Entergy

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GNRO-2010/00067

November 8, 2010

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: License Amendment Request to Implement TSTF-493 for Condensate Storage Tank Low Level Setpoint
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCES: 1. Letter from the NRC to Grand Gulf - Safety Evaluation for Grand Gulf Nuclear Station, Unit 1 – Issuance of Amendment Re: Condensate Storage Tank Low Level Setpoint Change (TAC No. MD 4675) dated February 25, 2009 (GNRI-09/00016)

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) on behalf of System Energy Resources, Inc. and South Mississippi Electric Power Association hereby requests approval of an amendment to the Grand Gulf Nuclear Station, Unit 1 (GGNS) Technical Specifications (TS). The proposed change is in response to the following commitment made by GGNS as referenced in the NRC Safety Evaluation for a license amendment request associated with revising the allowable value for the Condensate Storage Tank (CST) Level-Low (Reference 1):

> "Entergy will follow the efforts of the Technical Specification Task Force (TSTF) and NRC to finalize the details and scope of the changes needed to resolve the instrumentation setpoint issue discussed in RIS-2006-17. If the Condensate Storage Tank (CST) Level-Low setpoint is affected by the approved TSTF traveler, then Entergy will submit a separate amendment request to implement the approved generic change within 6 months of the approval of the TSTF traveler."

The commitment is focused on making changes related to the final resolution of an unresolved issue associated with TS Amendment No. 181. This issue was resolved with the approval of Revision 4 of TSTF-493, *Clarify Application of Setpoint Methodology for LSSS Functions,* which included the instrument function (i.e., CST Level-Low) that was the subject of Amendment No. 181. Specifically, the proposed change will add the appropriate notes as specified in TSTF-493 to the surveillance requirements associated with GGNS TS Table 3.3.5.1-1, Emergency Core

Cooling System Instrumentation, Function 3.d, Condensate Storage Tank Level – Low and to TS Table 3.3.5.2-1, Reactor Core Isolation Cooling System Instrumentation, Function 3, Condensate Storage Tank Level – Low. The supporting TS Bases will also be revised.

Attachment 1 provides a description of the proposed change. A markup of the TSs and the associated TS Bases is provided in Attachments 2 and 4, respectively. Attachment 3 provides a clean copy of the affected TS pages.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration. The bases for these determinations are included in the attached submittal.

The proposed change does not include new commitments.

Entergy requests approval of the proposed amendment within 12 months of the date of submittal. Once approved, the amendment will be implemented within 90 days. Although this request is neither exigent nor emergency, your prompt review is requested.

If you have any questions or require additional information, please contact Christina Perino at 601-437-6299.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 8, 2010.

Sincerely,

Jeremy Browning GGNS GMPO
acting VP for Randy Douet.

JRD/DM

Attachments:
1. Analysis of Proposed Technical Specification Changes
2. Proposed Technical Specification Changes (Mark-up)
3. Proposed Technical Specification Changes (Clean Copy)
4. Changes to Technical Specification Bases Pages – For Information Only

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Attachment 1

GNRO-2010/00067

Analysis of Proposed Technical Specification Changes

1.0 DESCRIPTION

Entergy Operations, Inc. (Entergy), on behalf of the owners of Grand Gulf Nuclear Station, Unit 1 (GGNS), System Energy Resources, Inc. and South Mississippi Electric Power Association, requests an amendment to the GGNS Operating License (NPF-29). By letter dated March 1, 2007 (Reference 1), Entergy Operations requested a change to the Condensate Storage Tank Level-Low setpoint. The proposed change was approved by the NRC on February 25, 2009 (Reference 2). The following commitment was included in the proposed change and subsequent NRC approval:

> "Entergy will follow the efforts of the Technical Specification Task Force (TSTF) and NRC to finalize the details and scope of the changes needed to resolve the instrumentation setpoint issue discussed in RIS-2006-17. If the Condensate Storage Tank (CST) Level-Low setpoint is affected by the approved TSTF traveler, then Entergy will submit a separate amendment request to implement the approved generic change within 6 months of the approval of the TSTF traveler."

The commitment is focused on making changes to the surveillance requirements (SR) for the CST Level-Low setpoint as they relate to TSTF-493, *Clarify Application of Setpoint Methodology for LSSS Functions* (Reference 3). TSTF-493 was approved by the NRC on May 11, 2010. Changes associated with the CST Level-Low setpoint were included in the TSTF traveler. Therefore, a change is proposed to the GGNS TS to satisfy the above commitment. Specifically, the proposed change will add notes, as reflected in TSTF-493, to the appropriate SRs associated with Function 3.d, Condensate Storage Tank Level – Low in TS Table 3.3.5.1-1, Emergency Core Cooling System Instrumentation, and the appropriate SR associated with Function 3, Condensate Storage Tank Level – Low in TS Table 3.3.5.2-1, Reactor Core Isolation Cooling System Instrumentation. The associated TS Bases will also be revised.

