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MAR 2 4 2009

U. S. Nuclear Regulatory Commission
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Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
AMENDMENT REQUEST NO. 296 TO UNIT 1 LICENSE NPF-14
AND AMENDMENT REQUEST NO. 266 TO UNIT 2 LICENSE NPF-22:
EMERGENCY CORE COOLING SYSTEM INSTRUMENTATION –
TECHNICAL SPECIFICATION (TS) TABLE 3.3.5.1-1 AND
EDITORIAL CHANGE TO TS 3.10.8.f **Docket Nos. 50-387**
PLA-6235 **and 50-388**

In accordance with the provisions of 10 CFR 50.90, PPL Susquehanna, LLC is submitting a request for amendment to the Technical Specifications (TS) for Susquehanna Units 1 and 2.

The purpose of this letter is to propose a technical change to the high pressure coolant injection (HPCI) system automatic suction transfer allowable value in the Susquehanna Steam Electric Station (SSES) Units 1 and 2 Technical Specifications Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation." The present allowable value has been determined to be non-conservative, as it does not preclude vortex formation and air intrusion in the HPCI pump suction.

The enclosure to this letter contains PPL's evaluation of the proposed technical change. Included are a description of the change, technical analysis of the change, regulatory analysis of the change (No Significant Hazards Consideration and the Applicable Regulatory Requirements), and the environmental considerations associated with the change.

The attachment to this letter contains the applicable pages of the SSES Units 1 and 2 TS, marked to show the proposed technical change. In addition, an editorial /administrative change which corrects a typographical error in the SSES Units 1 and 2 TS Section 3.10.8.f is included in the attachment.

There are no regulatory commitments associated with these proposed changes.

A002
NRR

The changes have been reviewed by the Susquehanna SES Plant Operations Review Committee and the Susquehanna Review Committee.

NRC approval of the proposed changes is requested by December 31, 2009.

Any questions regarding this request should be directed to Mr. Duane L. Filchner at (610) 774-7819.

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

Executed on: 3/24/09

W.H. Spence

Enclosure: Evaluation of Proposed Changes to Units 1 & 2 Technical Specification Table 3.3.5.1-1 – "Emergency Core Cooling System Instrumentation."

Attachment: Proposed Unit 1 & 2 Technical Specification Changes, (Mark-ups)

cc: NRC Region I
Mr. R. Janati, DEP/BRP
Mr. F. W. Jaxheimer NRC Sr. Resident Inspector
Mr. B. K. Vaidya, NRC Project Manager

Enclosure to PLA-6235

PPL Susquehanna, LLC

Evaluation of Proposed Changes to Units 1 & 2

Technical Specification Table 3.3.5.1-1

"Emergency Core Cooling System Instrumentation"

PPL EVALUATION

Subject: Units 1 & 2 Emergency Core Cooling System Instrumentation Technical Specification Table 3.3.5.1-1

1.0 DESCRIPTION

This is a request to amend Operating Licenses NPF-14 and NPF-22 for PPL Susquehanna, LLC (PPL), Susquehanna Steam Electric Station (SSES) Units 1 and 2. It represents a proposed revision to SSES Technical Specification (TS) Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation," Function 3.d.

2.0 PROPOSED CHANGE

The proposed change revises the allowable value in TS Table 3.3.5.1-1 (Function 3.d) for the High Pressure Coolant Injection (HPCI) automatic pump suction transfer from the Condensate Storage Tank (CST) to the Suppression Pool (SP). The present allowable value for this transfer is greater than or equal to 36 inches above the CST bottom. The proposed change is to increase the allowable value for this transfer to occur at greater than or equal to 40.5 inches above the CST bottom.

Additionally, an editorial /administrative change which corrects a typographical error in the SSES Units 1 and 2 TS Section 3.10.8.f is included in the attachment. No further discussion of this editorial / administrative change is provided hereafter.

3.0 BACKGROUND

Both SSES Units 1 and 2 have a HPCI system designed to ensure the reactor core is adequately cooled in the event of a small break (1 inch and under nominal pipe diameter) in the reactor coolant pressure boundary. HPCI automatically starts on design basis accident (DBA) signals indicative of a Loss of Coolant Accident (LOCA), based on either low reactor water level or high drywell pressure. Once automatically initiated, the HPCI system will continue to inject water until the pressure in the reactor pressure vessel (RPV) is below the pressure at which Low Pressure Coolant Injection (LPCI) or the low pressure Core Spray system can maintain core cooling. HPCI is also credited for water injection during non-design

basis events associated with Anticipated Transients without Scram (ATWS), Appendix R, or Station Blackout (SBO).

