Nuclear Operating Company

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

September 25, 2008
NOC-AE-08002351
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
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 (TAC Nos. MD8003, MD8004)

Reference:
1. Letter dated January 28, 2008, from Charles T. Bowman, STPNOC, to NRC Document Control Desk, "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-07002234, ML080350037)
2. Letter dated May 27, 2008, from Mohan C. Thadani, NRC, to James J. Sheppard, STPNOC, "South Texas Project, Units 1 And 2 - Request For Additional Information Re: License Amendment Request Related To Inoperable Extended Range Neutron Flux Instrumentation" (ML0814006470)
3. Letter dated July 28, 2008, from Charles T. Bowman, STPNOC, to NRC Document Control Desk, "Revision 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-08002319, ML082180230)

The STP Nuclear Operating Company submits this revised License Amendment Request (LAR) for approval by the Nuclear Regulatory Commission (NRC). This revision responds to NRC staff questions presented to STPNOC.

In Reference 1, STP Nuclear Operating Company (STPNOC) submitted a request for an amendment to the South Texas Project Operating Licenses NPF-76 and NPF-80 to establish an Action in Technical Specification (TS) 3.3.1, "Reactor Trip Instrumentation" for two inoperable channels of extended range neutron flux instrumentation and proposed a minor correction to TS 3.4.1.4.2 ACTION c. The NRC staff responded with the request for additional information (RAI) in Reference 2. Reference 3 was STPNOC's response to the staff's RAI and included changes to the amendment request.

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Upon further review, the NRC staff informed STPNOC that the staff had further questions regarding the proposed Action for two inoperable channels of extended range neutron flux instrumentation. This submittal responds to the staff's questions and includes changes to the amendment request.

TS 3.3.1 ACTION 5 applies for the extended range neutron flux instrumentation in MODEs 3, 4, and 5. The TS establishes action for one inoperable channel of extended range neutron flux, but has no action for two inoperable channels; therefore, TS 3.0.3 applies in MODE 3 and MODE 4. However, there is no action for two inoperable channels in MODE 5 and the action for one inoperable channel is not adequate. The proposed action is based on NUREG-1431, "Standard Technical Specifications - Westinghouse Plants", with modifications consistent with the current STP TS. The changes made in response to the NRC RAI (Reference 3) and in the changes requested in this letter do not affect the determination of no significant hazards provided in the original LAR (Reference 1).

The Enclosure provides a technical and regulatory evaluation of the changes. Proposed TS page markups are included as attachments to the Enclosure.

STPNOC requests approval by October 2, 2008. The requested date supports the STP Unit 2 Fall outage. Timely approval of the change is requested to afford STP adequate operational flexibility should a channel of extended range neutron flux instrumentation become inoperable during shutdown or startup for this outage.

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

The STPNOC Plant Operations Review Committee has reviewed and concurred with the proposed change to the Technical Specifications.

If there are any questions regarding the proposed amendment, 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 September 25, 2008.
Date

Charles T. Bowman
General Manager, Oversight

kjt/

Enclosure: Evaluation of the Proposed Change

cc:
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ENCLOSURE

Evaluation of the Proposed Change

Subject: Revision 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

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1. Technical Specification Page Markup
2. Technical Specification Bases Page Insert
3. NRC Request for Additional Information

ENCLOSURE

1.0 SUMMARY DESCRIPTION

This submittal is a revision to the STPNOC application dated January 28, 2008 and July 28, 2008. The STPNOC response to the NRC RAI of May 27, 2008 is attached to this enclosure for completeness.

In MODE 3, 4, and 5, the STP safety analysis relies on the extended range neutron flux instrumentation to alert the operator to unexpected increases in reactivity from boron dilution with at least 15 minutes to take action before loss of shutdown margin. Technical Specification 3.3.1, "Reactor Trip Instrumentation", provides an action for one inoperable channel of the extended range neutron flux instrumentation, but has no action for loss of both channels (i.e., loss of function). In MODE 3 and MODE 4, TS 3.0.3 applies for this condition. However, TS 3.0.3 does not apply in MODE 5 and the TS 3.3.1 action for one inoperable channel is not adequate. STPNOC proposes to revise the action for the extended range neutron flux instrumentation to address the condition for two inoperable channels by requiring isolation of boron dilution pathways and more frequent monitoring of reactor coolant system (RCS) boron concentration. STPNOC proposes that the action apply in MODE 3 and MODE 4 because it is the appropriate action to address the specific condition, rather than TS 3.0.3.

