

## PMSTPCOL PEmails

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**From:** Eudy, Michael  
**Sent:** Monday, December 07, 2009 5:15 PM  
**To:** Stillwell, Daniel; Hilsmeier, Todd; Pohida, Marie  
**Cc:** STPCOL  
**Subject:** FW: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 296 RELATED TO SRP SECTIONS 19 FOR THE SOUTH TEXAS PROJECT COMBINED LICENSE APPLICATION  
**Attachments:** STP RAI Letter 296.doc; image003.jpg  
**Importance:** High

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**From:** Keith, Felicia  
**Sent:** Monday, December 07, 2009 5:14 PM  
**To:** Bill Mookhoek; Chappell, Coley; Scott Head  
**Cc:** Eudy, Michael  
**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 296 RELATED TO SRP SECTIONS 19 FOR THE SOUTH TEXAS PROJECT COMBINED LICENSE APPLICATION

TO: Scott Head

FROM: Michael Eudy

DATE: December 7, 2009

ADAMS Accession No. ML093410233

Felicia Keith, Secretary  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors  
301-415-2950  
[Felicia.Keith@nrc.gov](mailto:Felicia.Keith@nrc.gov)



**Hearing Identifier:** SouthTexas34Public\_EX  
**Email Number:** 1883

**Mail Envelope Properties** (9E28710E0B702149AEC66397286364401AA89AD112)

**Subject:** FW: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 296 RELATED TO SRP SECTIONS 19 FOR THE SOUTH TEXAS PROJECT COMBINED LICENSE APPLICATION  
**Sent Date:** 12/7/2009 5:14:46 PM  
**Received Date:** 12/7/2009 5:14:47 PM  
**From:** Eudy, Michael

**Created By:** Michael.Eudy@nrc.gov

**Recipients:**  
"STPCOL" <STP.COL@nrc.gov>  
Tracking Status: None  
"Stillwell, Daniel" <dwstillwell@STPEGS.COM>  
Tracking Status: None  
"Hilsmeier, Todd" <Todd.Hilsmeier@nrc.gov>  
Tracking Status: None  
"Pohida, Marie" <Marie.Pohida@nrc.gov>  
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	600	12/7/2009 5:14:47 PM
STP RAI Letter 296.doc		66554
image003.jpg	4368	

**Options**  
**Priority:** High  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

December 7, 2009

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 296 RELATED TO  
SRP SECTIONS 19 FOR THE SOUTH TEXAS PROJECT COMBINED  
LICENSE APPLICATION

Dear Mr. Head

By letter dated September 20, 2007, STP Nuclear Operating Company (STP) 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 **45** 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.

S. Head

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If you have any questions or comments concerning this matter, I can be reached at 301-415-3104 or by e-mail at [Michael.Eudy@nrc.gov](mailto:Michael.Eudy@nrc.gov) or you may contact George Wunder at 301-415-1494 or by e-mail at [George.Wunder@nrc.gov](mailto:George.Wunder@nrc.gov).

Sincerely,

**/RA/**

Michael Eudy, Project Manager  
ABWR Projects Branch  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-012  
52-013

eRAI Tracking Nos. 4049

Enclosure:  
Request for Additional Information

cc: William Mookhoek  
Bill Stillwell

S. Head

-2-

If you have any questions or comments concerning this matter, I can be reached at 301-415-3104 or by e-mail at [Michael.Eudy@nrc.gov](mailto:Michael.Eudy@nrc.gov) or you may contact George Wunder at 301-415-1494 or by e-mail at [George.Wunder@nrc.gov](mailto:George.Wunder@nrc.gov).

Sincerely,

**/RA/**

Michael Eudy, Project Manager  
ABWR Projects Branch  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-012  
52-013

eRAI Tracking Nos. 4049

Enclosure:  
Request for Additional Information

cc: William Mookhoek  
Bill Stillwell

Distribution:  
PUBLIC  
NGE 1/2 R/F  
GWunder, NRO  
MEudy, NRO  
BAbeywickrama, NRO  
MPohida NRO  
LMrowca, NRO  
SKirkwood, OGC  
RidsNroDcipChpb  
RidsNroDnrlNge2

**ADAMS Accession No.: ML093410233**

NRO-002

OFFICE	SPLA/TR	SPLA/BC	NGE2/PM	NGE2/L-PM
NAME	MPohida	LMrowca	MEudy	GWunder
DATE	11/19/09	11/20/09	12/7/09	12/2/09

**\*Approval captured electronically in the electronic RAI system.**

**OFFICIAL RECORD COPY**

**Request for Additional Information No. 4049 Revision 3**

**South Texas Project Units 3 and 4  
South Texas Project Nuclear Operating Co  
Docket No. 52-012 and 52-013  
SRP Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation  
Application Section: 19.**

QUESTIONS for PRA Licensing, Operations Support and Maintenance Branch 1 (AP1000/EPR Projects) (SPLA)