The suction source for the HPCI pump is normally provided by the non-safety related CST. A reserve volume of water is available in the CST to assure adequate water is available for HPCI system operation. The HPCI system is designed to automatically transfer pump suction sources from the CST to the safety-related suppression pool (SP) if the CST level decreases to the low level transfer setpoint at 43.5 inches above the CST bottom. The suction source transfer function is initiated by redundant, float type level switches, installed in a fixed location on the CST wall approximately 43.5 inches above the tank bottom.

The original and current TS allowable value for these level switches is $\geq$ 36 inches above the CST bottom. The original architect engineer (AE) calculations for these level switches had determined that the allowable value for these level switches should be $\geq$40.5 inches. However, a basis for the original TS allowable value of 36 inches developed by the original (AE) could not be located in the design basis documentation.

In 1996, a basis for the 36 inch allowable value was established and documented in a PPL calculation. However, the PPL calculation was recently determined to be in error since it did not consider the continuing decrease in CST water level during the suction transfer process. Further, the PPL calculation did not acknowledge the original AE calculations regarding these level switches, which had determined that the allowable value should be $\geq$40.5 inches.

The General Electric (GE) documentation associated with operation of these level switches indicates that the process setpoint should be 3 inches above the allowable value, to establish adequate margin to the allowable value. Since the original AE documentation calculated an allowable value of $\geq$40.5 inches, the AE subsequently installed the switches and established a process setpoint of 43.5 inches above the CST bottom, consistent with the GE recommendation.

A flow model of the HPCI suction configuration was developed to establish a basis for determination of the TS allowable value, using conservative acceptance criteria regarding vortex formation and air intrusion in the suction piping. The model identified that the transfer logic for the CST and SP valves should be revised such that they operate in parallel rather than in series to reduce the overall transfer time.

Originally, the series operation of the suction valves occurred as follows:

- The SP suction valve would begin to open when low CST level is detected by the float level switch;

- After the SP suction valve reaches the fully open position, the CST suction valve would begin to close;
- The suction source transfer would be completed when the CST suction valve is fully closed.

The revised parallel operation transfer logic occurs as follows:

- The CST suction valve will begin to close and the SP suction valve will begin to open simultaneously upon receipt of a suction transfer signal from the CST level switch;
- The suction source transfer is completed in a shorter amount of time, thereby maintaining a greater volume of water in the CST.

This transfer logic design change to parallel operation has been implemented in the HPCI pump suction paths on both units in accordance with the 10 CFR 50.59 process.

This proposed change to the TS Table 3.3.5.1-1 HPCI suction transfer allowable value from ≥36 to ≥40.5 inches assures that vortex formation and air intrusion to the HPCI suction does not occur. If the suction transfer were to be initiated at the current technical specification allowable value (36 inches above CST bottom), the suction valve operation due to the transfer logic creates the potential for vortex formation and air intrusion into the HPCI suction line during the transfer process.

Interim Compensatory Measures:

The current TS allowable value of 36 inches was determined to be non conservative in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications that are Insufficient to Assure plant Safety." Accordingly, this issue was entered in the SSES corrective action program.

An operability assessment was prepared to demonstrate that the original automatic transfer functions (valves operating in series) are acceptable provided the suction transfer is completed within ½ inch of the actual float level switch setpoint (i.e. ≥43 inches above tank bottom). Consequently, the setpoint tolerance in the surveillance procedures for these level switches was reduced to be consistent with the assumptions used in the operability assessment. In addition, the acceptance criteria for maximum stroke times for the HPCI suction valves in the HPCI surveillance procedures were changed based on the operability assessment. These compensatory measures ensured HPCI remained fully functional in the event of an automatic suction transfer to the SP.

Subsequently, the design changes to parallel operation of the HPCI pump suction valves has been implemented. Upon implementation of the revised transfer logic, the valve stroke time restrictions were removed.

4.0 TECHNICAL ANALYSIS

This proposed TS change is necessary to eliminate the potential for unacceptable vortex formation in the HPCI suction piping during an automatic transfer of the HPCI pump suction source from the CST to the SP.

The following describes the bases for determining the new proposed allowable value of 40.5 inches.

Allowable Value Determination – Hydraulic Model

A hydraulic model of the HPCI Pump suction piping was developed based on conservation of mass and mechanical energy. The model determined CST level versus time during a HPCI suction transfer from the CST to the SP. The HPCI suction valves at the CST and the SP were modeled to operate in parallel, (i.e., at t=0, the HPCI suction valve from the CST HV1(2)55F004 begins to close and the SP suction valve HV1(2)55F042 begins to open).

