PROPOSED MODEL APPLICATION FOR PLANT-SPECIFIC ADOPTION OF TSTF TRAVELER-493, REVISION 4, “CLARIFY APPLICATION OF SETPOINT METHODOLOGY FOR LSSS FUNCTIONS”

U.S. Nuclear Regulatory Commission

Document Control Desk

Washington, D.C. 20555

SUBJECT: [Plant Name]

DOCKET NO. 50-[XXX]

LICENSE AMENDMENT REQUEST FOR ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE (TSTF) TRAVLER-493, REVISION 4, “CLARIFY APPLICATION OF SETPOINT METHODOLOGY FOR LSSS FUNCTIONS ”

In accordance with the provisions of Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), [LICENSEE] is submitting a request for an amendment to the Technical Specifications (TS) for [PLANT NAME, UNIT NO.].

The proposed amendment would revise the TS and TS Bases by adding requirements to assess channel performance during testing that verifies instrument channel setting values which are established by the plant-specific setpoint methodology(ies). This change is consistent with NRC-approved Revision 4 to TSTF Improved Standard Technical Specification (STS) Change Traveler-493 "Clarify Application of Setpoint Methodology for LSSS Functions." [Discuss any differences with Traveler-493, Revision 4.] The availability of this TS improvement was announced in the *Federal Register* on [Date] ([ ] FR [ ]).

{REVIEWER'S NOTE: Licensee to select and include sections pertaining to one of the 3 options underlined below.}

Adoption of TSTF Traveler-493 Option A with Changes to Setpoint Values

Attachment 1 provides a description and assessment of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides summary calculations for the revised setpoints as documentation of the plant-specific instrument setpoint methodology for TSTF Traveler-493, Revision 4, Option A. Attachment 2 also includes the calculation basis for the Limiting Trip Setpoint (LTSP), Nominal Trip Setpoint (NTSP), Allowable Value (AV), As-Found Tolerance band, and As-Left Tolerance band for each change to an automatic protection instrumentation function setpoint value. Attachment 3 provides markup pages of existing TS and TS Bases to show the proposed change in accordance with TSTF Traveler-493, Revision 4, Option A. Attachment 4 provides revised (clean) TS pages. Attachment 5 provides proposed Regulatory Commitments.

Adoption of TSTF Traveler-493 Option A without Changes to Setpoint Values

Attachment 1 provides a description and assessment of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. No changes to any setpoint values are proposed. Attachment 2 provides markup pages of existing TS and TS Bases to show the proposed change. Attachment 3 provides revised (clean) TS pages. Attachment 4 provides proposed Regulatory Commitments.

Adoption of TSTF Traveler-493 Option B - the Setpoint Control Program Option

Attachment 1 provides a description and assessment of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides the plant-specific evaluation for the list of instrument Functions that are described in Setpoint Control Program (SCP) TS 5.5.[18] Paragraph a. Attachment 3 addresses the content and application of the plant-specific setpoint methodology required by the SCP TS 5.5.[18]

Paragraph b. Attachment 3 includes the calculation basis for the Limiting Trip Setpoint (LTSP), Nominal Trip Setpoint (NTSP), Allowable Value (AV), As-Found Tolerance band, and As-Left Tolerance band for each automatic protection instrumentation function. Attachment 3 also describes the program methods for ensuring the requirements in Paragraph d will function as required by verifying the As-Left and As-Found settings are consistent with those established by the setpoint methodology. The discussion in Attachment 3 describes how the plant licensing basis meets the guidance provided in Regulatory Issue Summary (RIS) 2006-17, “NRC Staff Position on the Requirements of 10 CFR 50.36, "Technical Specifications,” Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels” and Regulatory Guide (RG) 1.105, Revision 3, “Setpoints for Safety-Related Instrumentation.” Attachment 4 documents the plant-specific evaluation identifying the Functions required by SCP TS 5.5.[18] Paragraph d. Attachment 5 provides markup pages of existing TS and TS Bases to show the proposed change. Attachment 6 provides revised (clean) TS pages. Attachment 7 provides proposed Regulatory Commitments.

[LICENSEE] requests approval of the proposed license amendment by [DATE], with the amendment being implemented [BY DATE OR WITHIN X DAYS].

In accordance with 10 CFR 50.91, “Notice for Public Comment; State Consultation,” a copy of this application, with attachments, is being provided to the designated [STATE] Official.

I declare [or certify, verify, state] under penalty of perjury that the foregoing is correct and true.

Executed on [date] [Signature]

If you should have any questions about this submittal, please contact [NAME, TELEPHONE NUMBER].

Sincerely,

[Name, Title]

Attachments: [As stated or provide list].

cc: [NRR Project Manager]

[Regional Office]

[Resident Inspector]

[State Contact]

ATTACHMENT 1

EVALUATION OF PROPOSED CHANGE

1.0 DESCRIPTION

{REVIEWER'S NOTE: Licensee to use the following 2 paragraphs for Adoption of TSTF Traveler-493 Option A}

The proposed amendment would revise the Technical Specifications (TS) by adding new test requirements to instrument Functions related to those variables that have a significant safety function, thereby ensuring instruments will function as required to initiate protective systems or actuate mitigating systems at the point assumed in the applicable safety analysis. These TS changes are made through the addition of individual footnote requirements to specific instrument Functions in accordance with Option A of Technical Specifications Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler-493, Revision 4, "Clarify Application of Setpoint Methodology for LSSS Functions."

This change is consistent with NRC-approved Revision 4 to TSTF Traveler-493. [Minor differences between the proposed plant-specific TS changes, and the changes proposed by Traveler-493 are listed in Section 2.0.] The availability of this TS improvement was announced in the *Federal Register* on [Date] ([ ] FR [ ]).

{REVIEWER'S NOTE: Licensee to use the following 2 paragraphs for Adoption of TSTF Traveler-493 Option B - the Setpoint Control Program Option}

The proposed amendment would revise the Technical Specifications (TS) by adding new test requirements to instrument Functions related to those variables that have a significant safety function, thereby ensuring instruments will function as required to initiate protective systems or actuate mitigating systems at the point assumed in the applicable safety analysis. These TS changes are made by adoption of a Setpoint Control Program that contains the setpoint methodology and parameters used in the calculation and control of instrumentation setpoints in

accordance with Option B of Technical Specifications Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler-493, Revision 4, “Clarify Application of Setpoint Methodology for LSSS Functions.”

This change is consistent with NRC-approved Revision 4 to TSTF Traveler-493. [Minor differences between the proposed plant-specific TS changes, and the changes proposed by Traveler-493 are listed in Section 2.0.] The availability of this TS improvement was announced in the *Federal Register* on [Date] ([ ] FR [ ]).

2.0 PROPOSED CHANGE

[LICENSEE] has reviewed the model safety evaluation as described in the *Federal Register* Notice of Availability published on [DATE] ([ ] FR [ ]). This review included a review of the NRC staff’s model safety evaluation as well as the supporting information provided to support TSTF Traveler-493, Revision 4. As described in the subsequent paragraphs, [LICENSEE] has concluded that the justifications presented in the TSTF Traveler-493, Revision 4, and the model safety evaluation prepared by the NRC staff are applicable to [PLANT, UNIT NOS.] and justify this amendment for the incorporation of the changes to the [PLANT] TS.

[LICENSEE] is [not] proposing variations or deviations from the TS changes described in TSTF Traveler-493, Revision 4, or the NRC staff's model safety evaluation published on [DATE] ([ ] FR [ ]) as part of the Notice of Availability. [Discuss any differences with TSTF Traveler-493, Revision 4, and the effect of any changes on the NRC staff's model safety evaluation, including plant-specific information explaining the licensee’s unique design feature(s) that require such variations or deviations.]

3.0 BACKGROUND

The background for this application is adequately addressed by the NRC Notice of Availability published on [DATE] ([ ] FR [ ]).

4.0 TECHNICAL ANALYSIS

[LICENSEE] has reviewed the safety evaluation published on [DATE] ([ ] FR [ ]) as part of the Notice of Availability. [LICENSEE] has concluded that the technical justifications presented in the safety evaluation prepared by the NRC staff are applicable to [PLANT, UNIT NO.].

5.0 REGULATORY SAFETY ANALYSIS

5.1 NO SIGNIFICANT HAZARDS DETERMINATION

[LICENSEE] has reviewed the no significant hazards determination published on [DATE] ([ ] FR [ ]) as part of the Notice of Availability. [LICENSEE] and has concluded that the determination presented in the notice is applicable to [PLANT, UNIT NO.]. [LICENSEE] has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration. An analysis of the issue of no significant hazards consideration is presented below:

[LICENSEE INSERT ANALYSIS HERE.]

5.2 APPLICABLE REGULATORY REQUIREMENTS/CRITERIA

A description of the proposed TS change and its relationship to applicable regulatory requirements were provided in the Notice of Availability published on [DATE] ([ ] FR [ ]). [LICENSEE] has reviewed the NRC staff's model safety evaluation published on [DATE] ([ ] FR[ ]) as part of the Notice of Availability and concluded that the regulatory evaluation section is applicable to [PLANT, UNIT NO.].

6.0 ENVIRONMENTAL CONSIDERATION

[LICENSEE] has reviewed the environmental evaluation included in the model safety evaluation published on [DATE] ([ ] FR [ ]) as part of the Notice of Availability. [LICENSEE] has concluded that the NRC staff's findings presented in that evaluation are applicable to [PLANT, NO.].

The proposed change 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, and would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change 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 change.

7.0 REFERENCES

1. Federal Register Notice, Notice of Availability published on [DATE] ([ ] FR [ ]).
2. TSTF Traveler-493, Revision 4, " Clarify Application of Setpoint Methodology for LSSS Functions."

[3. Other References]

PROPOSED MODEL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION FOR PLANT-SPECIFIC ADOPTION OF TSTF TRAVELER-493, REVISION 4, "CLARIFY APPLICATION OF SETPOINT METHODOLOGY FOR LSSS FUNCTIONS"

Description of Amendment Request: The proposed amendment would revise the Technical Specifications (TS) by adding test requirements to TS instrument functions related to those variables that have a significant safety function to ensure that instruments will function as required to initiate protective systems or actuate mitigating systems at the point assumed in the applicable safety analysis. The proposed changes are consistent with NRC-approved TSTF Traveler-493, Revision 4, "Clarify Application of Setpoint Methodology for LSSS Functions."

Basis for proposed no significant hazards consideration: As required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.91(a), the [LICENSEE] analysis of the issue of no significant hazards consideration is presented below:

1: Does the Proposed Change Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated?