**19-30**

At the staff audit of the South Texas Projects Unit 3 and Unit 4 PRA on September, 23, 2009, the staff reviewed the calculation, "External Flooding Event Breach of the Main Cooling Reservoir (MCR)". The calculation was dated April 20, 2009 and was referenced in the applicant's RAI response to 19.01-10 which discussed the PRA for external flooding due to MCR breach. The staff then reviewed Section 2.4S.4.1.2 of the FSAR which evaluates postulated failure of the MCR. Based on staff review of these two documents, the staff requests that the applicant address the following questions:

1. Section 2.4S.10 of the FSAR states: "All safety-related facilities in the power block are designed to be water tight at or below elevation 40.0 ft MSL. All water tight doors and hatches are normally closed under administrative controls and open outward. ... An MCR embankment breach near the STP 3 & 4 power block area would not provide sufficient time for implementation of emergency operating procedures or flood warning systems. As all water-tight doors and hatches are to remain in a closed position, no emergency operating procedures or plant Technical Specifications (plant shutdown), which are discussed in Subsection 2.4S.14, are required for implementation of flood protection measures." The MCR external flooding PRA analysis described in Section 19R of the FSAR is not consistent with the above statement in that under Section 19R the water tight door between the service building and the control building is normally open and takes credit for emergency operating procedures and operator action to close this water tight door during MCR breach. Please clarify this inconsistency and revise the FSAR as appropriate.
2. In STP's response to RAI 19.01-10, STP stated that the overtopping, slope protection erosion, and sliding failure modes are not applicable to the MCR design. Please justify why these failure modes are not applicable to the MCR design, and provide the basis for the reductions in dam failure frequency as a result of excluding these failure modes. In your discussion on why the MCR cannot overtop, please include the following information:
  - a. The maximum pumping capacity to the MCR from the Colorado River and the maximum discharge capacity to the Colorado River.
  - b. The frequency at which the MCR levels are monitored and how this information is alarmed/displayed in the control room.
  - c. The procedures used to control MCR level, and the response procedures if MCR level becomes too high.
3. Section 19R.7.4.1 of the FSAR states: "A breach of the main cooling reservoir could occur suddenly or progress over many minutes." This section of the FSAR also discusses other dam breaches noting that the failure time of most breaches is 15 minutes to 1 hour, and some breaches become fully developed in as little as 6 minutes. A sudden breach of the MCR (e.g.,

seismic liquidification) may not provide sufficient time for the operator to close the water tight door between the service building and the control building (i.e., basic event OCD = 1.0). Please address the external flooding analysis due to sudden MCR breaches.

4. Please assess the impact of Category 4 and 5 hurricanes on the frequency of MCR breach. Address how a storm surge from such a hurricane would affect the MCR levee system and the exterior side of the reservoir that has no liner.
5. Please provide your data sources for dam failures that include infantile dam's failures that were used to support your reduction factor for satisfactory operation of the MCR for five years. Based on staff review of dam failures from the National Performance of Dams Program (NPDP), developed by the Department of Civil and Environmental Engineering at Stanford University, including the Taum Sauk dam failure in 2005, the inclusion of infantile dam failures would result in generic dams break frequencies greater than  $1E-4$  per year. In addition, it appears that the reduction you credited for satisfactory operation of the MCR seems to be double-counting. Please address these issues in your response.
6. Please justify the factor of three reduction you used, based on the assumption that the location of a breach is limited to a thousand foot section. Please explain why any thousand foot section in the 16,250 foot perimeter facing the safety related buildings can not cause a flood.
7. Please assess the impact of a MCR breach during cold shutdown and refueling if secondary and primary containment has open penetrations to facilitate maintenance. Please consider the elevations of these penetrations in your assessment.
8. Please document if the assumptions, insights, or conclusions in the referenced calculation change given the revised MCR breach evaluation in Section 2.4.4.1.2 of the FSAR.
9. The staff needs more information on the probability (basic event- OCD) of the operator failing to close the single normally open flood door between the service building and the control building. To justify the human error probability 0.1, please provide the following information:
  - a. The criterion that you will supply to the guard at security house to determine if the MCR has breached.
  - b. The process by which these procedures will be controlled.
  - c. The potential for ambiguous visual indication on the occurrence of a MCR breach including: the occurrence of local ponding due to heavy rains and the ability of the guard to identify increased flood levels due to reduced visibility during heavy rain storms, fog, etc., particularly at night time.
  - d. Section 19R.7.5.1 of the FSAR states: "...a minimum available warning time from water at the South Security Gate House, approximately El. 32.0' MSL, to water at the entrances to safety-related buildings, El. 35.0' MSL. At least 30 minutes is available for operator action to close the normally open access door between the Service Building and the Control Building once water reaches the South Security Gate House." Please sufficiently justify the operator action time of at least 30 minutes.

