

April 8, 2010

Mr. Scott Head, Manager  
Regulatory Affairs  
South Texas Project Nuclear Operating Company  
P. O. Box 289  
Wadsworth, TX 77483

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 401 RELATED TO  
THE SRP SECTION 6.02 FOR THE SOUTH TEXAS COMBINED LICENSE  
APPLICATION

Dear Mr. Head:

By letter dated September 20, 2007, South Texas Project Nuclear Operating Company (STPNOC) submitted for approval a combined license application pursuant to 10 CFR Part 52. The U.S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 30 days of the date of this letter. If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes.

Mr. Scott Head

-2-

If you have any questions or comments concerning this matter, you may contact me at 301-415-2809 or [Paul.Kallan@nrc.gov](mailto:Paul.Kallan@nrc.gov), or you may contact George Wunder at 301-415-1494 or [George.wunder@nrc.gov](mailto:George.wunder@nrc.gov).

Sincerely,

**/RA/**

Paul Kallan, Senior Project Manager  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-012  
52-013  
eRAI Tracking No: 4577

Enclosure:  
Request for Additional Information

cc: William Mookhoek

Mr. Scott Head

-2-

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Enclosure:  
Request for Additional Information

cc: William Mookhoek

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**NRO-002**

OFFICE	SBCV/TR	SBCV/BC	NGE2/PM	NGE2/L-PM
NAME	GMarkar*	MNorato*	PKallan*	GWunder*
DATE	3/29/10	3/29/10	4/8/10	3/29/10

\*Approval captured electronically in the electronic RAI system.

**OFFICIAL RECORD COPY**

## Request for Additional Information No. 4577 Revision 0

**South Texas Project Units 3 and 4  
South Texas Project Nuclear Operating Co  
Docket No. 52-012 and 52-013  
SRP Section: 06.02.02 - Containment Heat Removal Systems  
Application Section: 6.2**

QUESTIONS for Component Integrity, Performance, and Testing Branch 2 (ESBWR/ABWR Projects) (CIB2)

### 06.02.02-27

The staff reviewed Supplemental response #2 to RAI 06.02.02-11 and determined the response is not complete. The aluminum corrosion calculations and solubility data used to analyze chemical effects were based on boron-containing solutions. These analysis tools do not apply directly to boron-free BWR coolant. In addition, the analysis did not include all relevant chemical debris sources. Therefore, the staff requests the following information:

- Analysis of aluminum chemical effects using corrosion and solubility data applicable to the post-LOCA ECCS fluid at STP 3&4.
- If the pH is expected to vary with time during the postulated 30-day post-LOCA period, provide an analysis of the chemical effects based on the predicted transient or explain how your approach is bounding. (For example, addition of sodium pentaborate from the standby liquid control system would increase pH over some time period.)
- Discuss your plans to address chemical effects not considered in the initial analysis, such as:
  - Constituents dissolved from concrete in the coatings zone of influence (ZOI), since the NRC coatings guidance assumes removal of the coating within the ZOI. Concrete dissolution generates elements that can form chemical precipitates, including precipitates containing aluminum (e.g., sodium aluminum silicate).
  - Zinc, which corroded at a low rate in testing related to PWRs but would be expected to corrode at higher rates in neutral and acidic solutions. This may result in levels of zinc particulate, zinc corrosion products, and zinc in solution that could contribute to other chemical precipitates.
  - Corrosion products (iron oxide) resulting from iron or steel corrosion prior to or following a LOCA
  - Any other material present in containment that would be exposed to the post-LOCA fluid and has not been addressed by an integrated chemical effects analysis for the ABWR environment.
- If your analysis predicts the formation of chemical debris, discuss your plans for addressing the impact of this debris on the ECCS strainers and fuel assemblies (e.g., integrated strainer testing or a simplified approach that relies on significant clean screen area).

Enclosure

