



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

November 24, 2008  
NOC-AE-08002363  
10CFR50.90

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498, STN 50-499  
Supplement to Proposed Amendment to Technical Specification 3.3.1 Required Action for Inoperable Extended Range Neutron Flux Instrumentation (TAC Nos. MD8003, MD8004)

- Reference:
1. Letter dated September 25, 2008 from Charles T. Bowman, STPNOC, to NRC Document Control Desk, "Revision 2 to Proposed Amendment to Technical Specification 3.3.1 Required Action for Inoperable Extended Range Neutron Flux Instrumentation and Technical Specification 3.4.1.4.2 Action c" (NOC-AE-08002351, ML082770068)
  2. Letter dated October 16, 2008 from Jack N. Donohew, NRC, to Mr. Edward D. Halpin, STPNOC, "South Texas Project, Units 1 and 2 – Issuance of Amendments, RE: Extended Range Neutron Flux Instrumentation and Technical Specification 3.4.1.4.2." (ST-AE-NOC-08001812, ML082810286)

The STP Nuclear Operating Company (STPNOC) submits this supplement to the revised License Amendment Request (LAR) listed above as Reference 1.

This supplement responds to NRC staff questions presented to STPNOC and includes revised wording for the required action for two inoperable extended range neutron flux instrument channels. The revised wording does not change the intent of the required action. The STPNOC Plant Operations Review Committee has reviewed and concurred with the proposed change to the Technical Specifications (TS). The no significant hazards consideration determination in the application remains unaffected by this change.

By Reference 2, STPNOC received approval of the proposed revision to TS 3.3.1 for the required action for one inoperable extended range neutron flux instrument channel.

STPNOC requests approval of the proposed required action for two inoperable extended range neutron flux instrument channels by January 31, 2009. The requested date should support the time needed to review of the supplemental information and approve the request. Upon approval, STPNOC requests 90 days to implement the amendment.

STI: 32391587

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In accordance with 10 CFR 50.91(b), STPNOC is notifying the State of Texas of this license amendment request supplement by providing a copy of this letter and its attachments.

If there are any questions regarding the proposed amendment and this supplement, please contact Ken Taplett at (361) 972-8416 or me at (361) 972-7454.

There are no commitments in this submittal.

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

Executed on November 24, 2008.  
Date



G. T. Powell  
Vice President,  
Engineering

kjt/

Attachments:

1. Response to Request for Additional Information
2. Revised Technical Specification Mark up

cc:

(paper copy)

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**Attachment 1**

**Response to Request for Additional Information**

## **Response to Request for Additional Information**

Reference: Letter dated September 25, 2008 from Charles T. Bowman, STPNOC, to NRC Document Control Desk, "Revision 2 to Proposed Amendment to Technical Specification 3.3.1 Required Action for Inoperable Extended Range Neutron Flux Instrumentation and Technical Specification 3.4.1.4.2 Action c"

- A. The following information is provided to address NRC staff questions. It supplements the summary of the engineering evaluation, previously provided in the referenced letter, performed to determine that securing unborated water sources within two hours is acceptable to preclude a potential return to criticality.**

The evaluation was done to ensure that no single failure or mis-position of a valve in a boron dilution flow path would have the potential to establish conditions for criticality before all unborated water sources were secured in two hours.

The evaluation considered all potential paths of unborated water sources to the reactor coolant system. The evaluation only postulates dilution of the reactor coolant system from one path. The engineering evaluation assumption is consistent with the Updated Final Safety Analysis Report (UFSAR), Chapter 15.4.6 safety analysis, which only assumes dilution of the reactor coolant system from one path.

The most limiting flow path is from the reactor makeup water system to the reactor coolant system. This path is analyzed in the UFSAR Chapter 15.4.6 safety analysis and assumes that the operator will isolate this path within 15 minutes from receiving a neutron flux multiplication alarm. Fifteen minutes was demonstrated to be adequate time to isolate the flow path from the reactor makeup water system. The engineering evaluation, supporting this application to revise the Technical Specifications, conservatively assumes the initiation of a boron dilution event coincident with the loss of both channels of the neutron flux multiplication alarm. The engineering evaluation assumes that the action to isolate the flow path from the reactor makeup water system starts upon the loss of both channels of the alarm.

Additional flow paths evaluated involve dilution to the volume control tank in the chemical volume and control system. The evaluation considered the dilution paths and demonstrated that the reactor would not return to criticality within the two hours. Two hours was evaluated as adequate time to isolate these postulated flow paths.

The evaluation assumes only one source of dilution. The engineering evaluation assumes that the action to isolate all the possible flow paths starts upon the loss of both channels of the neutron flux multiplication alarm.

As an example, if the dilution is from the reactor makeup water system, the dilution will be isolated when the valves in the flow path are closed. Although action will continue to ensure the valves in all flow paths are secured within two hours, a second dilution flow path is not postulated to be open.

On the other hand, if the dilution is from a flow path other than the reactor makeup water system, the valves in the flow paths from the reactor makeup water system are still isolated within 15 minutes. The action to secure the other dilution flow path valves is taken coincidentally with the action to isolate the flow path from the reactor makeup water system such that all dilution paths are secured within two hours of the loss of both channels of the neutron flux multiplication alarm to preclude a return to criticality.

The mixing model used in the evaluation above is the same model used to perform the UFSAR Chapter 15.4.6 analysis.

The analysis determined the most limiting dilution volume needed to achieve criticality for Modes 3, 4 and 5A. For future core designs, the limiting volume will be evaluated as part of core reload design process that is controlled by a plant procedure for ensuring that analytical assumptions remain valid for future core designs.

