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December 1, 2008 U7-C-STP-NRC-080066

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

Attached are responses to NRC staff questions included in Request for Additional Information (RAI) letter number 65, related to Combined License Application (COLA) Part 2, Tier 2, Section 2.3S.1. Attachments 1 and 2 include responses to the RAI questions 02.03.01-10 and 02.03.01-11, which comprise a complete response to RAI letter number 65.

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) 972-7136, or Bill Mookhoek at (361) 972-7274.

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

Executed on 127-08

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

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Attachments:

- 1. Response to Question 02.03.01-10
- 2. Response to Question 02.03.01-11

STI 32399288

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

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RAI 02.03.01-10:

QUESTION:

This question is related to the applicant's response to RAI 02.03.01-1. The staff finds the response to RAI 02.03.01-1 incomplete.

Revise the FSAR to discuss the influence of the Gulf of Mexico and the resulting land and sea breezes on regional climatology.

Subsection C.III.2.3.1.1 of RG 1.206 states that the application should describe the general climate of the region, including potential influences from regional topography (e.g., the Gulf of Mexico and the resulting land and sea breezes) and relationships between synoptic-scale atmospheric processes and local (site) meteorological conditions (e.g., the impact of land and sea breezes on local meteorological conditions).

RESPONSE:

FSAR Subsection 2.3S.1.2 will be revised by adding a new paragraph between the fifth and sixth paragraphs as shown below:

The influence of this macro-scale circulation feature continues during the transitional seasons (spring and autumn) and winter months; however, it is occasionally disrupted by the passage of synoptic- and meso-scale weather systems. During winter, cold air masses may briefly intrude into the region with the cyclonic northerly flow that follows the passage of low-pressure systems. These systems frequently originate in the continental interior around Colorado or Canada, pick up moisture-laden air due to southwesterly through southeasterly airflow in advance of the system, and result in a variety of precipitation events that include rain, sleet, freezing rain, or mixtures, depending on the temperature characteristics of the weather system itself and the temperature of the underlying air (see Subsection 2.3S.1.3.5).

During the summer months, the Texas coastal sea breeze has a large influence on local and regional climatology near the STP site. The inland coastal plains of Texas heat rapidly during summer days causing a large temperature differential between the land and the relatively cooler Gulf of Mexico. The land/sea temperature contrast during the day creates circulation forming a sea breeze, where cooler, more saturated air pushes inland as the warm inland air rises. Also called the "gulf" breeze, it extends about 50 km inland throughout the day. During a sea breeze, cooler temperatures and higher relative humidity can be expected. The opposite occurs at night, where air over the inland plains cools rapidly while the air over the sea stays relatively warmer, thus forming a land breeze to push off-shore into the Gulf of Mexico. 1

Larger, persistent outbreaks of very cold, dry air associated with massive high-pressure systems that move southward out of Canada also occasionally affect the site region (Reference 2.3S-1). However, these weather conditions are moderated significantly by the Gulf of Mexico immediately to the south and due to heating as it passes over the land.

RAI 02.03.01-11

QUESTION:

2

This question is related to the applicant's response to RAI 02.03.01-9. The staff finds the response to RAI 02.03.01-9 incomplete.

Confirm that the ABWR 1% exceedance ambient design temperature site parameter values listed in DCD Tier 1 Table 5.0 and DCD Tier 2 Table 2.0-1 are <u>seasonal</u> exceedance values. If these ABWR site parameters are seasonal exceedance values, revise the FSAR to provide the corresponding 1% <u>seasonal</u> exceedance STP site characteristic values.

The response to RAI 02.03.01-9 states that ASHRAE guidance was used for the ambient design temperature site parameter values listed in the ABWR DCD. In the 1993 and earlier versions for the ASHRAE Fundamentals Handbook chapter on weather data, <u>seasonal</u> exceedances were used to define design conditions. This means the ABWR DCD maximum 1% exceedance site parameter values represent values that should be equaled or exceeded 1% of the total hours during the months of June through September (i.e., a total of 29 hours per year should be at or above the 1% seasonal value since there are 2928 hours in the months June through September). This also means the ABWR DCD minimum 1% exceedance site parameter values represent values since there are 2928 hours in the months June through September). This also means the ABWR DCD minimum 1% exceedance site parameter values represent values that should be equaled or exceeded 99% of the total hours during the months of December through February (i.e., a total of 22 hours per year should be at or below the 99% seasonal value since there are either 2160 hours or 2184 hours in the months December through February). (Reference: 1993 ASHRAE Handbook - Fundamentals, pages 24.1-24.2)

The STP 3 and 4 maximum and minimum 1% exceedance ambient design site characteristics presented in FSAR Table 2.0-2 are based on the 1% and 99% climatic design information contained in the 2005 ASHRAE Handbook - Fundamentals. The 2005 ASHRAE values are <u>annual</u> exceedance values, not seasonal exceedance values. This means the STP 3 and 4 maximum 1% exceedance site characteristic values represent values that have been equaled or exceeded 88 hours per year (since there are either 8760 or 8784 hours in a year) instead of 29 hours per year as intended by the ABWR DCD. This also means the STP 3 and 4 minimum 1% exceedance site characteristic values represent values that are equal or not exceeded 88 hours per year as intended by the ABWR DCD.

10 CFR 52.79(d)(1) requires that COL applicants who are referencing a standard design certification (such as STP 3 and 4) present information in their COL applicant sufficient to demonstrate that the site characteristics fall within the site parameters specified in the design certification.

RESPONSE:

The ABWR DCD does not specify whether the 1% exceedance ambient design temperature site parameter values listed in ABWR DCD Tier 1 Table 5.0 and Tier 2 Table 2.0-1 are based on

seasonal or annual exceedance values. The response to ABWR DCD RAI 451.1 stated that bounding meteorological values were chosen based on a review of the corresponding parameters used in then recently licensed plants and potential nuclear sites. The ASHRAE Fundamentals 1993 Edition is not referenced or included in any part of the ABWR DCD.

The STP site characteristics for 1% exceedance ambient design temperatures would not fall within the site parameters specified in the design certification for these parameters, whether determined on a seasonal or annual basis. For this reason, the COLA departure requests a site specific exemption from these parameters (STP DEP T1 5.0-1).

Regulatory Guide 1.206 indicates that departures from the certified reference design included in a COL application should be developed using the regulatory guides and standards in effect six months before the initial COL application submittal date. Consistent with this regulatory guide, guidance provided in Standard Review Plan (SRP) 2.3.1 Regional Climatology, and in particular in Reference 23 of SRP 2.3.1, the American Society of Heating, Refrigeration, and Air Conditioning Engineers, "2005 ASHRAE Handbook – Fundamentals," 2005, was used in developing the site ambient design temperature parameters. Consistent with this guidance, the 1% exceedance values provided in STP DEP T1 5.0-1 are from data compiled on an annual basis.

Another reason that there is no regulatory basis for changing the 1% exceedance ambient design temperature site parameter values listed in COLA Tier 1 Table 5.0 and DCD Tier 2 Table 2.0-1 (and departure STP DEP T1 5.0-1) from annual to seasonal exceedance values is that these parameters are only used for design of nonsafety-related HVAC systems. Specifically, the following nonsafety-related systems are designed using 1% exceedance values:

- 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

In contrast, all safety-related HVAC systems are designed using 0% exceedance values. Therefore, the decision to apply the current guidance and base the 1% exceedance values on annual data in COLA Tier 1 Table 5.0 and DCD Tier 2 Table 2.0-1 (and departure STP DEP T1 5.0-1) has no safety or risk significance.

No COLA revision is required as a result of this RAI response.