Pressure drop relations were developed for the HPCI suction piping to predict the change in flow in each suction line as the suction valves changed positions. The model incrementally calculated the change in flow in each line and the corresponding change in CST level until the suction valves completed their position change. The initial CST level, assumed in the model, was adjusted until the final level in the CST was determined to be acceptable after a suction transfer.

Acceptable results were achieved when the final level was determined to be at or above the vortex breaker elevation (30.875 inches above tank bottom although the analysis used 32 inches to account for installation uncertainties) in the CST, or the level was determined to be above the onset of air ingestion curve, as defined in Reference 1.

The model demonstrated that when the HPCI suction transfer was initiated at CST level 40.5 inches above the tank bottom, acceptable results (no vortex formation and no air intrusion) were achieved . The evaluation conservatively assumed worst case flow conditions and valve stroke times, (i.e. high flow and slow valve stroke time), to maximize the decrease in CST water level during the transfer, thereby ensuring a conservative allowable value for the suction transfer.

Allowable Value Determination – PPL Setpoint Methodology

The SSES Setpoint Control Program is implemented utilizing engineering process controls, plant procedural controls, and the corrective action process. This program ensures the associated instrument channel is capable of performing its specified safety functions.

The Susquehanna Final Safety Analysis Report (FSAR) Section 3.13, Instrument Spans and Setpoints, states that the plant design meets the provisions of Regulatory Guide (RG) 1.105, Revision 1, November 1976, with exceptions as noted in that section. This design standard provides a discussion of the instrument setpoint methodologies of General Electric (GE) and the Instrument Society of America (ISA).

The PPL Design Standard for Instrumentation and Control Setpoint Calculation Methodology, follows a standardized approach based upon the GE NSSS methods used in the initial SSES setpoint calculations. However, this methodology is not applicable to mechanical float level switches.

Rather, the original allowable value (40.5 inches) determined by the original AE design basis calculation for these level switches was used to establish the process setpoint of 43.5 inches. Float chambers for the level switches were welded to the CST at that location. As stated above, the AE calculation determined that the TS allowable value of 40.5 inches was appropriate for this process setpoint. This value is identical to the new proposed 40.5" allowable value established by the hydraulic model, although the hydraulic model credits the HPCI transfer logic changes implemented under the design change process. The model also accounts for degraded voltage conditions that could exist at the HPCI suppression pool suction valve operator.

Establishing the allowable value in this manner is acceptable because it is consistent with Technical Specification Bases 3.3.5.1, "Applicable Safety Analyses, LCO, and Applicability" which describes the setpoint methodology used for establishing the allowable values for ECCS functions identified in TS Table 3.3.5.1-1. This TS Bases section states that allowable values for these mechanical float type level switches was based on system calculations and/or engineering judgment.

Acceptability of the Proposed 40.5 Inch Allowable Value

The reserve water volume in the CST dedicated for HPCI use was originally determined by GE to support 8 hours of decay heat removal. This volume

included the volume down to the HPCI CST suction nozzle. The CST reserve volume available when the HPCI low level transfer occurs at the 43.5 inch setpoint equates to approximately 7.4 hours of decay heat removal capability. This change in TS allowable value from 36 inches to 40.5 inches does not reduce the reserve volume since the transfer will still occur at the CST low level switch setpoint of 43.5 inches above tank bottom. The supporting analysis demonstrates that even if the transfer were to initiate at the 40.5 inch allowable value, no unacceptable vortex formation or air intrusion would occur.

The CST is not credited in any design basis accident analyses; however, the CST reserve volume is credited in ATWS, Appendix R and SBO evaluations. The most limiting case with regard to CST reserve capacity is the SBO. The reserve volume available in the CST (at the process setpoint of 43.5 inches above the CST bottom) exceeds the reserve volume required by the SBO analysis. The reserve volume available to support HPCI system operation will remain above the required reserve volume after the proposed change in technical specification allowable value from 36 inches to 40.5 inches, and therefore the reserve volume in the CST will remain adequate to fully support HPCI system operation. The proposed change also ensures that a HPCI suction source transfer initiated at the technical specification allowable value of 40.5 inches above tank bottom would not result in vortex formation or air intrusion in the HPCI pump suction piping and that the transfer would be completed without impacting HPCI system operation.

Since these float level switches do not provide any automatic trip function for protection against a violation of a Reactor Core Safety Limit (SL), or a Reactor Coolant System Pressure Safety Limit, during an anticipated operational occurrence (AOO), a normal operational transient, or steady state operation, the allowable value for their operation is not considered to be a Limiting Safety System Setting (LSSS).