Response: No

{REVIEWER'S NOTE: Use this paragraph for Option A} The proposed change adds test requirements to TS instrument functions related to those variables that have a significant safety function to ensure that instruments will function as required to initiate protective systems or actuate mitigating systems at the point assumed in the applicable safety analysis. Surveillance tests are not an initiator to any accident previously evaluated. As a result, the probability of any accident previously evaluated is not significantly increased. The systems and components required by the TSs for which surveillance tests are added are still required to be operable, meet the acceptance criteria for the surveillance requirements, and be capable of performing any mitigation

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

{REVIEWER'S NOTE: Use this paragraph for Option B} The proposed change clarifies the requirements for instrumentation to ensure the instrumentation will actuate as assumed in the safety analysis. The proposed change also allows the relocation of the plant-specific setpoints to licensee control provided the NRC has approved the methodology used to calculate the setpoints and that future changes to the setpoints are controlled under a TS Setpoint Control Program (SCP). Instruments are not an assumed initiator of any accident previously evaluated. The proposed change will ensure that the instruments actuate as assumed to mitigate the accidents previously evaluated. Relocated setpoints will continue to be determined using NRC-approved methodologies and under TS controls, which ensures that the instruments continue to act to mitigate accidents previously evaluated as assumed. 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 change does not involve a physical alteration of the plant, i.e., no new or different type of equipment will be installed, nor a change in the methods governing normal plant operation. The change does not alter assumptions made in the safety analysis but ensures that the instruments behave as assumed in the accident analysis. The proposed change is consistent with the safety analysis assumptions. Therefore, the

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

3: Does the Proposed Change Involve a Significant Reduction in a Margin of Safety?

Response: No

{REVIEWER'S NOTE: Use this paragraph for Option A} The proposed change adds test requirements that establish instrument performance criteria in TSs that are currently required by plant procedures. The testing methods and acceptance criteria for systems, structures, and components, specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plant licensing basis including the updated final safety analysis report. There is no impact to safety analysis acceptance criteria as described in the plant licensing basis because no change is made to the accident analysis assumptions. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

{REVIEWER'S NOTE: Use this paragraph for Option B} The proposed change clarifies the requirements for instrumentation to ensure the instrumentation will actuate as assumed in the accident analysis. The proposed change also allows the relocation of the plant-specific setpoints to licensee control provided the NRC has approved the methodology used to calculate the setpoints and that future changes to the setpoints are controlled under a TS SCP. No change is made to the accident analysis assumptions. NRC review of future changes to setpoints is eliminated, which has the potential to reduce a margin of safety. However, the NRC will review and approve the methodology used to determine the setpoints and future setpoint changes will be performed in accordance with the TS SCP. As a result, any reduction in the margin of safety provided

by NRC review of individual setpoint changes will not be significant. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above, the NRC staff concludes that the requested change does not involve a significant hazards consideration, as set forth in 10 CFR 50.92(c), “Issuance of Amendment.”

PROPOSED MODEL SAFETY EVALUATION FOR PLANT-SPECIFIC ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE TRAVELER-493, REVISION 4, "CLARIFY APPLICATION OF SETPOINT METHODOLOGY FOR LSSS FUNCTIONS"

1.0 INTRODUCTION

By letter dated [DATE], [LICENSEE] (the licensee) proposed changes to the Technical Specifications (TS) for [PLANT NAME]. The proposed changes would revise the TSs with respect to limiting safety system settings (LSSSs) assessed during periodic testing and calibration of instrumentation that may have an adverse effect on equipment operability.

The licensee stated that the application is consistent with NRC-approved Revision 4 to Technical Specifications Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler-493, "Clarify Application of Setpoint Methodology for LSSS Functions." [Discuss any differences with TSTF Traveler-493, Revision 4.] The availability of this TS improvement was announced in the *Federal Register* on [Date] ([ ] FR [ ]).

The proposed change addresses two NRC staff concerns. The first concern is that TSs Allowable Values (AVs)[1] calculated using some methods in the industry standard ISA-S67.04-1994 Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation," could be non-conservative depending upon the evaluation of instrument performance history and the As-Left Tolerance requirements of the calibration procedures could have an adverse effect on equipment operability. The second concern is about using AVs as the limiting setting for assessing instrument channel operability. In these regards TSs requirements having AVs for LSSS[2] may not be fully in compliance with the intent of

1 The instrument setting "Allowable Value" is a limiting value of an instrument's As-Found trip setting used during surveillances. The AV is more conservative than the Analytical Limit (AL) to account for applicable instrument measurement errors consistent with the plant-specific setpoint methodology. If during testing, the actual instrumentation setting is less conservative than the AV, the channel is declared inoperable and actions must be taken consistent with the TS requirements.

2 10 CFR 50.36(c)(1)(ii)(A) states: "Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions."

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36 and existing Surveillance Requirements (SRs) would not provide adequate assurance that instruments will always actuate safety functions at the point assumed in the applicable safety analysis.

{REVIEWER'S NOTE: The following 7 paragraphs apply only to applications for TSTF Traveler-493, Revision 4, Option A.}

The proposed change would revise the [Plant Name], TSs to incorporate NRC-approved TSTF Traveler-493, Revision 4, to be consistent with Option A. Under Option A two Notes would be added to SRs in the Surveillance Requirement Column of TSs Instrumentation Function Tables. If the specification does not include a Functions Table, then the Notes would be added to the applicable SRs. Specifically, Notes would be added to SRs that require verifying trip setpoint setting values, i.e., [Channel Calibration and Channel Functional Test SRs (NUREG-1430, 1432, 1433, and 1434)] [Channel Calibration, Channel Operational Test (COT), and Trip Actuating Device Operational Test SRs (NUREG-1431)]. The list of affected instrument Functions are in Attachment A to this SE. This list includes instrument Functions in the limiting conditions for operation (LCOs) for the [list appropriate LCOs].

The first Surveillance Note requires evaluation of channel performance for the condition where the As-Found setting for the channel setpoint is outside its As-Found Tolerance but conservative with respect to the AV. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. The performance of these channels will be evaluated under the plant Corrective Action Program (CAP). Entry into the CAP will ensure required review and documentation of the condition to establish a reasonable expectation for continued operability.

The second Surveillance Note requires that the As-Left setting for the channel be returned to within the As-Left Tolerance of the [Limiting Trip Setpoint (LTSP) or Nominal Trip Setpoint (NTSP)].[3] Where a setpoint more conservative than the [LTSP/NTSP] is used in the plant surveillance procedures, the As-Left Tolerance band and As-Found Tolerance band, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit (SL) and/or Analytical Limit (AL) is maintained. If the As-Left channel setting cannot be returned to a setting with the As-Left Tolerance band of the [LTSP/NTSP], then the channel would be declared inoperable. The second Note also requires that the [LTSP/NTSP] and the methodologies for calculating the As-Left Tolerance band and the As-Found Tolerance band be included in the [insert the facility updated final safety analysis report (UFSAR) reference or any document incorporated into the facility UFSAR by reference].[4]

The TS Bases are revised to reflect the addition of the Notes to the applicable Functions. The TS Bases are also revised to define the term "Limiting Trip Setpoint" or "Nominal Trip Setpoint," and to discuss the relationship of the LSSS to other values, such as the AV and the

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3 Throughout this SE and the proposed TS changes, the terms "Limiting Trip Setpoint" and "Nominal Trip Setpoint" and their abbreviations, "LTSP" and "NTSP" are shown in brackets (e.g., "[LTSP]"). In all cases, the term "Limiting Trip Setpoint" may be replaced in the Technical Specifications and in the TS Bases by a term (e.g., NTSP) consistent with the plant-specific setpoint methodology.

The [LTSP] is more conservative than the Allowable Value (AV) and is the nominal value to which the instrument channel is adjusted to actuate. The [LTSP] is the limiting setting for the channel trip setpoint (TSP) considering all credible instrument errors associated with the instrument channel. The [LTSP] is the least conservative value (with an As-Left Tolerance) to which the channel must be reset at the conclusion of periodic testing to ensure that the Analytical Limit (AL) will not be exceeded during an anticipated operational occurrence (AOO) or accident before the next periodic surveillance or calibration. It is impossible to set a physical instrument channel to an exact value, so a calibration tolerance is established around the [LTSP]. Therefore, the [LTSP] is considered a nominal value and the instrument adjustment is considered successful if the as-left instrument setting is within the setting tolerance (i.e., a range of values around the [LTSP]. The [NTSP] is the [LTSP] with margin added. The [NTSP] is always equal to or more conservative than the [LTSP].

4 In NUREGs-1430, 1432, 1433, and 1434, the TS Function tables contain AVs. These specifications are referred to as having the "single column" format. In NUREG-1431, the option is given to list only the AV or to list the AV and the [NTSP]. This second option is referred to as the "multiple columns" format; for the multiple column presentation, the [NTSP] is the LSSS. Those plants that utilize the "multiple column" format are not required to incorporate the NTSP value in the last sentence in Note 2 because any change to the value requires prior NRC review and the values cannot be changed by the licensee under 10 CFR 50.59. For plants that specify the [NTSP] [LTSP] instead of the AV, the same restrictions apply and the identification of the [LTSP] [NTSP] in the last sentence in Note 2 is not required.

[LTSP/NTSP]. The TS Bases provide details on implementing the requirements of the Notes and the relationship between the As-Found value and operability of the instrument Function.

For instrument Functions not required to have the Notes described above, the TS Bases for SRs which verify setpoint setting values would be clarified to ensure that the instruments are functioning as required in accordance with analyses of record for protective instrumentation trip or actuation functions, as follows: "There is a plant-specific program which verifies that the instrument channel(s) will function as required by verifying the As-Left and As-Found setting are consistent with those established by the setpoint methodology."

Additionally, as part of the review process it was determined that TSTF Traveler-411 had not been correctly implemented in NUREG-1431. Corrections have been made to TS 3.3.6, Containment Purge and Exhaust Isolation Instrumentation, Table 3.3.6-1 and TS 3.3.7, Control Room Emergency Filtration System (CREFS) Actuation Instrumentation, Table 3.3.7-1.

The regulatory basis for the proposed TSs changes is described in Section 2.0. The technical evaluation, including the approach used to assess the instrumentation methodology is discussed in Section 3.0.

{REVIEWER'S NOTE: The 5 following paragraphs apply only to applications for TSTF Traveler-493, Revision 4, Option B, Setpoint Control Program.}

The proposed change would revise the [Plant Name], TSs to incorporate NRC-approved TSTF Traveler-493, Revision 4, to be consistent with Option B. Under Option B, a program is added to the Administrative Controls section of the TSs. The new program, entitled the Setpoint Control Program (SCP or the program), references an NRC-approved methodology for determining and verifying instrument setpoints and includes requirements that serve the same purpose as the Notes added to SRs under Option A of TSTF Traveler-493, Revision 4. In addition to having these items in place to address the NRC staff concerns, the SCP also provides a means for processing changes to instrumentation setpoints without prior NRC review

and approval. Option B allows the relocation of the instrument setpoint values from the TSs to licensee control by including setpoint values in a licensee controlled document that has been incorporated by reference in the plant UFSAR.

Option B relocates instrument Limiting Trip Setpoints (LTSP), Nominal Trip Setpoints (NTSP) and AVs from TS Section 3.3,"Instrumentation," to a document controlled by 10 CFR 50.59, but requires that all changes to setpoints be performed using an NRC-approved setpoint methodology, which is referenced in the TS Section 5.5, "Setpoint Control Program." Thus, Option B requires NRC approval of the setpoint methodology or methodologies that a plant will use to calculate future setpoint changes. Option B applies the SCP requirements TS Section 3.3. The plant-specific list of instrument Functions are in Attachment A to this SE. This list includes instrument Functions in the limiting conditions for operation (LCOs) for the [list appropriate LCOs.] A plant may propose to apply the SCP to all or a few select Specifications provided that all of the Functions listed in Attachment A of this SE as receiving the TSTF Traveler-493 footnotes are included in the SCP.