2.0 PROPOSED CHANGE

The proposed change will add the following notes to SR 3.3.5.1.3 and SR 3.3.5.1.5 associated with Function 3.d, Condensate Storage Tank Level-Low in Table 3.3.5.1-1, Emergency Core Cooling System Instrumentation, and SR 3.3.5.2.4 associated with Function 3, Condensate Storage Tank Level-Low, in Table 3.3.5.2-1, Reactor Core Isolation Cooling System Instrumentation.

> "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."

> "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 to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in Technical Requirements Manual."

The proposed wording for the notes is consistent with TSTF-493, Revision 4, Option A.

A markup of the proposed change is included in Attachment 2. A clean copy of the proposed changes to the TS is provided in Attachment 3.

Changes to the associated TS Bases are included for information only in Attachment 4. In accordance with GGNS TS 5.5.11, Technical Specifications Bases Control Program, Entergy can implement these changes under 10 CFR 50.59 once this application is approved.

3.0 BACKGROUND

TS Amendment 181

On March 1, 2007, GGNS submitted a request to the NRC to revise the CST Level-Low setpoint reflected in TS Tables 3.3.5.1-1 and 3.3.5.2-1 (Reference 1). The change corrected an error in the original plant design, which under certain conditions, could have prevented a swap of the High Pressure Core Spray (HPCS) and Reactor Core Isolation Cooling (RCIC) suction flow paths to the Suppression Pool. The NRC approved the proposed change by letter dated February 25, 2009 (Reference 2) noting that the setpoint methodology and surveillance testing procedures used by GGNS were consistent with the guidance of 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* (Reference 4).

The NRC stated that the amendment request did not resolve the generic issue raised by RIS 2006-17 with respect to limiting safety system settings (LSSSs) assessed during periodic testing and calibration of instrumentation. As discussed in RIS 2006-17 (Reference 4), the issue was planned to be resolved with the industry through the TSTF, and to incorporate setpoint issue guidance in the final approved TSTF traveler. GGNS provided a regulatory commitment to address this issue, which is the subject of the proposed change described in this amendment request.

TSTF-493

Over the past several years, the NRC and the nuclear industry have participated in various forums to address the setpoint methodology issue. On September 7, 2005, the NRC transmitted a letter to the NEI Setpoint Methods Task Force that described setpoint-related TS that are acceptable for instrument settings associated with Safety Limit-related setpoints. On August 24, 2006, the NRC issued RIS 2006-17 (Reference 4) to provide guidance and information pertaining to the requirements of 10 CFR 50.36 with respect to LSSSs assessed during periodic instrument testing and calibration.

The NRC and industry have been working together on a TSTF proposal, TSTF-493, *Clarify Application of Setpoint Methodology for LSSS Functions* (Reference 3), to address the setpoint methodology issue. In a letter to the NRC dated February 23, 2009, the TSTF documented a proposed course of action to be taken by the industry to address the NRC's questions and concerns with TSTF-493. The NRC responded in a letter dated March 9, 2009 stating the TSTF letter "meets the agreed course of action ...for resolving the TSTF-493 setpoint issue." The NRC's comments have been incorporated into TSTF-493, Revision 4, which was submitted to the staff on July 31, 2009. The NRC approved TSTF-493, Revision 4 on May 11, 2010.

4.0 TECHNICAL ANALYSIS

4.1 Condensate Storage Tank

The CST contains reactor grade water and is the preferred suction source for the High Pressure Core Spray (HPCS) and Reactor Core Isolation Cooling (RCIC) systems during emergency conditions and for normal testing. Upon receipt of an HPCS or RCIC initiation signal, the CST suction valve is automatically signaled to open (it is normally in the open position) unless the associated pump suction valve from the suppression pool is open. If water level in the CST falls below a pre-selected level or if suppression pool water level is high, the suppression pool suction valve automatically opens followed by automatic closure of the CST suction valve.

As described in the Background section, the NRC has reviewed the CST Level-Low setpoint methodology and implementing procedures and concluded that they were consistent with the guidance in RIS 2006-17. The focus of this change is to address the commitment made as it relates to the open issue described in the Background section. The proposed change to add notes to the surveillance requirements associated with the calibration of the trip unit (SR 3.3.5.1.3) and the channel calibration (SR 3.3.5.1.5 and SR 3.3.5.2.4) does not alter the function of the system.