Although the STP boron dilution mitigation design does not involve automatic actuation of valves from the source range monitor as described in the Westinghouse NUREG-1431 Limiting Condition for Operation (LCO) 3.3.9, "Boron Dilution Protection System", STPNOC has based the proposed actions on the required action from that TS.

STPNOC also proposes to revise ACTION c. of TS 3.4.1.4.2, "Reactor Coolant System, Cold Shutdown – Loops Not Filled" to change the requirement for verification of boron concentration to verification of shutdown margin.

2.0 DETAILED DESCRIPTION

Specifically, STP proposes to revise TS 3.3.1, Table 3.3-1, ACTION 5 to make the existing requirement ACTION 5.a and add ACTION 5.b to address the condition for two inoperable channels of extended range neutron flux instrumentation (Item 7 in Table 3.3-1), as shown below. The detailed description has been revised in response to the NRC request for additional information (RAI) in Attachment 3 and in response to NRC staff questions provided to STPNOC during phone conversations conducted subsequent to the July 28, 2008 revised submittal.

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 Report from the reactor coolant system, and restore at least one channel to OPERABLE status within 1 hour, or

   1. Within 2 hours secure each unborated water flow path from 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

The change to divide ACTION 5 into 5.a and 5.b is an administrative change to accommodate the new requirements established in ACTION 5.b.

ACTION 5.a includes a new proposed completion time of 72 hours to restore the inoperable channel to OPERABLE status. The completion time is consistent with the completion time required in NUREG-1431, LCO 3.3.9, ACTION A. The existing allowance for temperature changes or boron dilution provided the change is accounted for in the calculated SHUTDOWN MARGIN is restated as a note, which is an administrative format change.

ACTION 5.b is a new requirement to address the condition of both channels of extended range neutron flux monitoring instrumentation being inoperable. The TS did not previously have an action for this condition. The loss of function for the neutron flux extended range monitor results in the potential for a reactivity change that could challenge the operators' ability to identify a loss of required shutdown margin and this action restricts operations that could challenge the shutdown margin. It requires immediate suspension of operations involving positive reactivity changes, and within 15 minutes isolation of the unborated flow paths described in Chapter 15.4.6 of the Updated Final Safety Analysis Report to the reactor coolant system, and at least one channel to be restored to OPERABLE status within 1 hour or within 2 hours apply the requirements of ACTION 5.b.1 to secure each unborated water flow path from 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 within 4 hours apply the requirements of 5.b.2 to verify shutdown margin is within limits. The action is modified by a note that allows temperature changes provided the change is accounted for in the calculated SHUTDOWN MARGIN. These actions are consistent with NUREG-1431, LCO 3.3.9, ACTION B with modifications explained below.

ACTION 5.b requires isolation of sources of unborated water flow paths from the coolant system within 15 minutes. Completion of this action isolates those flow paths described in Chapter 15.4.6 of the Updated Final Safety Analysis Report to mitigate a boron dilution event.

ACTION 5.b.1 requires securing each unborated water flow path from 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 within two hours. Completion of this ACTION is similar to achieving LIMITING CONDITION FOR OPERATION 3.4.1.4.2 for Reactor Coolant System COLD SHUTDOWN – Loops Not Filled. Completion of this action establishes a condition that precludes the potential for a boron dilution, consistent with the design basis in the STP Updated Final Safety Analysis Report (UFSAR).

ACTION 5.b.2 requires verifying RCS SHUTDOWN MARGIN is within limits within 4 hours and once per 12 hours thereafter. Due to the potential of having diluted the boron concentration of the reactor coolant, verification of shutdown margin must be performed to demonstrate that the required boron concentration exists.

The associated TS Bases will be revised to address ACTION 5. The Bases insert is attached for the staff's information.

ACTION c. of TS 3.4.1.4.2 states:

With a valve or mechanical joint used to isolate unborated water sources not secured in the closed position, immediately suspend all operations that would cause introduction into the RCS of coolant with boron concentration less than required to meet SHUTDOWN MARGIN specified in the Core Operating Limits Report (COLR) and initiate action to secure the valve(s) or joint(s) in the closed position and within 4 hours verify boron concentration is within limits specified in the COLR. The required action to verify the boron concentration within limits must be completed whenever ACTION c is entered. A separate ACTION entry is allowed for each unsecured valve or mechanical joint.