The SCP requires that the LTSP, NTSP, AV, As-Found Tolerance, and As-Left Tolerance (as applicable) of the Functions described in the SCP are calculated using the NRC-approved setpoint methodology. In addition, the program contains the value of the LTSP, NTSP, AV, As-Found Tolerance, and As-Left Tolerance (as applicable) for each Function described and identifies the setpoint methodology used to calculate these values. The program establishes methods to ensure that the Functions described will function as required by verifying the As-Left and As-Found settings are consistent with those established by the setpoint methodology. The program identifies the Functions that are automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A). The program will demonstrate that these instrument Functions will function as required by applying the SCP requirements during [Channel Calibration and Channel Functional Test SRs that verify

trip setpoint setting values (NUREG-1430, 1432, 1433, 1434)] [Channel Calibration and Channel Operational Test (COT) and Trip Actuating Device Operational Test (TADOT) SRs that verify trip setpoint setting values. (NUREG-1431)]. Changes to the program can be made in accordance with the requirements of 10 CFR 50.59 and revisions or supplements to the program will be provided to the NRC.

The TS Bases are also revised to define the term "Limiting Trip Setpoint" or "Nominal Trip Setpoint," and to discuss the relationship of the LSSS to other values, such as the AV and the [LTSP/NTSP]. The TS Bases provide details on the implementation of requirements described in the SCP and the relationship between the As-Found setpoint value and Function operability. Where necessary to provide context for the other changes, a description of the use of [LTSP/NTSP] and AV is added to the TS Bases, similar to the discussion in the Reactor Trip System TS Bases.

The regulatory basis for the proposed TS changes is described in Section 2.0. The technical evaluation and approach used to assess the instrumentation methodology is discussed in Section 3.0.

1.1 Development of TSTF Traveler-493, Revision 4

TSTF Traveler-493, Revision 4, changes satisfy the NRC staff position described in Regulatory Issue Summary (RIS) 2006-17, “NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels” through [the addition of Notes to the agreed upon TS Functions and changes to the TS Bases consistent with Option A] [the establishment of an SCP as a TS Administrative Controls program consistent with Option B].

In September 2002, during review of a plant-specific license amendment request (LAR), the NRC staff expressed two concerns about TSs AVs. The first concern was that TSs AVs calculated using some methods in the industry standard ISA-S67.04-1994 Part II could be

non-conservative depending upon the evaluation of instrument performance history and the As-Left requirements of the calibration procedures could have an adverse effect on equipment operability. The second concern was about using AVs as the limiting setting for assessing instrument channel operability. In these regards TSs requirements having AVs for LSSS may not be fully in compliance with the intent of 10 CFR 50.36 and the existing SRs would not provide adequate assurance that instruments will always actuate safety functions at the point assumed in the applicable safety analysis.

Subsequently, the NRC staff met with the industry group on setpoint methods about these concerns and in consideration of the need to develop a framework for processing LARs for setpoint changes. The industry group on setpoint methods proposed seven concepts for testing that they considered were essential to ensure instrument channels would function as required. These concepts were formally presented in a letter dated May 18, 2005, from industry (ADAMS Accession No. ML051570216). The NRC staff replied via letter dated August 23, 2005 (ADAMS Accession No. ML051660447), with clarifications of the concepts that the NRC staff believed would satisfactorily address both the NRC staff's and industry's concerns with instrument settings and ensure compliance with 10 CFR 50.36.

On January 27, 2006, the industry submitted standard technical specifications (STS) changes as TSTF Traveler-493, Revision 0 (ADAMS Accession No. ML060270503) employing the seven concepts. The NRC staff review of TSTF Traveler-493, Revision 0, concluded it did not provide a readily adoptable approach to ensure that the TSs would conform to the requirements of 10 CFR 50.36.

On August 24, 2006, the NRC staff issued RIS 2006-17 (ADAMS Accession No. ML051810077) to clarify its position on 10 CFR 50.36 requirements for LSSSs and to discuss why conformance to the AVs in the TSs during periodic testing or calibration alone is not sufficient to ensure that the ALs (and therefore SLs) will be protected until the next periodic

surveillance. RIS 2006-17 suggested (1) testing should verify that the change in the measured trip setpoint during testing or calibration is within predefined limits (acceptable As-Found and As-Left Tolerance bands) and (2) taking appropriate actions if the trip setpoint is outside these limits, as a method that could be used to meet the requirements of 10 CFR 50.36. The NRC staff explained it would use RIS 2006-17 concepts to evaluate the effects of the proposed TS setting changes on protection of plant SLs, the acceptability of the setpoint calculation methodology, and the adequacy of the proposed TS changes to meet the requirements of 10 CFR 50.36. The NRC staff also stated in the RIS 2006-17 that methods and approaches other than those discussed in the RIS may also be acceptable.

A description of the seven concepts agreed for use during testing of setpoint setting to verify that that instrument channels will perform their intended safety function when required is provided here:

Concept 1

The LTSP must be calculated consistent with the plant-specific methodology. The LTSP is the expected value for the trip. The As-Left and As-Found values may be less conservative than the LTSP by an amount equal to predefined tolerances that are factored into the trip setpoint calculation.

Concept 2

The As-Found trip setpoint must be verified to be within predefined double-sided limits that are based on the actual expected errors that occur between calibrations. Finding the As-Found trip setpoint outside these limits warrants additional evaluation and potential corrective action, as necessary, to ensure continued performance of the channel safety function. Typically, an As-Found Tolerance will be equivalent to uncertainties (e.g., Reference Accuracy (RA), Drift, and Measurement and Test Equipment (M&TE) accuracy/errors) evaluated during setpoint verification.

Concept 3

The NTSP must be reset to, or left within, the As-Left Tolerance band at the end of every surveillance test that requires setpoint verification. The ability to reset the setpoint represents confidence that the channel will continue to perform its intended safety function. The As-Left Tolerance band may include RA, M&TE accuracy, and readability uncertainties.

Concept 4

The NTSP may be set more conservative than the LTSP. If the NTSP is set more conservative than the LTSP, the As-Found and As-Left Tolerance bands will be maintained around the more conservative NTSP.

Concept 5

The AV (defined as the least conservative acceptable As-Found surveillance value) defines the maximum possible value for process measurement at which the AL is protected. The AV verifies that the AL and SL are still protected at the time of the surveillance. Since operability of the instrument channel is determined at the time of the surveillance performance, the fact that the tested trip point occurred conservative to the AV ensures that at that point in time the channel would have functioned to protect the AL and is operable. With implementation of these concepts, the calculation of the AV using any of the ISA S67.04 Part II methods is acceptable.

Concept 6

For those Westinghouse NSSS plants with plant-specific TSs that contain AV and NTSP columns, the NTSP identified in TSs is expected to be the NTSP for the channel.

Concept 7

When an As-Found channel value is conservative to the AV but the setpoint is outside the As-Found Tolerance band, the channel may be in a degraded condition and may not conform to the assumptions in the design basis calculation. Prior to returning the channel to

service a determination shall be made utilizing available information to ensure that the channel can perform as expected. For example, this determination may include an evaluation of the magnitude of setpoint change per unit time, of instrument channel reset response, previous channel test history, etc., to provide confidence that the channel will be capable of performing its intended safety function. This determination, combined with resetting the trip setpoint to within the As-Left Tolerance band, permits the channel to be returned to service.

{REVIEWER'S NOTE: Use this paragraph for TSTF Traveler-493, Revision 4, Option A.} Application of Concepts 1 through 6 results in TS or TS Bases changes in TSTF Traveler-493, Revision 4, Option A. To address Concept 7, the revised TS Bases state that when a channel's As-Found value is outside the As-Found Tolerance band, the potentially degraded instrument must be entered into the licensee's CAP. The CAP evaluation is expected to be performed promptly to validate the determination that was performed prior to returning the channel to service and to confirm that the channel is operable and performing as expected. The licensee's CAP will be used to track or trend these instruments.

{REVIEWER'S NOTE: Use this paragraph for TSTF Traveler-493, Revision 4, Option B.} For Option B, all items are addressed in the SCP in Section 5.5 of the Administrative Controls of the TS.

On January 18, 2008, the industry submitted TSTF Traveler-493, Revision 3, in response to NRC RIS 2006-17. However, Revision 3 of the Traveler did not represent agreement between the industry and NRC staff on the scope of instrument Functions that are LSSSs in accordance with 10 CFR 50.36.

In January 2009, discussions between industry and the NRC staff resulted in agreement on the scope of TS instrument Functions, which should be annotated with performance-based footnotes for assessing operability, as well as agreement on strategies that a licensee may pursue and which the NRC staff endorse for adopting TSTF Traveler-493.

1.2 Agreements on TSTF-493 Content and Implementation Strategies

Industry and the NRC staff agreed that TSTF Traveler-493, Revision 4, would add footnotes to instrument Functions in the LCOs for Reactor Trip System (also called Reactor Protection System), the Engineered Safety Feature Actuation System (also called Emergency Core Cooling System) and some instrument functions in other LCOs identified by the Boiling Water Reactors Owners' Group in TSTF Traveler-493, Revision 3. The comprehensive list of functions with footnotes is contained in the letter from the TSTF to the NRC, "Industry Plan to Resolve TSTF-493, "Clarify Application of Setpoint Methodology for LSSS Functions," dated February 23, 2009 (ADAMS Accession No. ML090540849). This list specifically excludes certain types of instrument functions (e.g., Manual functions) from having footnotes, which are also identified in the February 23, 2009, letter. With these agreements, the resulting scope of TS functions with footnotes in TSTF Traveler-493, Revision 4, would be consistent with the NRC staff position discussed in RIS 2006-17.

Industry also proposed three strategies in the February 23, 2009, letter including conditions related to license applications implementing these strategies, which would facilitate adoption of TSTF Traveler-493, Revision 4. The strategies are (1) adoption of TSTF Traveler-493, Revision 4, footnotes for all agreed upon instrument Functions for LARs with changes to setpoint values, (2) adoption of TSTF Traveler-493, Revision 4, footnotes for all agreed upon instrument Functions for LARs without changes to setpoint values, and (3) adoption of a TS Administrative Controls SCP that contains the setpoint methodology and parameters used in the calculation and control of instrumentation setpoints. The NRC staff found these strategies acceptable.

2.0 REGULATORY EVALUATION

Plant protective systems are designed to initiate reactor trips (scrams) or other protective actions before selected unit parameters exceed ALs assumed in the safety analysis in order to

prevent violation of the Reactor Core SLs and RCS Pressure SL from postulated Anticipated Operational Occurrences (AOOs) and accidents. The Reactor Core SLs and RCS Pressure SL ensure that the integrity of the reactor core and reactor coolant system (RCS) are maintained. The design criteria for instrumentation used by this evaluation are:

The regulations 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 13, "Instrumentation and Control," states:

> Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

The regulations 10 CFR Part 50, Appendix A, GDC 20, "Protection System Functions," states:

> The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

Section 182a of the Atomic Energy Act (the ‘‘Act’’) requires applicants for nuclear power plant operating licenses to include TS as part of the license. The TS ensure the operational capability of structures, systems and components that are required to protect the health and safety of the public. The Commission’s regulatory requirements related to the content of the TS are contained in 10 CFR 50.36, “Technical specifications.” The regulation requires that the TS

include items in the following specific categories: (1) Safety limits, limiting safety systems settings, and limiting control settings (50.36(c)(1)); (2) LCOs (50.36(c)(2)); (3) Surveillance Requirements (50.36(c)(3)); (4) design features (50.34(c)(4)); and (5) administrative controls (50.36(c)(5)). However, the regulation does not specify the particular requirements to be included in TSs.