4.2 Instrument Setpoint Methodology and Process

The instrument setpoint methodology currently implemented at GGNS is based on Instrument Society of America (ISA) Standard 67.04 Part II, 1994, *Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation* (Reference 5), and the GEH Instrument Setpoint Methodology (ISM) specified in NEDC-31336P-A, *General Electric Instrument Setpoint Methodology* (Reference 6).

Setpoint calculations provide a conservative analysis of setpoints, taking into account the applicable instrument measurement errors.

The Nominal Trip Setpoint (NTSP) is more conservative than the Allowable Value (AV). Because it is impossible to set an instrument channel to an exact value, a calibration tolerance is established around the NTSP. The NTSP is, therefore, considered a nominal value and the instrument adjustment is considered successful if the "as-left" instrument setting is within the calibration tolerance established around the NTSP.

Entergy calculates the setpoints from the Analytical Limit (AL), establishing margins between the AL, the AV, and the NTSP based on calculated instrument errors. Random errors are combined using the square-root-of-the-sum-of-the-squares method, and non-conservative bias errors are added algebraically. This approach provides sufficient margin between the AL and AV to ensure at least 95% probability that the AL is not exceeded if the setpoint drifts toward the AV.

Entergy's Typical Calibration Process

At the start of each calibration, the instrument is declared inoperable (in the case of TS-controlled instruments) and removed from service. The Operations Shift Supervisor or Manager reviews the results of the surveillance and determines whether the results are

acceptable based on TS operability requirements prior to returning the instrument to service.

If the as-found setpoint value exceeds its designated tolerance, the condition is documented for trending purposes and appropriate corrective actions are taken before the instrument is returned to service. Once actions have been taken to correct the condition, the instrument setpoint is reset to as close to the NTSP value as practicable and the instrument is returned to service. For cases in which the as-found setpoint value is within its designated tolerance, it is common practice to reset the setpoint value as close to the NTSP value as practicable within the specified as-left tolerance.

This process is applied to both safety-related and non-safety-related setpoints.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, and do not affect conformance with any General Design Criterion (GDC) differently than described in the Updated Final Safety Analysis Report (UFSAR).

5.2 No Significant Hazards Consideration

The proposed changes to the Grand Gulf Nuclear Station (GGNS) Technical Specifications (TS) add notes, as reflected in TSTF-493, *Clarify Application of Setpoint Methodology for LSSS Functions,* to the certain surveillances requirements associated with the Condensate Storage Tank (CST) Level-Low function included in Technical Specification Tables 3.3.5.1-1 (Function 3.d) and 3.3.5.2-1 (Function 3). Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed changes by focusing on the three standards set forth in 10 CFR 50.92, *Issuance of amendment*, as discussed below:

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

   Response: No

   The proposed change adds test requirements to the CST Level-Low function to ensure the CST Level-low instruments will function as required. Surveillance tests are not an initiator of any accident previously evaluated. The CST components, for which the additional requirements were added, continue to be operable and capable of performing their intended function.

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

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

   Response: No

   The proposed change does not involve a physical change to the plant, i.e., no new or different type of equipment will be installed. The proposed change does not alter assumptions made in the safety analysis but ensures that the CST Level-low instruments perform as assumed in the USFAR.

   Therefore, the proposed changes do 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

   The proposed change adds test requirements that will assure that (1) the CST Level-low instrumentation for the setpoint allowable value will be the limiting setting for assessing instrumentation channel operability and (2) will be conservatively determined so that the evaluation of CST instrument performance history and the requirements of the calibration procedures will not have an adverse effect on equipment operability. The testing methods and acceptance criteria for the CST Level-low instrumentation will continue to be met. There is no impact to the safety analysis acceptance criteria as described in the plant licensing basis because no change is made to the accident analysis assumptions.

   Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

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

5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Letter from Entergy Operations, Inc. to the NRC - "License Amendment Request Condensate Storage Tank Level-Low Setpoint Change," dated March 1, 2007 (GNRO-2007/00016, TAC # MD 4675)
2. Letter from the NRC to Grand Gulf - Safety Evaluation for Grand Gulf Nuclear Station, Unit 1 – Issuance of Amendment Re: Condensate Storage Tank Low Level Setpoint Change dated February 25, 2009
3. TSTF-493, *Clarify Application of Setpoint Methodology for LSSS Functions,* approved by the NRC May 11, 2010
4. 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,* dated August 24, 2006.
5. Society of America (ISA) Standard 67.04 Part II, 1994, *Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation*
6. NEDC-31336P-A, *General Electric Instrument Setpoint Methodology,* September 1996

Attachment 2

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Proposed Technical Specification Changes (Mark-up)

Table 3.3.5.1-1 (page 3 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level—Low Low, Level 2	1,2,3, 4[a],5[a]	4[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -43.8 inches
b. Drywell Pressure—High	1,2,3	4[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.44 psig
c. Reactor Vessel Water Level—High, Level 8	1,2,3, 4[a],5[a]	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 55.7 inches
d. Condensate Storage Tank Level—Low	1,2,3, 4[c],5[c]	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 4.7 ft (d) (e)
e. Suppression Pool Water Level—High	1,2,3	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 7.0 inches
f. HPCS Pump Discharge Pressure—High (Bypass)	1,2,3, 4[a],5[a]	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 108 psig and ≤ 1282 psig
g. HPCS System Flow Rate—Low (Bypass)	1,2,3, 4[a],5[a]	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1124 gpm and ≤ 1327 gpm
h. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.6	NA

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated diesel generator.

(c) When HPCS is OPERABLE for compliance with LCO 3.5.2, "ECCS—Shutdown," and aligned to the condensate storage tank while tank water level is not within the limit of SR 3.5.2.2.

(d) 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.

(e) 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 to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the Technical Requirements Manual.

Table 3.3.5.2-1 (page 1 of 1)
Reactor Core Isolation Cooling System Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level – Low Low, Level 2	4	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4 SR 3.3.5.2.5	≥ -43.8 inches
2. Reactor Vessel Water Level – High, Level 8	2	C	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ 55.7 inches
3. Condensate Storage Tank Level – Low	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.4 (a)(b) SR 3.3.5.2.5	≥ 3.7 ft
4. Suppression Pool Water Level – High	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ 7.0 inches
5. Manual Initiation	1	C	SR 3.3.5.2.5	NA

(a) 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.
(b) 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 to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the Technical Requirements Manual.

Attachment 3

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Proposed Technical Specification Changes (Clean Copy)

Table 3.3.5.1-1 (page 3 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level — Low Low, Level 2	1, 2, 3, 4(a), 5(a)	4(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -43.8 inches
b. Drywell Pressure — High	1, 2, 3	4(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.44 psig
c. Reactor Vessel Water Level — High, Level 8	1, 2, 3, 4(a), 5(a)	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 55.7 inches
d. Condensate Storage Tank Level — Low	1, 2, 3, 4(c), 5(c)	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 (d)(e) SR 3.3.5.1.5 (d)(e) SR 3.3.5.1.6	≥ 4.7 ft
e. Suppression Pool Water Level — High	1, 2, 3	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 7.0 inches
f. HPCS Pump Discharge Pressure — High (Bypass)	1, 2, 3, 4(a), 5(a)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 108 psig and ≤ 1282 psig
g. HPCS System Flow Rate — Low (Bypass)	1, 2, 3, 4(a), 5(a)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1124 gpm and ≤ 1327 gpm
h. Manual Initiation	1, 2, 3, 4(a), 5(a)	1	C	SR 3.3.5.1.6	NA

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated diesel generator.

(c) When HPCS is OPERABLE for compliance with LCO 3.5.2, "ECCS — Shutdown," and aligned to the condensate storage tank while tank water level is not within the limit of SR 3.5.2.2.

(d) 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.

(e) 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 to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the Technical Requirements Manual.

Table 3.3.5.2-1 (page 1 of 1)
Reactor Core Isolation Cooling System Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level — Low Low, Level 2	4	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4 SR 3.3.5.2.5	≥ -43.8 inches
2. Reactor Vessel Water Level — High, Level 8	2	C	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ 55.7 inches
3. Condensate Storage Tank Level — Low	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.4 (a)(b) SR 3.3.5.2.5	≥ 3.7 ft
4. Suppression Pool Water Level — High	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ 7.0 inches
5. Manual Initiation	1	C	SR 3.3.5.2.5	NA

(a) 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.
(b) 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 to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the Technical Requirements Manual.

Attachment 4

GNRO-2010/00067

Changes to Technical Specification Bases Pages
For Information Only

B 3.3 INSTRUMENTATION

B 3.3.5.1 Emergency Core Cooling System (ECCS) Instrumentation

BASES

BACKGROUND

The purpose of the ECCS instrumentation is to initiate appropriate responses from the systems to ensure that fuel is adequately cooled in the event of a design basis accident or transient.