STPNOC proposes to revise the action to read as follows:

With a valve or mechanical joint used to isolate unborated water sources not secured in the closed position, immediately suspend all operations that would cause introduction into the RCS of coolant with boron concentration less than required to meet the SHUTDOWN MARGIN specified in the Core Operating Limits Report (COLR) and initiate action to secure the valve(s) or joint(s) in the closed position and within 4 hours verify the SHUTDOWN MARGIN is within limits specified in the COLR. The required action to verify the SHUTDOWN MARGIN is within limits must be completed whenever ACTION c is entered. A separate ACTION entry is allowed for each unsecured valve or mechanical joint.

3.0 TECHNICAL EVALUATION

The TS 3.3.1 safety function of the extended range neutron flux monitoring instrumentation is to alert the operator to a loss of shutdown margin from a boron dilution event. In Modes 3, 4 and 5, the extended range neutron flux-multiplication alarm provides the signal indicating an inadvertent boron dilution. This alarm is not part of the RPS but is used as a mitigation function for this event. There are two channels of the monitoring instrumentation with a range of 1E-08 to 200% power. Either channel can provide the required flux multiplication alarm. The extended range neutron flux instrumentation is also used for post-accident neutron flux monitoring and is powered by Class 1E power and is seismically and environmentally qualified. The alarm actuated by the extended range neutron flux signal is not Class 1E qualified. The extended range neutron flux alarm is actuated when the designated flux-multiplication setpoint is reached. No credit is taken for other available functions in these modes to provide a signal or alarm to the plant operator (e.g. source range neutron flux).

The boron dilution analysis was performed to ensure that the operator action time from a flux-multiplication signal to complete loss of shutdown margin is greater than 15 minutes. The event was analyzed for all operating modes except those modes where administrative controls prohibit dilution. As described in the STP Updated Final Safety Analysis Report (UFSAR) Chapter 15.4.6, the boron dilution event is not postulated in MODE 5 with RCS loops not filled and in MODE 6 because administrative controls are used to isolate sources of unborated water and preclude the event.

TS 3.3.1, "Reactor Trip Instrumentation", Table 3.3-1, Item 7 governs the boron dilution mitigation function of the extended range neutron flux monitoring instrumentation. ACTION 5 prescribes the action required for one inoperable channel:

> With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes. Plant temperature changes or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

TS 3.3.1 has no action for more than one inoperable channel. Consequently, TS 3.0.3 would apply for this condition in MODE 3 or MODE 4. There is no applicable TS action for MODE 5 and the application of the current ACTION 5 for a condition where both flux monitoring channels are inoperable is non-conservative. STPNOC outage planning personnel identified this discrepancy and its resolution is being tracked in the STP Corrective Action Program.

The extended range neutron flux monitors are also governed by TS 3.3.3.5, "Remote Shutdown", and TS 3.3.3.6, "Accident Monitoring Instrumentation". The action requirements of these TS are described in the table below for information and completeness. The STP TS Bases clarifies the application of the TS to the extended range neutron flux functions:

> The Extended Range, Neutron Flux instrumentation denoted in LCO 3.3.1, Item 7 in Tables 3.3-1 and 4.3-1 is referring to the Gamma-Metrics Shutdown Monitors. The circuitry consists of hardware/software components which are unique to the Shutdown

Monitor itself, such as the flux multiplication alarm contacts; as well as hardware which is shared with the Remote Shutdown (LCO 3.3.3.5) and the Accident Monitoring (LCO 3.3.3.6) QDPS Extended range, Neutron Flux instrumentation. Inoperability of the Shutdown Monitors does not affect the Operability of the QDPS Extended Range instrumentation except for reasons of common mode failure. Conversely, inoperability of the QDPS Extended Range instrumentation should be evaluated for common mode failure with respect to the Shutdown Monitor to verify OPERABILITY of the Shutdown Monitor. (CR 97-908-8)

STPNOC is not proposing to change the requirements of the Remote Shutdown or Accident Monitoring TS in this amendment request.

Applicable TS	MODE	Requirement	Comment
3.3.3.5 Remote Shutdown	1, 2, 3	With one or more required channels inoperable, restore the inoperable Function(s) to OPERABLE status within 30 days or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Least restrictive TS requirement that applies to the subject instrumentation
3.3.3.6, Accident Monitoring Instrumentation (ACTION 36)	1, 2, 3	With one channel inoperable, "...restore one inoperable channel to OPERABLE status within 7 days, or be in at least HOT SHUTDOWN within the next 12 hours."	Imposes most restrictive requirement for one inoperable channel in MODE 3.
		With two channels inoperable, "...restore at least one channel to OPERABLE status within 48 hours, or be in HOT SHUTDOWN within the next 12 hours."	Provides an action for two inoperable channels in MODE 3, but is superseded by the TS 3.0.3 applicability in TS 3.3.1.