Instrumentation required by the TSs has been designed to assure that the applicable safety analysis limits will not be exceeded during accidents and AOOs. This is achieved by specifying [LTSPs/NTSPs], including testing requirements to assure the necessary quality of systems, in terms of parameters directly monitored by the applicable instrumentation systems for LSSSs, as well as specifying LCOs on other plant parameters and equipment in accordance with 10 CFR 50.36(c)(1)(ii)(A).

- Section 50.36(c)(1)(i)(A) states: "Safety limits for nuclear reactors are limits upon important process variables that are found to be necessary to reasonably protect the integrity of certain of the physical barriers that guard against the uncontrolled release of radioactivity."
- Section 50.36(c)(1)(ii)(A) states: "Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor."
- Section 50.36(c)(3) states: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

- Section 50.36(c)(5), states: “Administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure the operation of the facility in a safe manner.” This also includes the programs established by the licensee, and listed in the administrative controls section of the TS, for the licensee to operate the facility in a safe manner

In determining the acceptability of revising instrumentation TS requirements, the NRC staff used the accumulation of generically approved guidance in [NUREG–1430, Revision 3, ‘‘Standard Technical Specifications, Babcock and Wilcox Plants,’’ June, 2004; NUREG–1431, Revision 3, ‘‘Standard Technical Specifications, Westinghouse Plants,’’ dated June, 2004; NUREG–1432, Revision 3, ‘‘Standard Technical Specifications, Combustion Engineering Plants,’’ dated June, 2004; NUREG-1433, Revision 3, “Standard Technical Specifications, General Electric Plants, BWR/4,” dated June, 2004; or NUREG-1434, Revision 3, “Standard Technical Specifications, General Electric Plants, BWR/6,” dated June, 2004], and Regulatory Guide (RG) 1.105, Revision 3, “Setpoints for Safety-Related Instrumentation.” RG 1.105, Revision 3, describes a method acceptable to the NRC staff for complying with the NRC’s regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the TS limits. The RG endorses Part I of ISA -S67.04-1994, “Setpoints for Nuclear Safety-Related Instrumentation,” subject to NRC staff clarifications. The ISA standard provides a basis for establishing setpoints for nuclear instrumentation for safety systems and addresses known contributing errors in the channel. Part I defines a framework for ensuring that setpoints for nuclear safety-related instrumentation are established and maintained within specified limits. The RG neither addresses nor endorses Part II of ISA-S67.04-1994, “Methodologies for the Determination of Setpoints for the Nuclear Safety-Related Instrumentation.” Part II provides recommended practices and guidance for implementing Part I.

3.0 TECHNICAL EVALUATION

{REVIEWER'S NOTE: The Section 3.1 paragraphs that follow apply only to applications for TSTF Traveler-493, Revision 4, Option A.}

3.1 Option A TS Changes Technical Bases

{REVIEWER'S NOTE: The determination of which type of TSs channel surveillance requirements will get the Notes applied by Option A will vary due to vendor-specific surveillance testing terminology. In a similar manner, the location of the Notes on the TSs pages will also vary due to differences in vendor presentation and format for setpoint settings in the TSs Tables.}

3.1.1 Addition of Notes 1 and 2 to TS Functions

There are two Notes added to the TSs to address the NRC staff concerns about the use of TS AVs for operability determinations and for assessing channel behavior.

Note 1 states, "If the As-Found channel setpoint is outside its predefined As-Found Tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service."

Note 2 states, "The instrument channel setpoint shall be reset to a value that is within the As-Left Tolerance around the [LTSP/NTSP] at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the [LTSP/NTSP] are acceptable provided that the As-Found and As-Left Tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The [LTSP/NTSP] and the methodologies used to determine the As-Found and the As-Left Tolerances are specified in the [Bases][insert the facility UFSAR reference or the name of any document such as the TRM document incorporated into the facility UFSAR by reference.]"

3.1.2 Technical Bases

Setpoint calculations calculate a [LTSP/NTSP] based on the AL of the Safety Analysis to

ensure that trips or protective actions will occur prior to the process parameter exceeding the SL as required by the Safety Analysis calculations. These setpoint calculations may also calculate an allowable limit of change to be expected (i.e., the As-Found Tolerance) between performance of the surveillance tests for assessing the value of the setpoint setting. The least conservative As-Found instrument setting value that a channel can have during calibration without requiring performing a TS remedial action is the setpoint AV. Discovering an instrument setting to be less conservative than the setting AV indicates that there may not be sufficient margin between the setting and the AL. TSs Channel Calibrations, Channel Functional Tests (with setpoint verification), trip unit calibrations, COTs, and TADOTs (with setpoint verification) are performed to verify channels are operating within the assumptions of the setpoint methodology calculated [LTSP/NTSP] and that channel settings have not exceeded the TS AVs. When the measured As-Found setpoint is non-conservative with respect to the AV, the channel is inoperable and the actions identified in the TSs must be taken.

Verifying that a trip setting is conservative with respect to the AV when a Surveillance is performed does not by itself verify the instrument channel will operate properly in the future. Although the channel was operable during the previous surveillance interval, if it is discovered that channel performance is outside the performance predicted by the plant setpoint calculations for the test interval, then the design basis for the channel may not be met, and proper operation of the channel for a future demand cannot be assured. Note 1 formalizes the establishment of the appropriate As-Found setting tolerance for each channel. This As-Found Tolerance is applied about the [LTSP/NTSP] or about any other more conservative setpoint that the licensee chooses to implement. The As-Found setting tolerance ensures that channel operation is consistent with the assumptions or design inputs used in the setpoint calculations and establishes a high confidence of acceptable channel performance in the future. Because the setting tolerance is two-sided, changes in channel performance that are conservative with

respect to the tolerance will also be detected and evaluated for possible effects on expected performance.

Implementation of Note 1 requires the licensee to calculate an As-Found Tolerance. One acceptable method of calculating the As-Found Tolerance is the Square Root Sum of the Squares (SRSS) combination of either a) RA, M&TE error, M&TE readability (M&TEr) and projected drift, or b) As-Left Tolerance and the projected drift (assuming that As-Left Tolerance is less than the SRSS combination of RA, M&TE error, M&TEr). Different methods for calculating the As-Found Tolerance, including the inclusion of additional uncertainties (e.g., normal radiation effect, temperature effect between calibrations, capillary tubing error) may be acceptable. Alternate methods must result in an As-Found Tolerance that is small enough to detect abnormal channel performance. Any additional uncertainties included in the As-Found Tolerance calculation must be justified.

Verification that the measured setpoint is within the As-Found Tolerance is determined by calculating the difference between the current As-Found value and the [LTSP/NTSP] or by calculating the difference between the current As-Found value and the previous As-Left value. In order to use the As-Found minus [LTSP/NTSP] methodology, the As-Left Tolerance must be less than or equal to the SRSS combination of the RA, M&TE, and M&TEr. The methodology used to determine the As-Found and As-Left Tolerance must be stated in the document controlled under 10 CFR 50.59 referenced in Note 2, as described below.

{REVIEWER'S NOTE: use this paragraph for NUREG-1431} Note 2 states, "The instrument channel setpoint shall be reset to a value that is within the As-Left Tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the As-Found and As-Left Tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The Nominal Trip

Setpoint and the methodologies used to determine the As-Found and the As-Left Tolerances are specified in the [Bases][insert the facility UFSAR reference or the name of any document such as the Technical Requirements Manual (TRM) document incorporated into the facility UFSAR by reference.]"

{REVIEWER'S NOTE: use this paragraph for NUREGs-1430, 1432, 1433, or 1434} Note 2 states, “The instrument channel setpoint shall be reset to a value that is within the As-Left Tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the As-Found and As-Left Tolerances apply to the actual setpoint implemented in the Surveillance procedures (Nominal Trip Setpoint) to confirm channel performance. The Limiting Trip Setpoint and the methodologies used to determine the As-Found and the As-Left Tolerances are specified in the [Bases][insert the facility UFSAR reference or the name of any document such as the Technical Requirements Manual (TRM) document incorporated into the facility UFSAR by reference.]"

Setpoint calculations assume that the instrument setpoint is left at the [LTSP/NTSP] within a specific As-Left Tolerance (e.g., 25 psig + 2 psig). A Tolerance is necessary because no device perfectly measures the process. Additionally, it is not possible to read and adjust a setting to an absolute value due to the readability and/or accuracy of the test instruments or the ability to adjust potentiometers. The As-Left Tolerance is normally as small as possible considering the tools and the objective to meet an as low as reasonably achievable calibration setting of the instruments. The As-Left Tolerance is always considered in the setpoint calculation. Failure to set the actual plant trip setpoint to the [LTSP/NTSP] (or more conservative than the [LTSP/NTSP]), and within the As-Left Tolerance, would invalidate the assumptions in the setpoint calculation because any subsequent instrument drift would not start from the expected As-Left setpoint.

The NRC staff is concerned that some plants may have used As-Left Tolerances much larger than necessary for proper reading and adjustment of the channels. In this situation, the large tolerances could prevent or mask detection of instrument degradation or failure. However, large As-Left tolerances do have the advantage of minimizing the number of times that a channel must be adjusted, and can provide a true indication of long term instrument performance if the results are trended using "As-Found minus As-Left" techniques. Implementation of Note 2 may require some licensees to recalculate the As-Left Tolerance for some channels to ensure that realistic values are used that do not mask instrument performance.

During the process of checking the setpoint there are four possible results. They are listed here in best case-to-worst case order:

1. The setpoint is found within the As-Left Tolerance; the results are recorded in the procedure, and the TSs require no further action.

2. The setpoint is outside the As-Left Tolerance but within the As-Found Tolerance; the setpoint is reset to within the As-Left Tolerance, and the TSs require no further action.

3. The setpoint is found conservative with respect to the AV but outside the As-Found Tolerance. In this case the channel is Operable, but degraded. The degraded condition will be further evaluated and documented during performance of the SR. This evaluation will consist of resetting the channel setpoint to the [LTSP/NTSP] (within the allowed tolerance), and evaluating the channel response. If the channel is functioning as required and expected to pass the next surveillance, then the channel is Operable and can be restored to service at the completion of the surveillance.

4. The setpoint is found non-conservative to the AV; the channel is inoperable until the setpoint is reset to the [LTSP/NTSP] (within the As-Left Tolerance), and any evaluations necessary to return the channel to service are completed and documented.

The TS Bases for agreed upon Functions state that a determination that the instrument is functioning as required must be performed prior to returning the channel to service when the channel is found conservative with respect to the AV but outside the predefined tolerance (As-Found Tolerance). This determination will consider whether the instrument is degraded or is capable of being reset and performing its specified safety function. If the channel is determined to be functioning as required (i.e., the channel can be adjusted to within the As-Left Tolerance and is determined to be functioning normally based on the determination performed prior to returning the channel to service), then the channel is Operable and can be restored to service. The licensee must also enter the As-Found setting values condition into the Corrective Action Program for further analysis and trending.

3.1.3 Evaluation of Exclusion Criterion

The list of affected Functions in Attachment A of this SE was developed on the principle that all Functions in the affected TSs are included unless one or more of the following exclusions apply:

1. The two Notes are not applied to Functions which utilize manual actuation circuits, automatic actuation logic circuits or to instrument functions that derive input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, manual actuation switches, float switches, proximity detectors, etc.). In addition, the two Notes do not apply to those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function.