- B. The following discussion is provided to clarify information, previously provided in the referenced letter, regarding suspension of operations involving positive reactivity change that is required by the proposed required action (i.e. ACTION 5.b) for the loss of two channels of extended range neutron flux instrumentation. This additional clarification is not in response to a question from the staff.**

ACTION 5.b requires the immediate suspension of all operations involving positive reactivity changes because the loss of function for the extended range neutron flux monitor results in the potential for a reactivity change that could challenge the operators' ability to identify a loss of required shutdown margin. This action restricts operations that could challenge the shutdown margin including the suspension of sluicing and flushing operations of the Chemical Volume and Control System cation bed or mixed bed demineralizers. As a conservative measure, procedures will require suspension of sluicing and flushing operations whenever one channel of extended range neutron flux monitor is inoperable. Upon approval of the licensing amendment request, STPNOC plans to revise the TS Bases to capture this clarification.

- C. The NRC staff expressed concern regarding the language in the proposed ACTION 5.b in the referenced letter that included reference to Chapter 15.4.6 of the Updated Final Safety Analysis Report (UFSAR). Since changes to the UFSAR are a licensee-controlled process, the staff was concerned that the referenced UFSAR section could be changed by the licensee, and thus the TS could be changed without prior NRC review and approval pursuant to 10 CFR 50.90.**

To address the staff's concern, the proposed ACTION 5.b is revised to delete the reference to the UFSAR. In addition, the words "*the reactor makeup water system to*" are added to the ACTION to clarify the flows paths that are required to be isolated within 15 minutes. The revised ACTION is provided as Attachment 2.

The ACTION 5.b.1 to secure each unborated water flow path remains the same with one editorial change. The change is the word "from" is revised to the word "to" for clarity because the unborated water flows to the reactor coolant system. The planned TS Bases provides the information necessary to understand the actions required to isolate and secure the unborated water flow paths. See Attachment 2 to the Enclosure of the referenced letter.

ACTION 5.b is reformatted to add clarity to the required actions. The words "Perform either of the following" is added to distinguish that alternative actions ACTION 5.b.1 and 5.b.2 only apply to the ACTION for restoring at least one channel to OPERABLE status. The intent of ACTION 5.b remains unchanged. If the number of OPERABLE channels is two less than the minimum channels OPERABLE requirement, then three actions are required:

- All operations involving positive reactivity changes must be suspended immediately, and
- The unborated water flow paths from the reactor makeup system to the reactor coolant system must be isolated within 15 minutes, and
- At least one channel must be restored to an OPERABLE status within 1 hour.

If the third ACTION can not be completed, then each unborated water flow path to the reactor coolant system must be secured within 2 hours by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured AND the SHUTDOWN MARGIN must be verified within limits within 4 hours and once per 12 hours thereafter.

This revision does not change the intent of the proposed ACTION. Therefore, the no significant hazards consideration determination in the application remains unaffected by this change.

Attachment 2 reflects the change approved by License Amendments 187 to Unit 1 and 174 to Unit 2 for one inoperable channel of extended range neutron flux instrumentation. The letter "a" is added to the ACTION for one inoperable channel to distinguish it from the proposed

**ACTION** for two inoperable channels. This is editorial and was part of the application provided in the referenced letter.

Attachment 2 provides two Technical Specification pages. The proposed change for approval only appears on Page 3/4 3-7. Page 3/4 3-8 is a new page because some specifications previously found on Page 3/4 3-7 moved to Page 3/4 3-8 due to the proposed changes on Page 3/4 3-7. Upon approval of this request, it will be necessary to issue both pages.

## **Attachment 2**

### **Revised Technical Specification Mark up**

**Two Pages – Table 3.3-1 (Continued)**

**Page 3/4 3-7**

**Page 3/4 3-8**

TABLE 3.3-1 (Continued)  
ACTION STATEMENTS (Continued)

- ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:
- a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint, and
  - b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes. Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

- ACTION 5 -
- a. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 72 hours, or immediately suspend all operations involving positive reactivity changes.  
  
Note: Plant temperature changes or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

- b. With the number of OPERABLE channels two less than the Minimum Channels OPERABLE requirement,

Immediately suspend all operations involving positive reactivity changes,

AND

Within 15 minutes isolate unborated water flow paths described in Chapter 15.4.6 of the Updated Final Safety Analysis from the reactor makeup water system to the reactor coolant system,

AND

Perform either of the following:

Restore at least one channel to OPERABLE status within 1 hour,

OR

1. Within 2 hours secure each unborated water flow path from to the reactor coolant system by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured,

AND

2. Within 4 hours and once per 12 hours thereafter, verify SHUTDOWN MARGIN is within limits.

Note: Operations involving plant temperature changes may proceed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

TABLE 3.3-1 (Continued)  
ACTION STATEMENTS (Continued)

**No Changes on this  
Page**

- ACTION 6 -** With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
- a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.  

Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.
  - b. For Functional Units with no installed bypass test capability,
    - 1. The inoperable channel is placed in the tripped condition within 72 hours, and
    - 2. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels per Specification 4.3.1.1.
- ACTION 7 -** (Not Used)
- ACTION 8 -** With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.
- ACTION 9 -** With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.
- ACTION 9A -**
- a. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 24 hours restore the inoperable channel to OPERABLE status, or apply the requirements of the CRMP, or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.
  - b. With the number of OPERABLE channels more than one less than the Minimum Channels OPERABLE requirement, within 1 hour restore at least one inoperable channel to OPERABLE status or apply the requirements of the CRMP, or be in at least HOT STANDBY within the next 6 hours.
- ACTION 10 -** With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor Trip System breakers within the next hour.
- ACTION 11 -** (Not Used)
- ACTION 12 -** With one of the diverse trip features (undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 9. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.