Although there is no TS 3.3.1 action for two inoperable channels, STP procedures for reactivity management and for nuclear instrument malfunction adequately address the condition where the extended range neutron flux monitoring function is lost. The procedures require the suspension of positive reactivity changes, boron sampling, and isolation of sources of unborated water. These actions are consistent with the design and licensing basis described in UFSAR 15.4.6 for MODE 5 with RCS loops not filled and MODE 6, which preclude a condition where a boron dilution event could occur by isolating the sources of unborated water. Based on the UFSAR design basis and the existing procedure requirements, STPNOC proposes the revised ACTION 5 shown in Section 2.0 and discussed in more detail below.

ACTION 5.a for one inoperable channel of the flux monitor includes a new completion time of 72 hours to restore the inoperable channel to OPERABLE status. The completion time is consistent with the completion time required in NUREG-1431, LCO 3.3.9, ACTION A. The 72

hour Completion Time is based on the extended range flux monitor's shutdown monitoring function and is consistent with other TS Completion Times for loss of one redundant train. In this condition, the remaining extended range neutron flux monitoring channel is adequate to provide protection. The remaining OPERABLE channel provides continuous indication of core power status to the operator and has the required alarm function.

NUREG-1431 includes a note that provides for temperature changes provided the change is accounted for in the calculated SHUTDOWN MARGIN. STP's current TS also allow boron dilutions provided the change is accounted for in the calculated SHUTDOWN MARGIN. The redundant extended range channel provides protection in this condition and STPNOC proposes no change to existing TS allowance.

ACTION 5.b is a new requirement to address the condition of both channels of extended range neutron flux monitoring instrumentation being inoperable. The TS did not previously have an action for this condition. It requires immediate suspension of positive reactivity changes, and within 15 minutes isolation of the unborated flow paths described in Chapter 15.4.6 of the Updated Final Safety Analysis Report from the reactor coolant system, and that within one hour at least one channel to be restored to OPERABLE status or the requirements of ACTIONs 5.b.1 and 5.b.2 will apply. The required completion time of 1 hour is consistent with NUREG-1431, LCO 3.3.9, ACTION B.

ACTION 5.b requires the immediate suspension of all operations involving positive reactivity changes because the loss of function for the neutron flux extended range 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 or flushing operations of the Chemical Volume and Control System cation bed or mixed bed demineralizers..

ACTION 5.b allows temperature changes provided the change is accounted for in the calculated SHUTDOWN MARGIN. Allowing the temperature changes eliminates operational limitations that could otherwise needlessly restrict cooldown or other plant evolutions. The restriction to allow temperature changes only after isolation of the dilution pathways and verification of shutdown margin that was proposed in the original submittal is removed in this revised submittal. NUREG-1431 has no similar restriction. The restriction is not needed because of the short completion times associated with Action 5.b.1 and 5.b.2 and the premise that the shutdown margin would be within limits when Action 5.b is entered. Consistent with the existing Bases for ACTION 5, control rod withdrawal is not allowed. This allowance is consistent with the note in NUREG-1431, LCO 3.3.9, ACTION B.

If at least one channel is not restored to OPERABLE status within 1 hour, ACTION 5.b.1 requires securing each unborated water flow path from 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 within two hours. Completion of this ACTION is similar to achieving LIMITING CONDITION FOR OPERATION 3.4.1.4.2 for Reactor Coolant System COLD SHUTDOWN – Loops Not Filled. Completion of this action establishes a condition that precludes the potential for a boron dilution, consistent with the design basis in the

STP Updated Final Safety Analysis Report (UFSAR). NUREG-1431, LCO 3.3.9, ACTION B establishes a 1 hour completion time for this activity. STPNOC requests two hours to complete this ACTION because of the number of valves that need to be secured. The boration flow paths described in Chapter 15.4.6 of the Updated Final Safety Analysis Report to mitigate a boration dilution event have already been isolated within 15 minutes as required by ACTION 5.b.

An engineering evaluation was completed to ensure that no single failure or mis-positioning of a valve in a boron dilution flowpath would have the potential to establish conditions for criticality before all unborated water sources are secured in two hours in accordance with ACTION 5.b.1. Once all unborated water sources are secured by ACTION 5.b.1, no remaining dilution sources exist. Each flow path was evaluated for conditions in Modes 3 – 5A as well as potential line ups associated with allowed plant activities and evolutions in these modes of operation. A failure of an isolation valve in the flow path was evaluated for potential impact on criticality. In each case, the condition would preclude a return to criticality within two hours based on one or more of the following conditions:

- Redundant valve isolation exists such that no single failure (active failure or operator error) would create a dilution flow path.
- The potential dilution volume source is limited to below that needed for criticality from the most limiting condition.
- The pipe line size is sufficiently small that the maximum flow rate for two hours is below that needed for criticality from the most limiting condition.
- Procedural requirements require that the valve in the flow path be locked closed in Modes 3, 4 and 5A.
- Flow path is isolated within 15 minutes as required by ACTION 5.b.

