7} per year
	– Toxic Gases	None	
	– Volcanic Activity	None	
Exclusion Area Boundary: (EAB)	– An area whose boundary has a Chi/Q less than or equal to 1.37×10^{-3} s/m^3		
Meteorological Dispersion (Chi/Q)	– Maximum 2-hour 95% EAB	1.37×10^{-3} s/m^3	
	– Maximum 2-hour 95% LPZ	4.11×10^{-4} s/m^3	
	– Maximum annual average (8760 hour) LPZ	1.17×10^{-6} s/m^3	

* 50–year recurrence interval; value to be utilized for design of non-safety-related structures only.

† 100–year recurrence interval; value to be utilized for design for safety-related structures only.

‡ Probable maximum flood level (PMF), as defined in ANSI/ANS-2.8, "Determining Design Basis Flooding at Power Reactor Sites."

f Spectrum I missiles consist of a massive high kinetic energy missile which deforms on impact, a rigid missile to test penetration resistance, and a small rigid missile of a size sufficient to just pass through any openings in protective barriers. These missiles consists of an 1800 kg automobile, a 125 kg, 20 cm diameter armor piercing artillery shell, and a 2.54 cm diameter solid steel sphere, all impacting at 35% of the maximum horizontal windspeed of the design basis tornado. The first two missiles are assumed to impact at normal incidence, the last to impinge upon openings in the most damaging directions.

** Maximum value for 1 hour over 2.6 km^2 probable maximum precipitation (PMP) with ratio of 5 minutes to 1 hour PMP of 0.32 as found in National Weather Source Publication HMR No. 52. Maximum short term rate: 15.7 cm/5 min for ABWR Standard Plant Design and 16.3 cm/5 min for STP 3 & 4.

†† At foundation level of the reactor and control buildings.

‡‡ This is the minimum shear wave velocity at low strains after the soil property uncertainties have been applied.

ff Free-field, at plant grade elevation.

*** The site-specific annual cooling, dehumidification, and enthalpy design conditions for HVAC system design are: maximum dry-bulb 32.8°C and 26.3°C wet-bulb (coincident). These values will be used as design input for determining the cooling loads for site specific HVAC design.

††† Shear wave velocities at multiple depths below the foundation of seismic Category I structures are less than 305 m/s (1000 ft/sec). The deviations from the minimum shear wave velocity requirement will be justified by site-specific soil structure interaction analysis.

‡‡‡ See FSAR Table 2.0-2 for discussion of the comparison of Reference ABWR DCD Standard Plant design parameters with the STP 3 & 4 site parameters. Unless otherwise specified by a value, the site-specific design parameter is bounded by the ABWR DCD standard plant site design parameter.

RAI 02.03.01-13

QUESTION:

FSAR Tier 1 Table 5.0 contains footnote #8 which provides the ambient design temperature conditions for site-specific HVAC design. Does "site-specific HVAC design" mean the design conditions for SSCs that are not included as part of the ABWR standard plant design? If yes, do the design parameters for site-specific SSCs belong in a table listing the ABWR Site Parameters such as FSAR Tier 1 Table 5.0; if no, what SSCs do these site-specific HVAC design conditions apply to?

RESPONSE:

FSAR Tier 1 Table 5.0 Note 8 applies to nonsafety-related HVAC design. The second sentence in Tier 1 Table 5.0 Note 8 will be clarified to read: "These values are used as design input for determining the cooling loads for nonsafety-related ~~site-specific~~ HVAC design." For additional clarification, the HVAC design strategy used at STP 3&4 is summarized below.

The safety-related HVAC systems in the ABWR standard plant are designed for the temperature values shown in Tier 1 Table 5.0 of the DCD. As explained in COLA Tier 2 Table 2.0-2, the 1% exceedance site-specific temperature values provided in Note 8 to Tier 1 Table 5.0 (which are less than or equal to the values shown in Tier 1 Table 5.0) have no impact on the safety-related portion of the ABWR standard plant design. Use of Tier 1 Table 5.0 Note 8 site-specific temperatures for the nonsafety-related portion of the standard plant design (e.g. Radwaste Building SSCs) and for the site-specific Ultimate Heat Sink (UHS) design is also explained in Tier 2 Table 2.0-2.

In summary:

1. For safety-related HVAC :

   ABWR Site Parameters 0% Exceedance Values (shown in Tier 1 Table 5.0)

   - Reactor Building Safety-Related Electrical Equipment HVAC
   - Reactor Building Safety-Related Diesel Generator HVAC
   - Control Room Habitability Area HVAC
   - Control Building Safety-Related Equipment Area HVAC

   STP 3&4 Site Characteristics 0% Exceedance Values (shown in Tier 2 Table 2.0-2)

   - Ultimate Heat Sink HVAC

2. For nonsafety-related HVAC :

STP 3&4 Site Characteristics 1% Exceedance Values (referenced in Tier 1 Table 5.0, Note 8)

- Reactor Building Secondary Containment HVAC
- Reactor Building Nonsafety-Related Equipment HVAC
- Reactor Building Reactor Internal Pump ASD HVAC
- Control Building Annex HVAC
- Turbine Building HVAC
- Turbine Building Electrical Equipment Area HVAC
- Radwaste Building HVAC
- Service Building HVAC