



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

January 13, 2010
U7-C-STP-NRC-100016

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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11555 Rockville Pike
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South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Revised Responses to Requests for Additional Information

Attached are revised responses to NRC staff Requests for Additional Information (RAI) related to Combined License Application (COLA) Part 2, Tier 2, Section 9.5.

The attachments to this letter address revised responses to RAI 09.05.01-5 and RAI 09.05.01-8.

There are no new commitments in this letter.

If you have any questions, 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 1/13/2010

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

jaa

Attachments:

1. RAI 09.05.01-5, Revision 1
2. RAI 09.05.01-8, Revision 1

STI 32599133

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NRO

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

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RAI 09.05.01-5, Revision 1

QUESTION:

Operator Manual Actions:

The applicant is to clarify and describe if any operator manual actions outside of the main control room that will be credited for post-fire safe shutdown operations. The applicant is to explain why such actions are required and describe compliance with regulatory guidance for operator manual actions (e.g., RG 1.189, Rev 1 and NUREG-1852).

REVISED RESPONSE:

Reference: Letter from Scott Head to NRC dated August 12, 2009, U7-C-NRC-STP-090098 (ML092260197)

The initial response to this RAI (reference) is superseded by this revised response.

As required by Fire Protection System ITAAC (Tier 1, Section 2.15.6), a fire hazards report will exist for the as-built plant which concludes that, for each postulated fire, the plant can be shut down and maintained in a safe shut down condition. In the unlikely event the as-built fire safe shutdown analysis identifies a challenge to safe shutdown requiring mitigation by an operator manual action, then the guidance of RG 1.189 will be observed.

COLA Part 2, Tier 2, Appendix 9E, Fire Related Administrative Controls, will be revised as follows with changes indicated by gray shading:

9E.5.3 Fire Protection of Safe-Shutdown Capability

The systems required for safe shutdown are discussed in Section 7.4 and the fire protection design features for protecting safe-shutdown capability are discussed in detail in Subsection 9.5.1.

Operator Manual Actions

In the event that the final as-built fire safe shutdown analysis performed to meet ITAAC 2.15.6 identifies the need for a operator manual action(s) not previously described in the DCD, then the applicable regulatory requirements associated with operator manual actions (e.g., requirements for detection and suppression required by Section III.G.2.b and Section III.G.2.c of Appendix R) will be met. In addition the guidance provided in NUREG 1852 will be utilized to demonstrate that the operator manual actions are feasible and can be reliably accomplished.

RAI 09.05.01-8, Revision 1**QUESTION:**

The final Safe Shutdown Analysis is to include a detailed post-fire safe-shutdown circuit analysis performed and documented using a methodology similar to that described in NEI guidance document, NEI 00-01, "Guidance for Post-Fire Safe-Shutdown Circuit Analysis". The applicant should describe how this as-built analysis will be performed and documented. In addition, the applicant is to commit to having a milestone to have this safe shutdown analysis completed prior to fuel load.

REVISED RESPONSE:

Reference: Letter from Scott Head to NRC dated October 29, 2009, U7-C-STP-NRC-090187 (ML093430301)

The initial response to this RAI (reference) is superseded by this revised response.

The as-built analysis will be performed and documented as discussed in FSAR Tier 2, Subsection 9.5.1.4 and the supplemental information included in FSAR Section 9A.1 Introduction. The relevant information from FSAR Tier 2, Subsection 9.5.1.4 is copied below for convenience.

A compliance review will be conducted of the as-built design against the assumptions and requirements stated in the Fire Hazard Analysis as documented in Appendix 9B. This as-built reconciliation will include a comparison with Table 9A.6-1 (database) and Table 9A.5-2 (special cases). In addition, it will be demonstrated that multiple high impedance faults of those circuits described in Table 9A.5-2 resulting from a fire within any one fire area will not negatively impact other equipment fed from the same power source. Any non-compliance shall be documented in a Fire Hazards Report as being required and acceptable on the basis of the Fire Hazard Analysis (Appendix 9A) and the Fire Protection Probabilistic Risk Assessment (Appendix 19M). The Fire Hazards Analyses (Appendix 9A) will be updated to include the as-built information. Any noncompliance must be documented as being required and acceptable.