Based on this evaluation, the requirement to secure unborated water sources within two hours was determined to be acceptable and would preclude a potential return to criticality condition due to a dilution event.

In order to determine the most limiting dilution volume needed to achieve criticality, it was assumed that the plant is at the minimum reactor coolant system boron concentration that satisfies the shutdown margin requirements for a given plant condition. The dilution volume of interest will dilute the reactor coolant system from the minimum boron concentration to the critical boron concentration. The volume for each Mode is the same as currently used in the Updated Final Safety Analysis Report, Chapter 15.4.6 analysis. The critical boron concentrations are provided in the Nuclear Design Report. The current cycle for each unit was investigated. The most limiting dilution volume was determined to be 5281 gallons and occurred near the end of life at cold conditions in Mode 5A for Unit 2 Cycle 13. The allowable dilution volume was further reduced to 4500 gallons to accommodate future core designs.

If at least one channel is not restored to OPERABLE status within 1 hour, ACTION 5.b.2 requires verifying Shutdown Margin is within limits within 4 hours and once per 12 hours thereafter. Due to the potential of having diluted the boron concentration of the reactor coolant, verification of the Shutdown Margin must be performed to demonstrate that the required boron

concentration exists. The Completion Time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration and the conditional 12 hour surveillance provides assurance that the required shutdown margin is maintained. NUREG-1431 LCO 3.3.9, ACTION B provides a 1 hour completion time for the initial determination of the boron concentration. However, STPNOC proposes to apply the 4 hour completion time. ACTION 5.b and 5.b.1 eliminates many of the means by which Shutdown Margin can be reduced. The 4 hour completion time is also based on operating experience in performing the Required Action and the fact that plant conditions will change slowly. The proposed 12 hour frequency for the continued verification of boron concentration is consistent with the requirements of NUREG-1431.

As noted earlier, the current TS would require the application of TS 3.0.3. Application of TS 3.0.3 for a condition where the extended range flux monitoring function is lost in MODE 3 would require the unit be in MODE 4 within 6 hours and in MODE 5 within the next 24 hours. Once the unit was in MODE 5, there would be no TS requirement for the condition. Application of TS 3.0.3 is not an appropriate response to the condition because the shutdown and cooldown actions are not effective compensatory actions for loss of the extended range neutron flux monitoring function and TS 3.3.1 still applies for the affected function in MODE 5 where the existing action is not adequate. Therefore, the proposed action to modify ACTION 5 to add appropriate compensatory action for loss of the monitoring function is considered a nuclear safety improvement over the current TS required action to apply TS 3.0.3.

The proposed change to TS 3.4.1.4.2 is fundamentally an administrative change that makes the TS 3.4.1.4.2 consistent with the wording of proposed TS ACTION 5.b.2. The current TS 3.4.1.4.2 ACTION c requirement to verify the boron concentration is within limits specified in the COLR is imprecise because the COLR specifies SHUTDOWN MARGIN based on RCS critical boron concentration, but does not specify boron concentration limits. The lack of precision does not result in an inadequate TS or inadequate response should ACTION c be applied because boron concentration will be determined to assure that the required SHUTDOWN MARGIN is maintained in accordance with the assumptions in the COLR. Revising the wording of the action makes the requirement more precise and consistent with the requirements of proposed ACTION 5.b.2.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

The shutdown monitor function of the extended range neutron flux monitor required by TS 3.3.1 meets Criterion 3 of 10CFR50.36 (c)(2)(ii) as a system that is part of the primary success path and functions to mitigate a design basis transient that presents a challenge to the integrity of a fission product barrier. The proposed change provides additional assurance that appropriate remedial action required by 10CFR50.36(c)(2) will be taken for a loss of the mitigative function.

Section 15.4.6 of the Standard Review Plan lists the regulatory criteria below.

A. General Design Criterion 10, as it relates to the reactor coolant system being designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during normal operations including anticipated operational occurrences.
B. General Design Criterion 15, as it relates to the reactor coolant system and its associated auxiliaries being designed with appropriate margin to assure that the pressure boundary will not be breached during normal operations including anticipated operational occurrences.
C. General Design Criterion 26, as it relates to the reliable control of reactivity changes to assure that specified acceptable fuel design limits are not exceeded, including anticipated operational occurrences. This is accomplished by assuring that appropriate margin for malfunctions, such as stuck rods, are accounted for.

