



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

August 11, 2009
U7-C-STP-NRC-090095

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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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 is the response to the NRC staff question included in Request for Additional Information (RAI) letter number 156 related to Combined License Application (COLA) Part 2, Tier 2, Section 1.10. This submittal completes the response to this RAI letter.

The attachment addresses the response to the RAI question listed below:

RAI 01-12

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

There are no commitments in this letter.

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

DO91
NRO

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

Executed on 8/11/09



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

rhs

Attachment:

1. Question 01-12

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

(electronic copy)

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RAI 01-12:**QUESTION:**

10 CFR 52.79(a)(31) requires that the COL applicant needs to evaluate the potential effects of construction activities of the proposed units on the safe operation of the existing units. The staff expects that the construction activities and the facilities of the proposed Units 3 and 4 could restrict the pathway of the MCR breach flood at the existing units and result in exacerbating the flooding level at units 1 and 2. However, the increasing of flood level and its consequence are not addressed in the FSAR Section 1.10. Therefore, the applicant should provide sufficient information to prove that there is no potential in increasing the flood level at the existing units. Or otherwise, the applicant should (1) include the increase of flood level in existing units as one of the potential construction hazards and (2) provide either managerial and administrative controls to protect from the potential flood hazard or evidence that the existing units 1 and 2 have already proper flood mitigation measures to cope with the increase of flood potential.

RESPONSE:

The construction activities and facilities for the proposed STP Units 3 and 4 are not expected to impact the design basis flood level that has been established for STP Units 1 and 2. This is primarily because the construction areas of Units 3 and 4, as shown in the construction facilities plan in Figure 1, are located at a distance of over 600 feet away from the approximately 2000-ft (nominal) breach opening postulated on the north embankment of the Main Cooling Reservoir (MCR) for the design basis flood level determination for Units 1 and 2, and are outside the predominant pathway of the flood wave from the breach.

The postulated MCR breach event and the related flood analysis for Units 1 and 2 are described in Subsection 2.4.4 of Revision 13 of UFSAR for Units 1 and 2 (Reference 1). As described, the prediction of the maximum flood elevation resulting from a failure of the MCR embankment was accomplished by using a two-dimensional computer model entitled "System 21" developed by the Danish Hydraulic Institute (DHI). The model simulated the propagation of flood wave and the impact on the structures of Units 1 and 2. The model predicted that the maximum wave run-up level (or instantaneous maximum water level) in the power block of Units 1 and 2 would be 50.2 ft NGVD 29 and would be caused by a critical breach width of 2000 feet (nominal) as shown in Figure 1. The maximum wave run-up would occur at the south face of the Units 1 and 2 power block structures, which is about 600 feet north of the failed embankment, at 38 seconds after the postulated breach. After impacting the power block structures of Units 1 and 2, the flood wave would continue to spread and propagate outwards to the downstream areas. Structures located on the flood path would cause wave reflections that may potentially travel back to the Units 1 and 2 power block area. However, with the Units 3 and 4 construction areas located outside the predominant path of the flood wave, at over 600 feet away from the breach opening and over 1000 feet away from the safety-related structures of existing units, there is no potential for the maximum wave run-up level at the existing units to be affected as any wave reflection from the construction facilities of Units 3 and 4 will arrive much later, more than 38

seconds, after the first wave impacted on the south face of Units 1 and 2 power block structures. In the quasi-steady condition, the backwater effect causes the maximum flood level predicted at the south face of Units 1 and 2 power block structures to be slightly higher at 50.8 ft NGVD 29, which has been adopted as the design basis flood level for the existing units. Model sensitivity test runs (Reference 1) indicate that the flow characteristics around the plant structures of Units 1 and 2 change insignificantly with changes in downstream boundary depth. For instance, the change on the water levels at the structures of Units 1 and 2 is found to be 0.3 ft or less in response to a 3-ft change in downstream water depth. Any potential increase in the water levels outside of the Units 1 and 2 power block during a breach event as a result of flow restrictions caused by the construction activities and facilities of Units 3 and 4 would be small because the area to the north and east of the Units 1 and 2 power block is wide open with few flow restricting features and generally low flow velocities, and would therefore, have minimal influence on the water levels at Units 1 and 2.

In addition, multiple levels of compounding conservatisms were employed in the Units 1 and 2 flood simulations as explained in Subsection 2.4.4 of Reference 1. Most significantly is the use of an extremely large breach width of 2000 feet (nominal). According to geotechnical and seismic evaluations discussed in Subsection 2.4.4.1 of Reference 1, the most conservative approximation of the improbable failure of the embankment would be the total, instantaneous removal of a 400-ft segment of the embankment. Using the 2000-ft breach (nominal) width in the design basis flood level determination for Units 1 and 2 introduces a “freeboard” of approximately 5.9 feet between the conservative 400-ft (nominal) breach scenario and the extremely conservative 2000-ft (nominal) breach scenario. Potential perturbations on the water levels in Units 1 and 2, during an embankment breach event, as a result of the construction activities and facilities of Units 3 and 4, if any, would be small and be sufficiently bounded by the 5.9 feet freeboard.