Insert 1

For most anticipated operational occurrences (AOOs) and Design Basis Accidents (DBAs), a wide range of dependent and independent parameters are monitored.

The ECCS instrumentation actuates low pressure core spray (LPCS), low pressure coolant injection (LPCI), high pressure core spray (HPCS), Automatic Depressurization System (ADS), and the diesel generators (DGs). The equipment involved with each of these systems is described in the Bases for LCO 3.5.1, "ECCS—Operating."

Low Pressure Core Spray System

The LPCS System may be initiated by either automatic or manual means. Automatic initiation occurs for conditions of Reactor Vessel Water Level—Low Low Low, Level 1 or Drywell Pressure—High. Each of these diverse variables is monitored by two redundant transmitters, which are, in turn, connected to two trip units. The outputs of the four trip units (two trip units from each of the two variables) are connected to relays whose contacts are arranged in a one-out-of-two taken twice logic. The LPSC initiation signal is a sealed in signal and must be manually reset. The logic can also be initiated by use of a manual push button. Upon receipt of an initiation signal, the LPCS pump is started immediately after power is available.

The LPCS test line isolation valve, which is also a primary containment isolation valve (PCIV), is closed on a LPCS initiation signal to allow full system flow assumed in the accident analysis and maintains containment isolation in the event LPCS is not operating.

The LPCS pump discharge flow is monitored by a flow transmitter. When the pump is running and discharge flow is

(continued)

BASES

BACKGROUND

Diesel Generators (continued)

Feature (ESF) buses if a loss of offsite power occurs. (Refer to Bases for LCO 3.3.8.1.)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The actions of the ECCS are explicitly assumed in the safety analyses of References 1, 2, and 3. The ECCS is initiated to preserve the integrity of the fuel cladding by limiting the post LOCA peak cladding temperature to less than the 10 CFR 50.46 limits.

ECCS instrumentation satisfies Criterion 3 of the NRC Policy Statement. Certain instrumentation Functions are retained for other reasons and are described below in the individual Functions discussion.

set

The OPERABILITY of the ECCS instrumentation is dependent upon the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.5.1-1. Each Function must have a required number of OPERABLE channels, with their setpoints within the ~~specified Allowable Values~~, setting tolerances of the trip setpoint. where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. Insert 2 ~~Each ECCS subsystem must also respond within its assumed response time.~~ Table 3.3.5.1-1 is modified by two footnotes. Footnote (a) is added to clarify that the associated functions are required to be OPERABLE in MODES 4 and 5 only when their supported ECCS are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown. Footnote (b) is added to show that certain ECCS instrumentation Functions also perform DG initiation.

~~Allowable Values are specified for each ECCS Function specified in the table. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. Trip~~ Nominal trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The ~~analytic limits~~ are derived from the limiting values of the process parameters ~~obtained~~ analytical from the safety analysis. ~~The Allowable~~ Values are derived from the ~~analytic~~ limits, corrected for calibration, nominal process, and some of the instrument errors. The trip setpoints are then determined, accounting for the remaining instrument errors (e.g., drift). The trip setpoints derived in this manner provide adequate protection because instrumentation uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for.

In general, the individual Functions are required to be OPERABLE in the MODES or other specified conditions that may require ECCS (or DG) initiation to mitigate the consequences of a design basis accident or transient. To ensure reliable ECCS and DG function, a combination of Functions is required to provide primary and secondary initiation signals.

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

Low Pressure Core Spray and Low Pressure Coolant Injection Systems

1.a, 2.a. Reactor Vessel Water Level—Low Low Low, Level 1

Low reactor pressure vessel (RPV) water level indicates that the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. The low pressure ECCS and associated DGs are initiated at Level 1 to ensure that core spray and flooding functions are available to prevent or minimize fuel damage. The Reactor Vessel Water Level—Low Low Low, Level 1 is one of the Functions assumed to be OPERABLE and capable of initiating the ECCS during the transients and accidents analyzed in References 1, 2, and 3. The core cooling function of the ECCS, along with the scram action of the Reactor Protection System (RPS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be not within its required Allowable Value specified in Table 3.3.5.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analyses. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than the setting accounted for in the appropriate setpoint methodology.

The Frequency of 92 days is based on the reliability analysis of Reference 4.

Insert 3

SR 3.3.5.1.4 and SR 3.3.5.1.5

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency of SR 3.3.5.1.4 and SR 3.3.5.1.5 is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.