The proposed change does not change the function of the extended range neutron flux monitor. It provides additional assurance that unavailability of shutdown monitor function required by TS 3.3.1 is addressed by appropriate remedial action and reduces the potential for a challenge to a fission product barrier.

The proposed change to TS 3.4.1.4.2 is an editorial clarification that does not affect the regulatory basis.

Based upon the considerations discussed above:

- There is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner;
- Such activities will be conducted in compliance with the Commission's regulations; and
- Issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.2 Precedent

As described in the evaluation above, precedent is established in NUREG-1431, "Standard Technical Specifications – Westinghouse Plants".

4.3 Significant Hazards Consideration

STP has evaluated whether a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response:

   No. The extended range neutron flux monitoring instrumentation that is the subject of the proposed change performs a monitoring function and of itself has no potential as an accident initiator. The proposed requirement for the condition where both channels of the function are inoperable establishes actions that preserve the design basis where no actions

previously existed. This is a more restrictive change and thus does not increase the probability or consequences of an accident previously evaluated.

The proposed change to TS 3.4.1.4.2 ACTION c. clarification regarding the verification of shutdown margin does not result in any technical change in the way the TS ACTION is applied. Therefore this proposed change does not increase the probability or consequences of an accident previously evaluated.

The proposed change includes formatting changes that are administrative and consequently have no effect on accident analyses.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response:

   No. The proposed changes do not involve any physical alteration of plant equipment and does not change the method by which any safety-related structure, system, or component performs its function or is tested. As such, no new or different types of equipment will be installed, and the basic operation of installed equipment is unchanged. The methods governing plant operation and testing remain consistent with current safety analysis assumptions.

   The proposed change includes formatting changes that are administrative and consequently have no effect on accident analyses.

   Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response:

   No. The proposed changes do not negate any existing requirement, and does not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analysis. The purpose of the proposed change is to provide greater assurance that the design basis is maintained. There are no changes being made to safety analysis assumptions, safety limits or safety system settings that would adversely affect plant safety as a result of the proposed change.

   The proposed change includes formatting changes that are administrative and consequently have no effect on accident analyses.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, STP concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of 'no significant hazards consideration" is justified.

4.4 Conclusions

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c) (9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement, or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. STP UFSAR Section 15.4.6
2. NUREG -1431, Revision 3 "Standard Technical Specifications – Westinghouse Plants"

ENCLOSURE, ATTACHMENT 1

Technical Specification Page Markups

NO CHANGES THIS PAGE
FOR INFORMATION AND COMPLETENESS.

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Manual Reactor Trip	2	1	2	1, 2	1
	2	1	2	3*, 4*, 5*	10
2. Power Range, Neutron Flux					
a. High Setpoint	4	2	3	1, 2	2
b. Low Setpoint	4	2	3	1###, 2	2
3. Power Range, Neutron Flux High Positive Rate	4	2	3	1, 2	2
4. Deleted					
5. Intermediate Range, Neutron Flux	2	1	2	1###, 2	3
6. Source Range, Neutron Flux					
a. Startup	2	1	2	2##	4
b. Shutdown	2	1	2	3*, 4*, 5*	10
c.					
7. Extended Range, Neutron Flux	2	0	2	3, 4, 5	5
8. Overtemperature ΔT	4	2	3	1, 2	6
9. Overpower ΔT	4	2	3	1, 2	6
10. Pressurizer Pressure -- Low (Interlocked with P-7)	4	2	3	1	6
11. Pressurizer Pressure—High	4	2	3	1, 2	6
12. Pressurizer Water Level--High (Interlocked with P-7)	4	2	3	1	6

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 coolant system, and restore at least one channel to OPERABLE status within 1 hour, or

1. Within 2 hours secure each unborated water flow path from 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

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.

REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4.2

a. At least two residual heat removal (RHR) loops shall be OPERABLE* and at least one RHR loop shall be in operation.**, and

b. Each valve or mechanical joint used to isolate unborated water sources shall be secured in the closed position.

APPLICABILITY: MODE 5 with reactor coolant loops not filled.