The two Notes are not applied to Functions which utilize mechanical components to sense the trip setpoint, or to manual initiation circuits (the latter are not explicitly modeled in the accident analysis) because current functional SRs, which have no setpoint verifications, adequately demonstrate the operability of these Functions. Note 1 requires a comparison of the periodic SR results to provide an indication of channel (or individual device) performance. This

comparison is not valid for most mechanical components. While it is possible to verify that a limit switch functions at a point of travel, a change in the surveillance result probably indicates that the switch has moved, not that the input/output relationship has changed. Therefore, a comparison of SR results would not provide an indication of the channel or component performance.

2. The two Notes are not applied to TSs associated with mechanically operated safety relief valves. The performance of these components is already controlled (i.e., trended with As-Left and As-Found tolerances) under the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants testing program.

3. The two Notes are not normally applied to Functions and SRs, which test only digital components. There is no expected change in result between SR performances for these components. Where separate As-Left and As-Found Tolerance is established for digital component SRs, the requirements would apply. The two Notes do not apply to Functions and Surveillances which test only digital components. For purely digital components, such as actuation logic circuits, relays, and any other tests using a digital or on/off input, there is no expected change in result between SRs and any test result other than the identified TS surveillance acceptance criteria would be considered inoperable.

An evaluation resulted in the two Notes being applied to the Functions shown in Attachment A of this SE. Each licensee proposing to adopt this Traveler must review the list of Functions in order to confirm that the identified functions are consistent with their plant-specific design. The two Notes are not required to be applied to any of the listed Functions, which meet any of the exclusion criteria based on the plant-specific design and analysis provided the analysis is reviewed and approved by the NRC staff. In particular the licensee's evaluation must include all bypass, permissives, and interlocks to verify they meet the exclusion criteria. Note that Attachment A to NUREG-1433, Specification 3.3.5-1, Function 1.d, has been revised to

indicate that if the valve is locked open, the Function can be removed from TSs. The TSTF-09-07 letter dated February 23, 2009, contained incorrect information for this Function.

The AV may still be the only value included in the TSs to indicate the least conservative value that the As-Found setpoint may have during testing. In this case the [LTSP/NTSP] values must be in the TRM (or equivalent) or any document incorporated into the UFSAR by reference, and the title of this document must be identified in Note 2 in order to satisfy the 10 CFR 50.36 requirements that the LSSS be in the TSs. Additionally, to ensure proper use of the AV, [LTSP/NTSP], and [NTSP or field settings], the methodology for calculating the As-Left and As-Found Tolerances, as discussed above, must also be included in a document controlled under 10 CFR 50.59 and listed in the second Note.

For TSs with a multiple column format which lists the [LTSP/NTSP] (as shown as an option in NUREG-1431), the last sentence of Note 2 is modified to remove the requirement that the [LTSP/NTSP] be identified in a 10 CFR 50.59 controlled document. If the [LTSP/NTSP] is specified in the TSs, any change to the [LTSP/NTSP] requires prior NRC review and approval. As a result, it is not necessary for the [LTSP/NTSP] to be specified in a document controlled under 10 CFR 50.59. It will still be necessary to identify the methodologies used to determine the As-Found and the As-Left Tolerances in a document controlled under 10 CFR 50.59 and identify this document in Note 2.

3.1.4 Addition of the Definition of "Limiting Trip Setpoint" to the TS Bases

The term "[Limiting Trip Setpoint]" is added as generic terminology for the setpoint value calculated by means of the plant-specific setpoint methodology documented in a document controlled under 10 CFR 50.59. The trip setpoint (field setting for the Westinghouse STS NUREG; NTSP for all other vendor STS NUREGs) may be more conservative than the LTSP (NTSP for the Westinghouse STS NUREG). For the purpose of TS compliance with 10 CFR 50.36, the plant-specific value for the LSSS must be in the TSs or contained in a document

controlled under 10 CFR 50.59.

Instead of referencing the title of the document that contains the [LTSPs] in Note 2, it is also acceptable to list the [LTSPs] directly in the TSs, and revise Note 2 to only identify the title of the document that describes the methodology for determining the As-Found and As-Left Tolerances.

{REVIEWER'S NOTE: The Section 3.2 paragraphs that follow apply to applications for TSTF Traveler-493, Revision 4, Option A - with changes to setpoint values.}

3.2 Technical Evaluation for Option A with Changes to Setpoint Values

{REVIEWER'S NOTE: the plant-specific SE discussion may deviate from this generic evaluation due to the scope and content of the licensee plant-specific license basis}

3.2.1 Changes to The Setting Limits

The licensee proposed changes to revise various TSs instrument setting limits. The licensee demonstrated the calculation basis for the LTSP, NTSP, AV, As-Found Tolerance band, and As-Left Tolerance band for a representative sample of each type of automatic protection instrumentation function. The licensee discussed how the plant licensing basis meets the guidance provided in RIS 2006-17 and RG 1.105, Revision 3.

Based on this the NRC staff concludes that the licensee setpoint methodology meets the guidance provided in RIS 2006-17 and RG 1.105, Revision 3. The licensee has revised the affected TS Tables [insert list of Tables] where these setting are listed. Since these settings are calculated based on the acceptable methodology, they are acceptable to the NRC staff.

3.2.2 Addition of Footnotes to TS Tables

The licensee has added footnotes to the following TS instrumentation specifications: [insert list of Instrumentation LCOs]. The licensee stated that the determination to include footnotes for specific Functions in these TS Tables is based on these functions being automatic protective devices related to variables having significant safety functions as delineated by

10 CFR 50.36(c)(1)(ii)(A). Furthermore, the licensee stated that if during calibration testing the setpoint is found to be conservative with respect to the AV but outside its predefined As-Found Tolerance band, then the channel shall be brought back to within its predefined calibration tolerance before returning the channel to service. The licensee has applied footnotes to the following functions in the follow TS Tables: [insert the list of instrument Functions in their respective TS Tables that will be modified with the two Option A footnotes.]

The proposed notes will add operability determination of the subject functions in the TS consistent with the NRC staff position for complying with 10 CFR 50.36(c)(1)(ii)(A) as discussed RIS 2006-17. The NRC staff reviewed the list of affected TS functions. [Insert a summary statement, detailing the extent of the NRC staff review, addressing any NRC staff concerns that resulted in modification of the application with a supplemental letter.] The NRC staff finds licensees proposed change acceptable.

3.2.3 Conclusion

Based on our review of the licensee's submittal, the NRC staff concludes that the setpoint calculations are representative of the instrument setpoint methodology for the proposed TS changes and is therefore acceptable. The NRC staff further concludes that by adding the two notes the instrument Function operability will be controlled in the TS rather than procedures. By meeting the Note requirements of the TSs the licensee has also demonstrated that these instruments will perform their safety function. The NRC staff further concludes that the proposed TS changes specified in Section [3.0] of this SE meet the requirements of 10 CFR 50.36(c)(1)(ii)(A) and therefore, are acceptable to the NRC staff.

{REVIEWER'S NOTE: The Section 3.2 paragraphs that follow apply to applications for TSTF Traveler-493, Revision 4, Option A - without changes to setpoint values.}

3.2 Technical Evaluation for Option A Without Changes to Setpoint Values

{REVIEWER'S NOTE: the plant-specific SE discussion may deviate from this generic

evaluation due to the scope and content of the licensee plant-specific license basis}

3.2.1 Addition of Footnote to TS Tables

The licensee has added footnotes to the following TS instrumentation specifications [insert list of Instrumentation LCOs]. The licensee stated that the determination to include footnotes for specific Functions in these TS Tables is based on these functions being automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A). Furthermore, the licensee stated that if during calibration testing the setpoint is found to be conservative with respect to the LSSS but outside its predefined calibration tolerance, then the channel shall be brought back to within its predefined calibration tolerance before returning the channel to service. The calibration tolerances are specified in the TRM or a document incorporated by reference in the UFSAR. Changes to the values will be controlled by 10 CFR 50.59. The licensee has applied footnotes to the following functions in the follow TS Tables:

[Insert the list of instrument Functions in their respective TS Tables that will be modified with the two Option A footnotes.]

The proposed notes will add operability determination of the subject functions in the TS consistent with the NRC staff position for complying with 10 CFR 50.36(c)(1)(ii)(A) as discussed in RIS 2006-17. The NRC staff reviewed the list of affected TS functions. [Insert a summary statement, detailing the extent of the NRC staff review, addressing any NRC staff concerns that resulted in modification of the application with a supplemental letter.] The NRC staff finds licensee's proposed change acceptable.

3.2.2 Conclusion

Based on review of the licensee's submittal, the NRC staff concludes that by adding footnotes to the TS Tables, the instrument function operability will be controlled in the TS rather than procedures. The NRC staff further concludes that the proposed TS changes specified in

Section [3.2.1] of this SE meet the requirements of 10 CFR 50.36(c)(1)(ii)(A) and therefore, are acceptable to the NRC staff.

{REVIEWER'S NOTE: The Sections 3.1 and 3.2 paragraphs that follow apply to applications for TSTF Traveler-493, Revision 4, Option B.}

3.1 Option B Technical Specification Changes Technical Bases

3.1.1 Technical Basis

Under Option B, a program is added to the Administrative Controls section of the TSs. The new program, titled the "Setpoint Control Program," establishes the requirements for ensuring that setpoints for automatic protective devices are initially within and remain within the TS requirements. The SCP also provides a means for processing changes to instrumentation setpoints without prior NRC review and approval and identifies the NRC-approved setpoint methodologies that may be used. The program also includes requirements that serve the same purpose as the Notes added to SRs under Option A.

A request to adopt Option B requires that all changes to those setpoints be performed using an NRC-approved setpoint methodology, which is referenced in the TS Section 5.5, "Setpoint Control Program." A licensee may propose to apply the SCP to all or a few select Specifications provided that all of the Functions listed in Attachment A of this SE as receiving the TSTF Traveler-493 footnotes are included in the SCP or with the Option A footnotes. Surveillances which verify AVs or Trip Setpoints in the Specifications for which AVs or Trip Setpoints are relocated are revised to state that the SRs must be performed in accordance with the SCP.

Paragraph a of the TS SCP lists the Specifications which are controlled by the program. The licensee's SCP must list each instrument Function with a relocated setpoint for each Specification listed in the TS SCP. The licensee's SCP must also list the LTSP, NTSP, AV, As-Found Tolerance, and As-Left Tolerance (as applicable) for each instrument Function and

identify the NRC-approved setpoint methodology used to calculate these values. The TS SCP includes a reference to the NRC staff SE approving the setpoint methodology or methodologies. Using an NRC-approved methodology to establish a requirement on which to base future changes to TSs required AVs and [LTSP/NTSP] limits is similar to the precedent established in Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," (ADAMS Accession No. ML031130447).

The TS SCP, Paragraph c, requires the licensee to establish a method to ensure the instrument Functions with relocated setpoints will function as required by verifying the As-Left and As-Found settings are consistent with those established by the setpoint methodology.