Insert 4

SR 3.3.5.1.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.1, LCO 3.5.2, LCO 3.8.1, and LCO 3.8.2 overlaps this Surveillance to provide complete testing of the assumed safety function.

The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage (except for Division III which can be tested in any operational condition) and the potential for unplanned transients if the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1.6 (continued)

Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. UFSAR, Section 5.2.

2. UFSAR, Section 6.3.

3. UFSAR, Chapter 15.

4. NEDC-30936-P-A, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation, Part 2," December 1988.

5. Regulatory Guide 1.105, "Setpoints for Safety-Related Instrumentation," Revision 3.

B 3.3 INSTRUMENTATION

B 3.3.5.2 Reactor Core Isolation Cooling (RCIC) System Instrumentation

BASES

BACKGROUND

The purpose of the RCIC System instrumentation is to initiate actions to ensure adequate core cooling when the reactor vessel is isolated from its primary heat sink (the main condenser) and normal coolant makeup flow from the Reactor Feedwater System is unavailable, such that initiation of the low pressure Emergency Core Cooling Systems (ECCS) pumps does not occur. A more complete discussion of RCIC System operation is provided in the Bases of LCO 3.5.3, "RCIC System." Insert 5

The RCIC System may be initiated by either automatic or manual means. Automatic initiation occurs for conditions of Reactor Vessel Water Level—Low Low, Level 2. The variable is monitored by four transmitters that are connected to four trip units. The outputs of the trip units are connected to relays whose contacts are arranged in a one-out-of-two taken twice logic arrangement. Once initiated, the RCIC logic seals in and can be reset by the operator only when the reactor vessel water level signals have cleared.

The RCIC test line isolation valves close on a RCIC initiation signal to allow full system flow.

The RCIC System also monitors the water levels in the condensate storage tank (CST) and the suppression pool, since these are the two sources of water for RCIC operation. Reactor grade water in the CST is the normal source. Upon receipt of a RCIC initiation signal, the CST suction valve is automatically signaled to open (it is normally in the open position) unless the pump suction from the suppression pool valve is open. If the water level in the CST falls below a preselected level, first the suppression pool suction valve automatically opens and then the CST suction valve automatically closes. Two level transmitters are used to detect low water level in the CST. Either switch can cause the suppression pool suction valve to open and the CST suction valve to close. The suppression pool suction valve also automatically opens and the CST suction valve closes if high water level is detected in the suppression pool (one-out-of-two logic similar to the CST water level logic).

(continued)

BASES

BACKGROUND (continued)

To prevent losing suction to the pump, the suction valves are interlocked so that one suction path must be open before the other automatically closes.

The RCIC System provides makeup water to the reactor until the reactor vessel water level reaches the high water level (Level 8) trip (two-out-of-two logic), at which time the RCIC steam supply valve closes (the injection valve also closes due to the closure of the steam supply valves) to prevent overflow into the main steam lines. The RCIC System restarts if vessel level again drops to the low level initiation point (Level 2).

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The function of the RCIC System is to provide makeup coolant to the reactor in response to transient events. The RCIC System is not an Engineered Safety Feature System and no credit is taken in the safety analysis for RCIC System operation. Based on its contribution to the reduction of overall plant risk, however, the RCIC System, and therefore its instrumentation, are included as required by the NRC Policy Statement. Certain instrumentation Functions are retained for other reasons and are described below in the individual Functions discussion.

The OPERABILITY of the RCIC System instrumentation is dependent on the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.5.2-1. Each Function must have a required number of OPERABLE channels with their setpoints within the ~~specified Allowable Values~~, where appropriate. ~~A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.~~ The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions.

set

setting tolerance of the trips setpoints.

Each channel must also respond within its assumed response time.

Insert 6

~~Allowable Values are specified for each RCIC System instrumentation Function specified in the table. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. Each Allowable Value specified accounts for instrument uncertainties appropriate to the Function. These uncertainties are described in the setpoint methodology.~~

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 92 days is based on the reliability analysis of Reference 1.

SR 3.3.5.2.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.5.2-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be re-adjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

The Frequency of 92 days is based on the reliability analysis of Reference 1.

SR 3.3.5.2.4

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter with the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based on the assumption of the magnitude of equipment drift in the setpoint analysis.

Insert 7 →

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.3 overlaps this Surveillance to provide complete testing of the safety function.

The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. NEDE-770-06-2, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

2. Regulatory Guide 1.105, "Setpoints for Safety-Related Instrumentation," Revision 3.

Insert 1

This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the ECCS, as well as LCOs on other reactor system parameters and equipment performance.