ACTION:

a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

b. With no RHR loop in operation, suspend all operations that would cause introduction into the RCS of coolant with boron concentration less than required to meet SHUTDOWN MARGIN of LCO 3.1.1 and immediately initiate corrective action to return the required RHR loop to operation.

c. With a valve or mechanical joint used to isolate unborated water sources not secured in the closed position, immediately suspend all operations that would cause introduction into the RCS of coolant with boron concentration less than required to meet the SHUTDOWN MARGIN specified in the Core Operating Limit Report (COLR) and initiate action to secure the valve(s) or joint(s) in the closed position and within 4 hours verify ~~boron concentration~~ the SHUTDOWN MARGIN is within limits specified in the COLR. The required action to verify the ~~boron concentration~~ SHUTDOWN MARGIN is within limits must be completed whenever ACTION c is entered. A separate ACTION entry is allowed for each unsecured valve or mechanical joint.

SURVEILLANCE REQUIREMENTS

4.4.1.4.2.1 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

4.4.1.4.2.2 Each valve or mechanical joint used to isolate unborated water sources shall be verified closed and secured in position at least once per 31 days.

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*Two RHR loops may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

**The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause introduction into the RCS of coolant with boron concentration less than that required to meet SHUTDOWN MARGIN of LCO 3.1.1, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

ENCLOSURE, ATTACHMENT 2

Technical Specification Bases Page Insert

Technical Specification Bases Inserts (For Information)

Following approval of the proposed amendment, the TS Bases for ACTION 5 will be revised to include the following:

ACTION 5.a addresses the condition for loss of one channel of extended range neutron flux monitor and provides 72 hours to restore the inoperable channel. In this condition, the second channel provides the monitoring function. The action requires suspending positive reactivity changes with the exception that reactivity changes from temperature changes or boron dilution be accounted for in the calculated SHUTDOWN MARGIN. Control rod withdrawal is not permitted.

ACTION 5.b addresses the condition for loss of two inoperable channels of extended range neutron flux monitoring instrumentation. In this condition, the UFSAR design basis that the flux multiplication alarm provided by the extended range neutron flux monitor will give the operator 15 minutes to respond to a loss of shutdown margin is not valid since the flux monitor design function is lost.

ACTION 5.b.requires the immediate suspension of all operations involving positive reactivity changes and within 15 minutes isolation of the unborated water flow paths to the reactor coolant system described in Chapter 15.4.6 of the Updated Final Safety Analysis Report to mitigate a boron dilution event. Isolation of these flow paths is achieved by closing valve FCV-110B, in the normal reactor makeup water (RMW) line to the charging pump suction, by closing valve FCV-111B, in the RMW line to the top of the volume control tank, by closing valve CV-0201A, the chemical mixing isolation valve, and by closing valve CV-0221, the alternate emergency boration isolation valve. Suspension of operations involving positive reactivity changes includes suspension of sluicing operations of the Chemical Volume and Control System cation bed or mixed bed demineralizers. The loss of function for the neutron flux extended range monitor results in the potential for a reactivity change that could challenge the operators' ability to identify a loss of required shutdown margin and this action restricts operations that could challenge the shutdown margin, and provides assurance that the design basis is met in the unlikely situation that a boron dilution event occurs coincident with the loss of the instrumentation credited in the safety analysis for initiating the operator actions to mitigate the event. The action allows temperature changes provided the change is within the limits of the calculated SHUTDOWN MARGIN. Control rod withdrawal is not allowed.

If at least one channel is not restored to OPERABLE status within 1 hour, ACTION 5.b.1 requires a verification within 2 hours that each unborated water flow path be secured 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. The method of securing must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and deactivated automatic containment isolation valve, a locked closed manual valve, a blind flange, and a check valve with flow through the valve secured. Completion of this ACTION is similar to achieving LIMITING CONDITION FOR OPERATION 3.4.1.4.2 for Reactor

Coolant System COLD SHUTDOWN – Loops Not Filled. Securing each unborated water flow path from 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 ensures that the devices cannot be inadvertently opened. Engineering analysis (Reference: CREE 07-13553-27) assumes that no sluicing operations of the Chemical Volume and Control System cation bed or mixed bed demineralizers are in progress. Completion of this action establishes a condition that administratively precludes the potential for a boron dilution, consistent with the design basis in the STP Updated Final Safety Analysis Report (UFSAR).

If at least one channel is not restored to OPERABLE status within 1 hour, ACTION 5.b.2 requires verifying the Shutdown Margin is within limits within 4 hours and once each 12 hours thereafter. Due to the potential of having diluted the boron concentration of the reactor coolant, verification of Shutdown Margin must be performed to demonstrate that the required boron concentration exists. The Completion Time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration. The 12 hour surveillance assures the required shutdown margin is maintained.

The SHUTDOWN MARGIN is specified in the Core Operating Limits Report.