The general requirement in Paragraph c of the SCP for all the affected Functions is augmented with additional requirements in Paragraph d of the SCP. Paragraph d contains requirements equivalent to the Notes on the identified Functions in Option A. The Reviewer's Note for Paragraph d includes the exclusion criteria that are used to determine which Functions must receive the additional requirements in Paragraph d. Instruments are excluded because their functional purpose can be described as (1) a manual actuation circuit, (2) an automatic actuation logic circuit, or (3) an instrument function that derives input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, etc.). Many permissives or interlocks are excluded if they derive input from a sensor or adjustable device that is tested as part of another TS function. This ensures that the instrument Functions which would receive Notes under Option A are subject to the same controls under Paragraph d of Option B. These instrument Functions must be identified in the licensee's SCP.

The current method of controlling instrument setpoints to assure conformance to 10 CFR 50.36 is to specify the value in the TSs. Relocating the TS values to licensee controlled documents and requiring the values to be determined using an NRC-approved methodology and acceptance criteria assures conformance to 10 CFR 50.36. The controls on the relocated

setpoints continue to ensure that the lowest functional capability or performance levels of instrumentation required for safe operation is met. This permits operation at any specific value determined by the licensee, using the NRC-approved methodology, to be within the acceptance criteria.

The NRC staff concludes that it is essential to plant safety that a plant is operated within the bounds of the parameter limits and that a requirement to maintain the plant within the appropriate bounds must be retained in the TS. However, the specific values of these limits may be modified by licensees, without affecting nuclear safety, provided that these changes are determined using an NRC-approved methodology and consistent with all applicable limits of the plant safety analysis that are addressed in the UFSAR. The NRC staff concludes that changes to these values shall be submitted to NRC in a formal report. This will allow continued trending of this information, even though prior NRC approval of the changes to these limits would not be required.

3.2 Option B Technical Evaluation of TS Changes Using the Setpoint Control Program

{REVIEWER'S NOTE: the plant-specific SE discussion may deviate from this generic evaluation due to the plant-specific setpoint methodology and licensing basis}

3.2.1 Setpoint Control Program TS 5.5.[18]

The licensee described the plant-specific evaluation for the list of instrument Functions that are described in SCP TS 5.5.[18] Paragraph a. This program establishes requirements for ensuring that setpoints for automatic protective devices are initially within and remain within the TS requirements. This program provides a means for processing changes to instrumentation setpoints and identified setpoint methodologies to ensure instrumentation will functions as required. The program also ensures that testing of automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.369(c)(1)(ii)(A) verify that instrumentation will function as required.

Since the licensee SCP meets the requirements for programmatic elements described in TS 5.5.[18] the SCP is acceptable to the NRC staff.

3.2.2 Setpoint Methodology

The licensee setpoint methodology met the content and application requirements of the SCP TS 5.5.[18] Paragraphs b and c. The program included the calculation basis for the LTSP, NTSP, AV, As-Found Tolerance band, and As-Left Tolerance band for each automatic protection instrumentation function. The application included a description of the method the program will establish to ensure that Functions described in TS 5.5.[18] Paragraph a (i.e., Functions not described as LSSSs in accordance with Paragraph d) will function as required by verifying the As-Left and As-Found settings are consistent with those established by the setpoint methodology.

The licensee discussed how the plant licensing basis meets the guidance provided in RIS 2006-17 and RG 1.105, Revision 3. The licensee described the measures to be taken to ensure that the associated instrument channel is capable of performing its safety function(s) in accordance with applicable design requirements and associated analyses. Information was provided on the controls employed to ensure that the As-Left trip setting after completion of periodic surveillance is consistent with the setpoint methodology. The plant corrective action processes (including plant procedures) detailed the plant-specific requirements for restoring channels to operable status. The licensee also described how the controls established by plant procedures would ensure that corrective actions will be implemented.

The licensee has demonstrated the calculation basis for the LTSP, NTSP, AV, As-Found Tolerance band and As-Left Tolerance band are consistent with the revised setting limits for the instrument functions identified in TS 5.5.[18] Paragraph a. These calculations meet the guidance provided in RIS 2006-17 and RG 1.105, Revision 3. Based on this the NRC staff concludes that the licensee setpoint methodology is acceptable. The licensee has revised the

affected TS Surveillances [insert plant-specific SR list] and TS Tables [insert plant-specific list] where these setting are listed. Since these settings are calculated based on the acceptable methodology, they are acceptable to the NRC staff. [Insert a summary statement, detailing the extent of the NRC staff review, addressing any NRC staff concerns that resulted in modification of the application with a supplemental letter.]

3.2.3 LSSSs

The licensee provided documentation of the plant-specific evaluation for identifying the Functions that are automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A) as required by SCP TS 5.5.[18] Paragraph d. The evaluation explained the basis for this determination, including the consideration of the three exclusion criterion listed in TS 5.5.[18] Paragraph d. The evaluation also established the list of TS SRs, which are applicable to the performance testing criterion of Paragraph d. The licensee has also identified all deviations from the list provided in TSTF Traveler-493, Revision 4, and has explained the basis for these deviations.

Since automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A) are consistent with the plant-specific license basis and since performance based testing is applied to all current TS Surveillances that evaluate setpoint settings, including the As-Found Tolerance band and As-Left Tolerance band (as applicable) the requirement of TS SCP, Paragraph d are met. The NRC staff finds this acceptable and the requirements of TS 5.5.[18] are consistent with TSTF Traveler-493, Revision 4, Attachment A.

In accordance with the SCP for Functions which are not evaluated under the scope of Paragraph d, but are included in Paragraph a, the licensee has explained how the requirements of Paragraph c will be met. This ensures that instruments meeting the requirements of Paragraph c of the SCP will perform their safety function as required by 10 CFR

50.36(c)(1)(ii)(A).

3.2.4 Conclusion

Based on the review of the licensee's submittal, the NRC staff concludes that the setpoint calculations are representative of the instrument setpoint methodology for the proposed TS changes and is therefore acceptable. The NRC staff further concludes that by meeting the SCP described in TS 5.5.[18], Paragraph d, instrument function operability will be controlled in the TS rather than procedures. By meeting the requirements of Paragraph c, the licensee has also demonstrated that these instruments will perform their safety function. The NRC staff further concludes that the proposed TS changes specified in Section [3.0] of this SE meet the requirements of 10 CFR 50.36(c)(1)(ii)(A) and therefore, are acceptable.

3.3 Technical Evaluation of Changes Related to TSTF-411

Additionally, as part of the TSTF-493 review process it was determined that the allowances of TSTF-411 changes had not been correctly incorporated into NUREG 1431. Corrections have been made to Specification 3.3.6, Containment Purge and Exhaust Isolation Instrumentation, Table 3.3.6-1 and 3.3.7, Control Room Emergency Filtration System (CREFS) Actuation Instrumentation, Table 3.3.7-1 to correct these noted discrepancies. These changes establish conformance with a previously reviewed and approved TSTF Traveler. The technical basis for approval of TSTF-411 remains unchanged therefore the NRC staff finds them acceptable.

4.0 CONCLUSIONS

The Commission has concluded, based on the considerations discussed above, that: (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 STATE CONSULTATION

In accordance with the Commission's regulations, the [ ] State official was notified of the proposed issuance of the amendment. The State official had [(1) no comments or (2) the following comments—with subsequent disposition by the NRC staff].

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, "Standards for Protection Against Radiation." The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards considerations, and there has been no public comment on the finding [FR]. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

7.0 REFERENCES

1. [Licensee] Licensee Amendment Request to adopt TSTF Traveler-493, [DATE].
2. Federal Register Notice, Notice of Availability published on [DATE] ([ ] FR [ ]).
3. TSTF Traveler-493, Revision 4, "Clarify Application of Setpoint Methodology for LSSS Functions"

ATTACHMENT A
TS INSTRUMENTATION FUNCTIONS LSSS

Technical specifications (TS) limiting safety system settings (LSSS) for instrumentation Functions are required to be identified to establish surveillance requirements (SR) that provide adequate assurance that the instruments will always actuate safety functions at the point assumed in the applicable safety analysis to address full compliance with LSSS as defined by 10 CFR 50.36(c)(1)(ii)(A). Regulatory Issue Summary (RIS) 2006-17, “NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels” provided additional guidance to the licensee on meeting this requirement.

TSTF Traveler-493, Revision 4, provides for two separate options to address full compliance with 10 CFR 50.36. The first option (Option A) places Notes in TS Tables for the agreed upon functions. The second option (Option B) adds a program to the Administrative Controls section of the TSs which requires evaluation equivalent to the Notes under Option A. Each option conservatively identifies LSSS TSs instrument Functions as all Functions in the Reactor Trip System (also called the Reator Protection System) and Engineered Safety Feature Actuation System (also called the Emergency Core Cooling System) and some instrument Functions in limiting conditions for operation (LCOs) identified for NUREG-1433 and NUREG-1434 plants in TSTF Traveler-493, Revision 3. Criteria were applied to exclude instrumentation Functions not required to establish full compliance with 10 CFR 50.36(c)(1)(ii)(A). An LCO instrument Function would be excluded as a LSSS if one or more following criteria apply:

1. Manual actuation circuits, automatic actuation logic circuits or to instrument functions that derive input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, manual actuation switches, float switches, proximity

detectors, etc.) are excluded. In addition, those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function are excluded.

2. Settings associated with safety relief valves are excluded. The performance of these components is already controlled (i.e., trended with As-Left and As-Found limits) under the ASME Code for Operation and Maintenance of Nuclear Power Plants testing program.

3. Functions and SRs which test only digital components are normally excluded. There is no expected change in result between SR performances for these components. Where separate As-Left and As-Found Tolerance is established for digital component SRs, the requirements would apply.

The following functions from TSs are identified where the instrument NTSP and/or AV or the operability of these functions is controlled by TS rather than by plant procedures establishing compliance with 10 CFR 50.36(c)(1)(ii)(A), which defines LSSS for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where an LSSS is specified for a variable on which a safety limit (SL) has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a SL is exceeded. If during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action which may include shutting down the reactor. RIS 2006-17 provided additional guidance to the licensee on meeting this requirement. TSTF Traveler-493, Revision 4, identifies these functions to include all instrument functions in [Westinghouse STS, NUREG-1431 TS Section 3.3.1 and TS Section 3.3.2], except for the functions which met the three exclusion criteria discussed above. The NRC staff finds these exceptions acceptable because these instrument functions do not have components required to meet As-Left and As-Found acceptance bands; values necessary to make the determination during testing whether the instrument is operable or needs to be replaced.

TSTF Traveler-493, Revision 4, lists two notes added to all these functions. These notes are:

Note 1: If the As-Found channel setpoint is outside its predefined As-Found Tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

Note 2: The instrument channel setpoint shall be reset to a value that is within the As-Left Tolerance around the [LTSP/NTSP] at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the [LTSP/NTSP] are acceptable provided that the As-Found and the As-Left Tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm channel performance. The [LTSP/NTSP] and the methodologies used to determine the As-Found and the As-Left Tolerances are specified in [insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility UFSAR].

These notes control the operability of these instrument functions in the TS and also provide assurance that the instrument will function as per the instrument setpoint methodology for the plant. Therefore, NRC staff concludes that all the functions identified in TS 3.3.1 and TS 3.3.2 meet the requirements of 10 CFR50.36(c)(1)(ii)(A).