Technical Specifications are required by 10 CFR 50.36 to include LSSSs for variables that have significant safety functions. LSSS are defined by the regulation as "Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur.

The trip setpoint is a predetermined setting for a protection channel chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded. As such, the trip setpoint accounts for uncertainties in setting the channel (e.g., calibration), uncertainties in how the channel might actually perform (e.g., repeatability), changes in the point of action of the channel over time (e.g., drift during surveillance intervals), and any other factors which may influence its actual performance (e.g., harsh accident environments). In this manner, the trip setpoint ensures that SLs are not exceeded. Therefore, for Function 3.d, Condensate Storage Tank Level-Low, the trip setpoint meets the definition of an LSSS (Ref. 5).

The Allowable Value specified in the Table 3.3.5.1-1 serves as the LSSS such that a channel is OPERABLE if the trip setpoint is found not to exceed the Allowable Value. As such, the Allowable Value differs from the trip setpoint by an amount primarily equal to the expected instrument loop uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a SL is not exceeded at any given point of time as long as the device has not drifted beyond that expected during the surveillance interval.

Technical Specifications contain values related to the OPERABILITY of equipment required for safe operation of the facility. OPERABLE is defined in Technical Specifications as "...being capable of performing its specified safety function(s)." Relying solely on the trip setpoint to define OPERABILITY in Technical Specifications would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as-found" value of a protection channel setting during a Surveillance. This would result in Technical Specification compliance problems, as well as reports and corrective actions required by the rule which are not necessary to ensure safety. For example, an automatic protection channel with a setting that has been found to be different from the trip setpoint due to some drift of the setting may still be OPERABLE because drift is to be expected. This expected drift would have been specifically accounted for in the setpoint methodology for calculating the trip setpoint and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as-found" setting of the protection channel. Therefore, the channel would still be OPERABLE because it would have performed its safety function and the only corrective action required would be to reset the channel within the established as-left tolerance around trip setpoint to account for further drift during the next

surveillance interval. Note that, although the channel is OPERABLE under these circumstances, the trip setpoint must be left adjusted to a value within the as-left tolerance, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned (as-found criteria).

However, there is also some point beyond which the channel may not be able to perform its function due to, for example, greater than expected drift. This value needs to be specified in the Technical Specifications in order to define OPERABILITY of the channels and is designated as the Allowable Value. If the actual setting (as-found setpoint) of the channel is found to be conservative with respect to the Allowable Value but is beyond the as-found tolerance band, the channel is OPERABLE, but degraded. The degraded condition will be further evaluated during performance of the SR. This evaluation will consist of resetting the channel setpoint to the trip setpoint (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. After the surveillance is completed, the channel as-found condition will be entered into the Corrective Action Program for further evaluation.

Insert 2

Allowable Values are specified for each ECCS Function specified in Table 3.3.5.1-1. For Function 3.d, Condensate Storage Tank Level-Low, the nominal trip setpoint and methodologies for calculation of the as-left and as-found tolerances are described in the Technical Requirements Manual. The trip setpoints are selected to ensure that the setpoints remain conservative to the as-left tolerance band between CHANNEL CALIBRATIONS. After each calibration the trip setpoint shall be left within the as-left band around the nominal trip setpoint.

Insert 3

SR 3.3.5.1.3 for Function 3.d, Condensate Storage Tank Level –Low, is modified by two Notes as identified in Table 3.3.5.1-1. The first 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 Allowable Value. 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. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition.

The second Note applied to SR 3.3.5.1.3 for Function 3.d, Condensate Storage Tank Level – Low, requires that the as-left setting for the channel be within the as-left tolerance of the Nominal Trip Setpoint (NTSP). Where a setpoint more conservative than the NTSP is used in the plant surveillance procedures, the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the NTSP, then the channel shall be declared

inoperable. The second Note also requires that NTSP and the methodologies for calculating the as-left and the as-found tolerances be in the TRM.

Insert 4

SR 3.3.5.1.5 for Function 3.d, Condensate Storage Tank Level –Low, is modified by two Notes as identified in Table 3.3.5.1-1. The first 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 Allowable Value. 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. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition.

The second Note applied to SR 3.3.5.1.5 for Function 3.d, Condensate Storage Tank Level – Low, requires that the as-left setting for the channel be within the as-left tolerance of the NTSP. Where a setpoint more conservative than the NTSP is used in the plant surveillance procedures, the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the NTSP, then the channel shall be declared inoperable. The second Note also requires that NTSP and the methodologies for calculating the as-left and the as-found tolerances be in the TRM.