ENCLOSURE - Attachment 3

NRC Request for Additional Information

NRC Request for Additional Information:

The current Action 5 for Extended Range Neutron Flux, Functional Unit 7, in Technical Specifications (TS) Table 3.3-1, "Reactor Trip Instrumentation," specifies an Action when the number of OPERABLE channels is one less than the Minimum Channels OPERABLE specified in TS Table 3.3-1. Current TS Table 3.3-1, Action 5 reads:

> With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes. Plant temperature changes or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

The proposed license amendment request will revise the current Action 5 to make it applicable for one and two inoperable channels. The proposed Action 5 reads:

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 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, restore at least one channel to OPERABLE status within 1 hour, or

   1. Suspend all operations involving positive reactivity changes, and

      Note: Operations involving plant temperature changes may proceed provided the change is accounted for in the calculated SHUTDOWN MARGIN when ACTION 5.b.2 is completed and reactor coolant system boron concentration has been verified to be within required limits,

   2. Immediately initiate action to secure each valve or mechanical joint used to isolate unborated water sources from the reactor coolant system, and

   3. Within 4 hours and once per 12 hours thereafter, verify SHUTDOWN MARGIN is within limits specified in the COLR.

The licensee stated that the proposed TS changes are based on NUREG-1431, "Standard Technical Specifications – Westinghouse Plants." The staff observed that the proposed Actions 5.a and 5.b differ from TS 3.3.9 in NUREG-1431, and specifically, as shown below, not all of the required actions in the proposed Action 5.a and 5.b are consistent with similar required actions in NUREG-1431.

1. The statement, "OR Required Action and Associated Completion Time of Condition A not met" specified under Condition B in NUREG-1431 is not addressed in the proposed Action 5.a and 5.b.

2. In the proposed Action 5b "or" is specified at the end of the statement, "With number of OPERABLE channels two less than the Minimum Channels OPERABLE requirement, restore at least one channel to OPERABLE status within 1 hour, or" while "AND" is specified in the Required Action B.1 in NUREG-1431 for the same Action.

3. Condition B.1, "Suspend operations involving positive reactivity additions" in NUREG-1431 requires "Immediate" suspension of operations involving positive reactivity additions while the corresponding proposed Condition 5.b.1, does not specify any time requirement.

4. The proposed Action 5.b.1 has "and" at the end of the statement, "Suspend all operations involving positive reactivity changes, and" while the NUREG-1431 has "OR" for the same required actions in B.1 and B.2.1.

5. The proposed Action 5.b.3 states, "Within 4 hours and once per 12 hours thereafter" while NUREG-1431, Required Action B.2.2.2 states, "1 hour AND Once per 12 hours thereafter" for this Action.

Please explain why the above proposed TS changes are different from the corresponding statements in the NUREG-1431.

STPNOC Response:

With the exception of the time specified to perform the verification of shutdown margin (see the response to RAI #5), STPNOC believes the proposed action has been revised to be consistent with NUREG-1431. The specific responses to the RAIs are provided below.

1. Action 5.a is revised to specify that positive reactivity changes be immediately suspended if the inoperable channel is not restored within 72 hours:

   "...restore the inoperable channel to OPERABLE status within 72 hours, or immediately suspend all operations involving positive reactivity changes."

   Action 5.b is revised to specify that positive reactivity changes be immediately suspended AND at least one inoperable channel be restored within one hour, OR within 1 hour isolate unborated water sources and verify shutdown margin:

   "immediately suspend all operations involving positive reactivity changes and restore at least one channel to OPERABLE status within 1 hour, or

   1. Within 1 hour secure each valve or mechanical joint used to isolate unborated water sources from the reactor coolant system, and
   2. Within 1 hour and once per 12 hours thereafter, verify SHUTDOWN MARGIN is within limits specified in the COLR."

2. See the response to Question 1. Action 5.b is revised to be consistent with the NUREG wording.

3. See the response to Question 1. Action 5.b is revised to specify immediate suspension of positive reactivity changes.

4. See the response to Question 1. Action 5.b.1 is revised to require isolation of unborated water sources within 1 hour if one channel of extended range neutron flux is not restored to OPERABLE status within 1 hour. This is consistent with the NUREG-1431 requirement.

5. STP proposes to retain the Action 5.b.2 4-hour completion time to verify shutdown margin. This is based on the current licensing basis established in TS 3.4.1.4.2, as discussed in the body of the application. The 4-hour completion time is a reasonable time to obtain and analyze the reactor coolant system sample. The verification is complemented by the other actions required if Action 5.b applies.