With regards to the spurious operation concerns identified in Nuclear Energy Institute (NEI) publication NEI-00-01, "Guidance for Post-Fire Safe Shutdown Circuit Analysis", Revision 2; due to the degree of divisional separation within the ABWR, susceptibility to spurious operations is minimized. FSAR Subsection 9.5.1.1.7 discusses the resistance of the ABWR design to spurious control actions generated from the Engineered Safety Features Logic and Control System (ELCS). Additional discussion relative to spurious control actions is contained in DCD Section 9A.5.5.

The as-built Fire Hazards Analysis will include an assessment of single and multiple spurious scenarios using an approach similar to NEI 00-01. The following text will be added as the final paragraph to FSAR section 9.5.1.1.7, Spurious Control Actions:

An approach to evaluate single and multiple spurious operations that could adversely impact post fire safe shutdown will be developed similar to the approach described in NEI 00-01, Revision 2. Due to the large degree of separation within the ABWR, a detailed circuit analysis will be required for only the relatively few special cases in which a divisional component may operate in a manner that would impact safe shutdown of complementary divisions (i.e. if spurious operation of a Division I piece of equipment could affect shutdown for a fire area requiring use of Division II or Division III systems). Section 9A.5.5 identifies cases where cables from more than one division are located in relatively close proximity to one another, and the components from the circuits which utilize these cables will form a sub-set of components that will require a detailed electrical circuit analysis. For the resultant sub-set of components, an electrical circuit analysis will be performed consistent with the present industry knowledge of fire-induced cable failures. The following configurations will be considered for power, control, and instrumentation circuits whose fire-induced failure could initiate a spurious operation that would cause a flow diversion, loss of coolant, or other scenario that could significantly impact the ability to achieve and maintain hot shutdown:

A. For any individual multiconductor cable (thermoset or thermoplastic), failure, that may result from intracable shorting of any possible combination of conductors within the cable, will be postulated to occur concurrently regardless of number. For cases involving the potential damage of more than one multiconductor cable, it will be assumed that a maximum of two cables will be damaged.

B. For any two multiconductor thermoplastic cables, failures, of any combination of conductors that may result from intercable shorting (i.e., between two cables) will be postulated to occur concurrently.

C. For cases in A. or B. above involving direct current (DC) control circuits, the potential spurious operation will be considered when the source and target conductors are each located in the same multiconductor cable (even if the spurious operation requires two concurrent hot shorts of the proper polarity, i.e., plus-to-plus and minus-to-minus).

D. The isolation valves at high-pressure/low-pressure interfaces will be evaluated to ensure that three phase power cables are not subject to three-phase hot shorts that could cause the valves to open.

Postulated multiple spurious operation scenarios involving more than a total of four components or requiring consideration of sequentially selected cable faults of a prescribed type, at a prescribed time, in a prescribed sequence in order for the postulated scenario to occur are not considered credible. In consideration of the above, and to minimize the risk of fire induced cable failures, the power, control and instrumentation cables are generally specified for STP 3 & 4 with a thermoset insulation material.

Operator manual actions may be considered as a potential resolution strategy for single and multiple spurious scenarios. RAI 09.05.01-5 Revision 1 provides the methodology that shall be implemented for evaluation of an operator manual action as a credited post-fire safe shutdown operation.

As discussed in FSAR Tier 2, Subsection 9E.8.6, the elements of the Fire Protection Program that are necessary to protect new fuel from the adverse affects of a fire in the new fuel storage area or adjacent areas will be implemented prior to the receipt of new fuel. Other required elements of the Fire Protection Program will be implemented prior to initial fuel load.