Insert 5

This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the RCIC instrumentation, as well as LCOs on other reactor system parameters and equipment performance.

Technical Specifications are required by 10 CFR 50.36 to include LSSSs for variables that have significant safety functions. LSSS are defined by the regulation as "Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur.

The trip setpoint is a predetermined setting for a protection channel chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded. As such, the trip setpoint accounts for uncertainties in setting the channel (e.g., calibration), uncertainties in how the channel might actually perform (e.g., repeatability), changes in the point of action of the channel over time (e.g., drift during surveillance intervals), and any other factors which may influence its actual performance (e.g.,

harsh accident environments). In this manner, the trip setpoint ensures that SLs are not exceeded. Therefore, for Function 3, Condensate Storage Tank Level- Low, the trip setpoint meets the definition of an LSSS (Ref. 2).

The Allowable Value specified in Table 3.3.5.2-1 serves as the LSSS such that a channel is OPERABLE if the trip setpoint is found not to exceed the Allowable Value. As such, the Allowable Value differs from the trip setpoint by an amount primarily equal to the expected instrument loop uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a SL is not exceeded at any given point of time as long as the device has not drifted beyond that expected during the surveillance interval.

Technical Specifications contain values related to the OPERABILITY of equipment required for safe operation of the facility. OPERABLE is defined in Technical Specifications as "...being capable of performing its specified safety function(s)." Relying solely on the trip setpoint to define OPERABILITY in Technical Specifications would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as-found" value of a protection channel setting during a Surveillance. This would result in Technical Specification compliance problems, as well as reports and corrective actions required by the rule which are not necessary to ensure safety. For example, an automatic protection channel with a setting that has been found to be different from the trip setpoint due to some drift of the setting may still be OPERABLE because drift is to be expected. This expected drift would have been specifically accounted for in the setpoint methodology for calculating the trip setpoint and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as-found" setting of the protection channel. Therefore, the channel would still be OPERABLE because it would have performed its safety function and the only corrective action required would be to reset the channel within the established as-left tolerance around trip setpoint to account for further drift during the next surveillance interval. Note that, although the channel is OPERABLE under these circumstances, the trip setpoint must be left adjusted to a value within the as-left tolerance, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned (as-found criteria).

However, there is also some point beyond which the channel may not be able to perform its function due to, for example, greater than expected drift. This value needs to be specified in the Technical Specifications in order to define OPERABILITY of the channels and is designated as the Allowable Value. If the actual setting (as-found setpoint) of the channel is found to be conservative with respect to the Allowable Value but is beyond the as-found tolerance band, the channel is OPERABLE, but degraded. The degraded condition will be further evaluated during performance of the SR. This evaluation will consist of resetting the channel setpoint to the trip setpoint (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. After the surveillance is completed, the channel as-found condition will be entered into the Corrective Action Program for further evaluation.

Insert 6

Allowable Values are specified for each RCIC System instrumentation Function specified in Table 3.3.5.2-1. For Function 3, Condensate Storage Tank Level- Low, the nominal trip setpoint and methodologies for calculation of the as-left and as-found tolerances are described in the

Technical Requirements Manual. The trip setpoints are selected to ensure that the setpoints remain conservative to the as-left tolerance band between CHANNEL CALIBRATIONS. After each calibration the trip setpoint shall be left within the as-left band around the nominal trip setpoint. Nominal trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytical limits are derived from the limiting values of the process parameters obtained from the safety analysis. The Allowable Values are derived from the analytical limits, corrected for calibration, process, and some of the instrument errors. The nominal trip setpoints are then determined, accounting for the remaining instrument errors (e.g., drift). The trip setpoints derived in this manner provide adequate protection because instrumentation uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for.

Note that, although the channel is OPERABLE under these circumstances, the trip setpoint must be left adjusted to a value within the as-left tolerance, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned (as-found criteria).

Insert 7

SR 3.3.5.2.4 for Function 3, Condensate Storage Tank Level- Low, is modified by two Notes as identified in Table 3.3.5.2-1. The first 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 Allowable Value. 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. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition.

The second Note applied to SR 3.3.5.2.4 for Function 3, Condensate Storage Tank Level- Low, requires that the as-left setting for the channel be within the as-left tolerance of the Nominal Trip Setpoint (NTSP). Where a setpoint more conservative than the NTSP is used in the plant surveillance procedures, the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the NTSP, then the channel shall be declared inoperable. The second Note also requires that the NTSP and the methodologies for calculating the as-left and the as-found tolerances be in the TRM.