NUREG-1430, Standard Technical Specifications Babcock and Wilcox Plants

Specification 3.3.1, "Reactor Protection System Instrumentation"

1. Nuclear Overpower

a. High Setpoint

b. Low Setpoint

2. RCS High Outlet Temperature

3. RCS High Pressure

4. RCS Low Pressure

5. RCS Variable Low Pressure

6. Reactor Building High Pressure

7. Reactor Coolant Pump to Power

8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE

9. Main Turbine Trip (Control Oil Pressure)

10. Loss of Main Feedwater Pumps (Control Oil Pressure)

11. Shutdown Bypass RCS High Pressure

Specification 3.3.5, "Engineered Safety Feature Actuation System Instrumentation"

1. Reactor Coolant System Pressure - Low Setpoint (HPI Actuation, RB Isolation, RB Cooling, EDG Start)

2. Reactor Coolant System Pressure - Low Low Setpoint (HPI Actuation, LPI Actuation, RB Isolation, RB Cooling)

3. Reactor Building (RB) Pressure - High Setpoint (HPI Actuation, LPI Actuation, RB Isolation, RB Cooling)

4. Reactor Building Pressure - High High Setpoint (RB Spray Actuation)

No TS instrumentation Functions were excluded from assessing the As-Found and As-Left Tolerances during TS testing.

NUREG-1431, Standard Technical Specifications Westinghouse Plants

Specification 3.3.1, "Reactor Trip System Instrumentation"

2. Power Range Neutron Flux

a. High

b. Low

3. Power Range Neutron Flux Rate

a. High Positive Rate

b. High Negative Rate

4. Intermediate Range Neutron Flux

5. Source Range Neutron Flux

6. Overtemperature ΔT

7. Overpower ΔT

8. Pressurizer Pressure

a. Low

b. High

9. Pressurizer Water Level - High

10. Reactor Coolant Flow - Low

12. Undervoltage RCPs

13. Underfrequency RCPs

14. Steam Generator (SG) Water Level - Low Low

15. SG Water Level - Low

Coincident with Steam Flow/Feedwater Flow Mismatch

16. Turbine Trip

a. Low Fluid Oil Pressure

Specification 3.3.2, "Engineered Safety Feature Actuation System Instrumentation"

1. Safety Injection

c. Containment Pressure - High 1

d. Pressurizer Pressure - Low

e. Steam Line Pressure

(1) Low

(2) High Differential Pressure Between Steam Lines

f. High Steam Flow in Two Steam Lines

Coincident with Tavg - Low Low

g. High Steam Flow in Two Steam Lines

Coincident with Steam Line Pressure - Low

2. Containment Spray

c. Containment Pressure High - 3 (High High)

d. Containment Pressure High - 3 (Two Loop Plants)

3. Containment Isolation

a. Phase A Isolation

b. Phase B Isolation

(3) Containment Pressure High - 3 (High High)

4. Steam Line Isolation

c. Containment Pressure - High 2

d. Steam Line Pressure

(1) Low

(2) Negative Rate - High

e. High Steam Flow in Two Steam Lines

Coincident with Tavg - Low Low

f. High Steam Flow in Two Steam Lines

Coincident with Steam Line Pressure - Low

g. High Steam Flow

Coincident with Tavg - Low Low

h. High High Steam Flow

5. Turbine Trip and Feedwater Isolation

b. SG Water Level - High High (P-14)

c. Safety Injection (Automatic actuation logic circuit excluded from footnotes)

6. Auxiliary Feedwater

c. SG Water Level - Low Low

e. Loss of Offsite Power

f. Undervoltage Reactor Coolant Pump

g. Trip of all Main Feedwater Pumps

h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low

7. Automatic Switchover to Containment Sump

b. Refueling Water Storage Tank (RWST) Level - Low Low

c. RWST Level - Low Low

Coincident with Containment Sump Level - High

NUREG-1431 Functions Excluded from Notes

Some instrumentation functions are excluded from a TS requirement to assess the As-Found and As-Left Tolerances during TS testing. These instruments are excluded because their functional purpose can be described as (1) a manual actuation circuit, (2) an automatic actuation logic circuit, or (3) an instrument function that derives input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, etc.). Many permissives or interlocks are excluded if they derive input from a sensor or adjustable device that is tested as part of another TS function.

Specification 3.3.1, "Reactor Trip System Instrumentation"

1. Manual Reactor Trip – (Manual actuation excluded from footnotes)

11. Reactor Coolant Pump (RCP) Breaker Position – (Mechanical component excluded from footnotes)

b. Turbine Stop Valve Closure (Mechanical component excluded from footnotes)

17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) (Automatic actuation logic circuit excluded from footnotes)

18. Reactor Trip System Interlocks (Permissive or interlock excluded from footnotes)

19. Reactor Trip Breakers (RTBs) (Mechanical component excluded from footnotes)

20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms (Mechanical component excluded from footnotes)

21. Automatic Trip Logic (Automatic actuation logic circuit excluded from footnotes)

Specification 3.3.2, "Engineered Safety Feature Actuation System Instrumentation"

1. Safety Injection

a. Manual Initiation (Manual actuation excluded from footnotes)

b. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

2. Containment Spray

a. Manual Initiation - (Manual actuation excluded from footnotes)

b. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

3. Containment Isolation

a. Phase A Isolation

(1) Manual Initiation (Manual actuation excluded from footnotes)

(2) Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

(3) Safety Injection (Automatic actuation logic circuit excluded from footnotes)

b. Phase B Isolation

(1) Manual Initiation (Manual actuation excluded from footnotes)

(2) Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

4. Steam Line Isolation

a. Manual Initiation (Manual actuation excluded from footnotes)

b. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

g. High Steam Flow

Coincident with Safety Injection (Automatic actuation logic circuit excluded t from footnotes)

h. High High Steam Flow

Coincident with Safety Injection (Automatic actuation logic circuit excluded from footnotes)

5. Turbine Trip and Feedwater Isolation

a. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

c. Safety Injection (Automatic actuation logic circuit excluded from footnotes)

6. Auxiliary Feedwater

a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System) (Automatic actuation logic circuit excluded from footnotes)

b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) (Automatic actuation logic circuit excluded from footnotes)

d. Safety Injection (Automatic actuation logic circuit excluded from footnotes)

7. Automatic Switchover to Containment Sump

a. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit excluded from footnotes)

b. Refueling Water Storage Tank (RWST) Level - Low Low

Coincident with Safety Injection (Automatic actuation logic circuit excluded from footnotes)

c. RWST Level - Low Low

Coincident with Safety Injection (Automatic actuation logic circuit excluded from footnotes)

8. ESFAS Interlocks (Permissive or interlock excluded from footnotes)

Specification 3.3.1, "Reactor Protective System Instrumentation" (Analog)

1. Variable High Power Trip

2. Power Rate of Change - High

3. Reactor Coolant Flow - Low

4. Pressurizer Pressure - High

5. Containment Pressure - High

6. Steam Generator Pressure - Low

7a. Steam Generator A Level - Low

7b. Steam Generator B Level - Low

8. Axial Power Distribution - High

9a. Thermal Margin/Low Pressure (TM/LP)

9b. Steam Generator Pressure Difference

10. Loss of Load (turbine stop valve control oil pressure)

Specification 3.3.4, "Engineered Safety Features Actuation System Instrumentation" (Analog)

1. Safety Injection Actuation Signal (SIAS)

a. Containment Pressure - High

b. Pressurizer Pressure – Low

2. Containment Spray Actuation Signal

a. Containment Pressure - High

3. Containment Isolation Actuation Signal

a. Containment Pressure - High

b. Containment Radiation - High

4. Main Steam Isolation Signal

a. Steam Generator Pressure - Low

5. Recirculation Actuation Signal

a. Refueling Water Tank Level - Low

6. Auxiliary Feedwater Actuation Signal (AFAS)

a. Steam Generator A Level - Low

b. Steam Generator B Level - Low

c. Steam Generator Pressure Difference - High (A > B) or (B > A)

Specification 3.3.1, "Reactor Protective System Instrumentation" (Digital)

1. Linear Power Level - High

2. Logarithmic Power Level - High

3. Pressurizer Pressure - High

4. Pressurizer Pressure - Low

5. Containment Pressure - High

6. Steam Generator #1 Pressure - Low

7. Steam Generator #2 Pressure - Low

8. Steam Generator #1 Level - Low

9. Steam Generator #2 Level - Low

10. Reactor Coolant Flow, Steam Generator #1 - Low

11. Reactor Coolant Flow, Steam Generator #2 - Low

12. Loss of Load (turbine stop valve control oil pressure)

13. Local Power Density - High

14. Departure From Nucleate Boiling Ratio (DNBR) - Low

Specification 3.3.5, "Engineered Safety Features Actuation System Instrumentation" (Digital)

1. Safety Injection Actuation Signal

a. Containment Pressure - High

b. Pressurizer Pressure – Low

2. Containment Spray Actuation Signal

a. Containment Pressure - High High

b. Automatic SIAS (Automatic actuation logic circuit excluded from footnotes)

3. Containment Isolation Actuation Signal

a. Containment Pressure - High

b. Pressurizer Pressure - Low

4. Main Steam Isolation Signal

a. Steam Generator Pressure - Low

b. Containment Pressure - High

5. Recirculation Actuation Signal

a. Refueling Water Storage Tank Level – Low

6. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)

a. Steam Generator Level - Low

b. SG Pressure Difference - High

c. Steam Generator Pressure - Low

7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)

a. Steam Generator Level - Low

b. SG Pressure Difference - High

c. Steam Generator Pressure – Low

NUREG-1432 Functions Excluded from Notes

Some instrumentation functions are excluded from a TS requirement to assess the As-Found and As-Left Tolerances during TS testing. These instruments are excluded because their functional purpose can be described as (1) a manual actuation circuit, (2) an automatic actuation logic circuit, or an instrument function that derives input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, etc.). Many permissives or interlocks are excluded if they derive input from a sensor or adjustable device

that is tested as part of another TS function.

Specification 3.3.5, "Engineered Safety Features Actuation System Instrumentation" (Digital)

2. Containment Spray Actuation Signal

a. Containment Pressure - High High

b. Automatic SIAS (Automatic actuation logic circuit excluded from footnotes)

NUREG-1433, Standard Technical Specifications General Electric Plants, BWR/4

Specification 3.3.1.1, "Reactor Protection System Instrumentation"

1. Intermediate Range Monitors

a. Neutron Flux - High

2. Average Power Range Monitors

a. Neutron Flux - High, Setdown

b. Flow Biased Simulated Thermal Power - High

c. Fixed Neutron Flux - High

d. Downscale

3. Reactor Vessel Steam Dome Pressure - High

4. Reactor Vessel Water Level - Low, Level 3

6. Drywell Pressure - High

9. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low

Specification 3.3.2.1, "Control Rod Block Instrumentation"

1. Rod Block Monitor

a. Low Power Range - Upscale

b. Intermediate Power Range - Upscale

c. High Power Range - Upscale

Specification 3.3.4.1, "EOC-RPT Instrumentation"

1. Trip Units

3. Turbine Control Valve - Fast Closure, Trip Oil Pressure - Low

Specification 3.3.5.1, "Emergency Core Cooling System Instrumentation"

1. Core Spray System

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

2. Low Pressure Coolant Injection (LPCI) System

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

f. Low Pressure Coolant Injection Pump Start - Time Delay Relay

g. Low Pressure Coolant Injection Pump Discharge Flow - Low Bypass (If valve locked open, Function can be removed from TS)

3. High Pressure Coolant Injection (HPCI) System

a. Reactor Vessel Water Level - Low Low, Level 2

b. Drywell Pressure – High

c. Reactor Vessel Water Level - High, Level 8 (Optional to include footnotes or not)

d. Condensate Storage Tank Level – Low (If mechanical device, excluded from footnotes)

e. Suppression Pool Water Level – High (If mechanical device, excluded from footnotes)

f. High Pressure Coolant Injection Pump Discharge Flow - Low (Bypass) (If valve locked open, Function can be removed from TS)(If mechanical device, excluded from footnotes)

4. Automatic Depressurization System (ADS) Trip System A

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)

5. ADS Trip System B

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)

Specification 3.3.5.2, "Reactor Core Isolation Cooling System Instrumentation"

1. Reactor Vessel Water Level - Low Low, Level 2

2. Reactor Vessel Water Level - High, Level 8 - (Optional to include footnotes or not)

3. Condensate Storage Tank Level - Low (If mechanical device, excluded from footnotes)

4. Suppression Pool Water Level - High (If mechanical device, excluded from footnotes)

NUREG-1433 Functions Excluded from Notes

Some instrumentation functions are excluded from a TS requirement to assess the As-Found and As-Left Tolerances during TS testing. These instruments are excluded because their functional purpose can be described as (1) a manual actuation circuit, (2) an automatic actuation logic circuit, or an instrument function that derives input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, etc.). Many permissives or interlocks are excluded if they derive input from a sensor or adjustable device that is tested as part of another TS function.