Since the design basis flood level for Units 1 and 2 is not expected to increase as a result of construction activities and facilities for Units 3 and 4, the existing flood mitigation measures for Units 1 and 2 are sufficient and no additional managerial and administrative controls are deemed necessary.

Reference:

1. STPEGS, Units 1 and 2 Updated Final Safety Analysis Report (UFSAR), Revision 13.

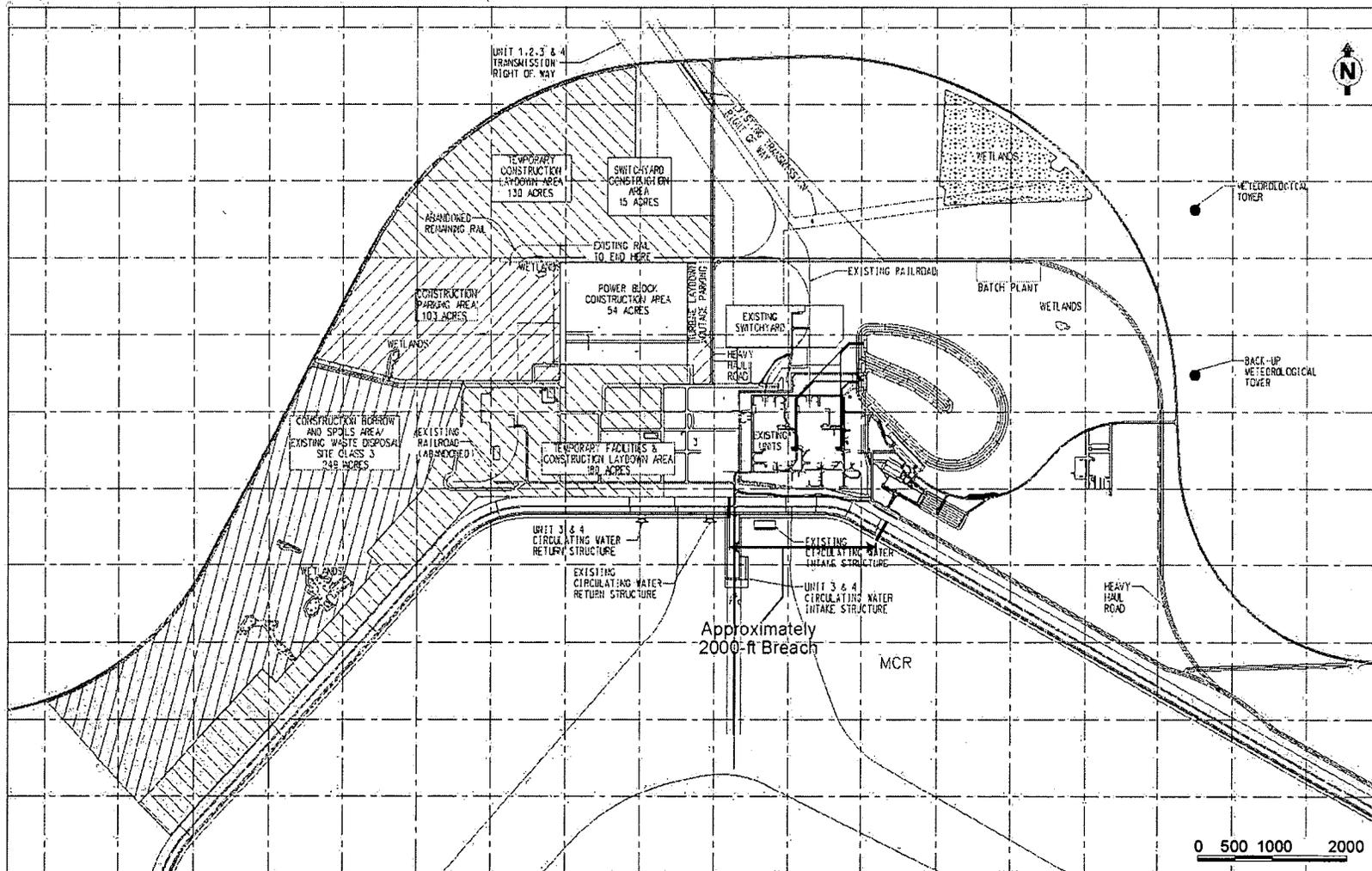


Figure 1: Postulated 2000-ft (Nominal) Breach Location Relative to Units 3 and 4 Construction Areas
(Source: modified from FSAR Figure 1.10S-1)

The following items will be added to Tables 1.10S-1 and 1.10S-2 of Subsection 1.10S of Rev. 2 of the COLA:

In Table 1.10S-1, add design basis flood level as Potential Impact under two categories -

Construction Activity Hazard	Potential Impact
Equipment and Material Laydown, Storage, Warehousing	Flooding Design Basis/Flood Protection Measures for STP Units 1 & 2
General Construction, Erection, Fabrication	Flooding Design Basis/Flood Protection Measures for STP Units 1 & 2

In Table 1.10S-2, add impact on design basis flood level to Potential Impact Hazard -

Potential Impact Hazard	Impacted SSCs
Impact on Flooding Design Basis/Flood Protection Measures for STP Units 1 & 2	Not Applicable [1]