Specification 3.3.1.1, "Reactor Protection System Instrumentation"

1. Intermediate Range Monitors

b. Inop (Interlock excluded from footnotes)

2. Average Power Range Monitors

e. Inop (Interlock excluded from footnotes)

5. Main Steam Isolation Valve - Closure (Mechanical device excluded from footnotes)

7. Scram Discharge Volume Water Level - High

a. Resistance Temperature Detector (Mechanical device excluded from footnotes)

b. Float Switch (Mechanical device excluded from footnotes)

8. Turbine Stop Valve - Closure (Mechanical device excluded from footnotes)

10. Reactor Mode Switch - Shutdown Position (Manual actuation excluded from footnotes)

11. Manual Scram (Manual actuation excluded from footnotes)

Specification 3.3.2.1, "Control Rod Block Instrumentation"

1. Rod Block Monitor

d. Inop (Interlock excluded from footnotes)

e. Downscale (Not part of RPS or ECCS excluded from footnotes)

f. Bypass Time Delay (Permissive or interlock excluded from footnotes)

2. Rod Worth Minimizer (Not part of RPS or ECCS excluded from footnotes)

3. Reactor Mode Switch - Shutdown Position (Manual actuation excluded from footnotes)

Specification 3.3.4.1, "EOC-RPT Instrumentation"

2. Turbine Stop Valve - Closure (Mechanical component excluded from footnotes)

Specification 3.3.5.1, "Emergency Core Cooling System Instrumentation"

1. Core Spray System

c. Reactor Steam Dome Pressure - Low (Injection Permissive) (Actuation logic excluded from footnotes)

d. Core Spray Pump Discharge Flow - Low (Bypass) (Actuation logic excluded from footnotes)

e. Manual Initiation - Manual (Manual actuation excluded from footnotes)

2. Low Pressure Coolant Injection (LPCI) System

c. Reactor Steam Dome Pressure - Low (Injection Permissive) (Actuation logic excluded from footnotes)

d. Reactor Steam Dome Pressure - Low (Recirculation Discharge Valve Permissive) (Actuation logic excluded from footnotes)

e. Reactor Vessel Shroud Level - Level 0 (Actuation logic excluded from footnotes)

f. Low Pressure Coolant Injection Pump Start - Time Delay Relay

Pumps A,B,D (Permissive or interlock excluded from footnotes)

Pump C (Permissive or interlock excluded from footnotes)

h. Manual Initiation (Manual actuation excluded from footnotes)

3. High Pressure Coolant Injection (HPCI) System

g. Manual Initiation (Manual actuation excluded from footnotes)

4. Automatic Depressurization System (ADS) Trip System A

c. Automatic Depressurization System Initiation Timer (Actuation logic excluded from footnotes)

e. Core Spray Pump Discharge Pressure – High (Actuation logic excluded from footnotes)

f. Low Pressure Coolant Injection Pump Discharge Pressure – High (Actuation logic excluded from footnotes)

g. Automatic Depressurization System Low Water Level Actuation Timer (Actuation logic excluded from footnotes)

h. Manual Initiation (Manual actuation excluded from footnotes)

5. ADS Trip System B

c. Automatic Depressurization System Initiation Timer (Actuation logic excluded from footnotes)

e. Core Spray Pump Discharge Pressure – High (Actuation logic excluded from footnotes)

f. Low Pressure Coolant Injection Pump Discharge Pressure – High (Actuation logic excluded from footnotes)

g. Automatic Depressurization System Low Water Level Actuation Timer (Actuation logic excluded from footnotes)

h. Manual Initiation (Manual actuation excluded from footnotes)

Specification 3.3.5.2, "Reactor Core Isolation Cooling System Instrumentation"

5. Manual Initiation (Manual actuation excluded from footnotes)

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Specification 3.3.1.1, "Reactor Protection System Instrumentation"

1. Intermediate Range Monitors

a. Neutron Flux – High

2. Average Power Range Monitors

a. Neutron Flux - High, Setdown

b. Flow Biased Simulated Thermal Power - High

c. Fixed Neutron Flux - High

3. Reactor Vessel Steam Dome Pressure - High

4. Reactor Vessel Water Level - Low, Level 3

5. Reactor Vessel Water Level - High, Level 8

7. Drywell Pressure - High

8. Scram Discharge Volume Water Level - High

a. Transmitter/Trip Unit

9. Turbine Stop Valve Closure, Trip Oil Pressure - Low

10. Turbine Control Valve Fast Closure, Trip Oil Pressure – Low (if mechanical device is used then exempt from footnotes)

Specification 3.3.2.1, "Control Rod Block Instrumentation"

1. Rod Pattern Control System

a. Rod withdrawal limiter

Specification 3.3.4.1, "EOC-RPT Instrumentation "

1. Trip Units

2. Turbine Stop Valve Closure, Trip Oil Pressure – Low (if mechanical device is used then exempt from footnotes)

3. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low

Specification 3.3.5.1, "Emergency Core Cooling System Instrumentation"

1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure – High

2. LPCI B and LPCI C Subsystems

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

3. High Pressure Core Spray (HPCS) System

a. Reactor Vessel Water Level - Low Low, Level 2

b. Drywell Pressure - High

c. Reactor Vessel Water Level - High, Level 8 (Optional to include footnotes or not)

d. Condensate Storage Tank Level – Low (If mechanical device, excluded from footnotes)

e. Suppression Pool Water Level – High (If mechanical device, excluded from footnotes)

f. HPCS Pump Discharge Pressure - High (Bypass) (If mechanical device, excluded from footnotes) (If valve locked open, Function can be removed from TS)

g. HPCS System Flow Rate - Low (Bypass) (If mechanical device, excluded from footnotes) (If valve locked open, Function can be removed from TS)

4. Automatic Depressurization System (ADS) Trip System A

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)

5. ADS Trip System B

a. Reactor Vessel Water Level - Low Low Low, Level 1

b. Drywell Pressure - High

d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)

<u>Specification 3.3.5.2, "Reactor Core Isolation Cooling System Instrumentation"</u>

1. Reactor Vessel Water Level - Low Low, Level 2

2. Reactor Vessel Water Level - High, Level 8 (Optional to include footnotes or not)

3. Condensate Storage Tank Level - Low (If mechanical device, excluded from footnotes)

4. Suppression Pool Water Level - High (If mechanical device, excluded from footnotes)

Specification 3.3.6.5, "Relief and Low-Low Set (LLS) Instrumentation"

1. Trip Unit

2. Relief Function

a. Low

b. Medium

c. High

3. LLS Function

a. Low (open and close)

b. Medium (open and close)

c. High (open and close)

NUREG-1434 Functions Excluded from Notes

Some instrumentation functions are excluded from a TS requirement to assess the As-Found and As-Left Tolerances during TS testing. These instruments are excluded because their functional purpose can be described as (1) a manual actuation circuit, (2) an automatic actuation logic circuit, or (3) an instrument function that derives input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, etc.). Many permissives or interlocks are excluded if they derive input from a sensor or adjustable device that is tested as part of another TS function.

Specification 3.3.1.1, "Reactor Protection System Instrumentation"

1. Intermediate Range Monitors

b. Inop (Interlock excluded from footnotes)

2. Average Power Range Monitors

d. Inop (Interlock excluded from footnotes)

6. Main Steam Isolation Valve - Closure (Mechanical component excluded from footnotes)

8. Scram Discharge Volume Water Level - High

b. Float Switch (Mechanical component excluded from footnotes)

11. Reactor Mode Switch - Shutdown Position (Manual actuation excluded from footnotes)

12. Manual Scram (Manual actuation excluded from footnotes)

Specification 3.3.2.1, "Control Rod Block Instrumentation"

1. Rod Pattern Control System

b. Rod pattern controller (Not part of RPS or ECCS excluded from footnotes)

2. Reactor Mode Switch - Shutdown Position (Manual actuation excluded from footnotes)

Specification 3.3.5.1, "Emergency Core Cooling System Instrumentation"

1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems

c. LPCI Pump A Start - Time Delay Relay (Permissive or interlock excluded from footnotes)

d. Reactor Steam Dome Pressure - Low (Injection Permissive) (Actuation logic excluded from footnotes)

e. LPCS Pump Discharge Flow - Low (Bypass) (Actuation logic excluded from footnotes)

f. LPCI Pump A Discharge Flow - Low (Bypass) (Actuation logic excluded from footnotes)

g. Manual Initiation (Manual actuation excluded from footnotes)

2. LPCI B and LPCI C Subsystems

c. LPCI Pump B Start - Time Delay Relay (Permissive or interlock excluded from footnotes)

d. Reactor Steam Dome Pressure - Low (Injection Permissive) (Actuation logic excluded from footnotes)

e. LPCI Pump B and LPCI Pump C Discharge Flow - Low (Bypass) (Actuation logic excluded from footnotes)

f. Manual Initiation (Manual actuation excluded from footnotes)

3. High Pressure Core Spray (HPCS) System

h. Manual Initiation (Manual actuation excluded from footnotes)

4. Automatic Depressurization System (ADS) Trip System A

c. ADS Initiation Timer (Actuation logic excluded from footnotes)

e. LPCS Pump Discharge Pressure – High (Actuation logic excluded from footnotes)

f. LPCI Pump A Discharge Pressure – High (Actuation logic excluded from footnotes)

g. ADS Bypass Timer (High Drywell Pressure) (Actuation logic excluded from footnotes)

h. Manual Initiation (Manual actuation excluded from footnotes)

5. ADS Trip System B

c. ADS Initiation Timer (Actuation logic excluded from footnotes)

e. LPCI Pumps B & C Discharge Pressure – High (Actuation logic excluded from footnotes)

f. ADS Bypass Timer (High Drywell Pressure) (Actuation logic excluded from footnotes)

g. Manual Initiation (Manual actuation excluded from footnotes)

Specification 3.3.5.2, "Reactor Core Isolation Cooling System Instrumentation"

5. Manual Initiation (Manual actuation excluded from footnotes)