Setpoint Tolerances and Drift

The float level switches are simple mechanical switches. Switching action is obtained using a magnetic attracting sleeve, actuated by a float, and a switching mechanism. The float moves the magnetic attracting sleeve upward in the enclosing tube and into the field of the switch mechanism magnet. As a result, the magnet is drawn in tightly to the enclosing tube causing the switch to tilt, either completing or breaking an electrical circuit. As CST level decreases, the float pulls the magnetic attracting sleeve downward until at a predetermined "low level," the switch magnet releases and is drawn outward away from the enclosing tube by a tension spring. This in turn tilts the switch, thus reversing switch action and opening the electrical circuit.

The float level switches are mounted in a fixed location on the CST tank wall, 43.5 inches above the CST bottom. Therefore, this location establishes the setpoint for initiation of the automatic HPCI suction source transfer as the CST water level decreases to 43.5 inches above the CST bottom. This fixed location for the 43.5 inch setpoint provides a high degree of assurance that the float level switch will not actuate below the proposed 40.5 inch allowable value. The proposed allowable value of 40.5 inches does not result in a change to the process setpoint of 43.5 inches.

The level switch setpoint tolerances were established based on a review of historical surveillance data. The calculated range and drift values were found to be consistent with original design values. These tolerances provide adequate margin to the proposed technical specification allowable value of 40.5 inches and will therefore ensure the HPCI suction transfer will occur prior to level reaching the technical specification allowable value.

The as-found and as-left tolerances ensure that the proposed 40.5 inch Allowable Value would not be approached with the existing process setpoint of 43.5 inches and are more consistent with the level switch capabilities. The historical surveillance data review, GE and Bechtel Design Data, and input regarding actual physical calibration in the field of these level switches provide the supporting bases for these tolerances.

The original design basis documentation states that the original design basis of the mechanical float type level switch requires a one inch calibration accuracy. The switch purchase data sheet shows adjustable range requirements of (+/-) 1inch. The statistical analysis of the drift data over a 3.75 year period determined that the setpoint tolerances for these switches support an As-found tolerance of (+/-) 2 inches and an As-left tolerance of (+/-) 1 inch. Therefore, these tolerances are consistent with the original design bases and consistent with level switch capabilities to ensure that the allowable value will not be approached during the surveillance interval.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

The Commission has provided standards in 10 CFR 50.92(c) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if

operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

PPL proposes changes to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-14 and NPF-22 for the Susquehanna Steam Electric Station Units 1 and 2 respectively.

The proposed change revises TS Table 3.3.5.1-1 to increase the technical specification allowable value for the high pressure coolant injection (HPCI) suction low level automatic transfer from the condensate storage tank (CST) to the suppression pool (SP).

Additionally, an editorial /administrative change is proposed which corrects a typographical error in the SSES Units 1 and 2 TS Section 3.10.8.f. No further discussion of this editorial / administrative change is provided hereafter because it does not involve a significant increase in the probability or consequences of an accident previously evaluated; it does not create the possibility of a new or different kind of accident from any accident previously evaluated; and it does not involve a significant reduction in a margin of safety.

In accordance with the criteria set forth in 10 CFR 50.92, PPL has evaluated the proposed TS change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

No. The proposed change increases the Technical Specification allowable value for the HPCI suction low level automatic transfer function from ≥ 36 inches to ≥ 40.5 inches above the CST bottom. There are no process setpoint changes associated with this TS allowable value change. This TS change does not introduce the possibility of an increase in the probability or consequences of an accident because the HPCI automatic transfer function is not an initiator of any new accidents nor does it introduce any new failure modes. The CST is not safety related and therefore not credited in any design basis accident analyses. However, the CST reserve volume is credited in anticipated transients without scram (ATWS), Appendix R and station blackout (SBO) evaluations. The reserve volume available in the CST at the proposed allowable value of 40.5 inches above the CST bottom

remains adequate to fully support these HPCI system support functions and the change fully supports HPCI system operation. The reserve volume is not reduced as a result of the proposed change in the TS allowable value since the transfer will still occur at the CST low level instrument setpoint of 43.5 inches above tank bottom, which remains unchanged.

The HPCI system automatic transfer function occurs at the point in a design basis accident (DBA) when the CST level reaches the low level transfer setpoint. This proposed change will require the HPCI pump suction to be transferred from the CST to the SP at 40.5 inches versus 36 inches above the CST bottom. Currently, the TS allow this transfer to occur at 36 inches. This proposed change is conservative because it assures the suction transfer will occur while there is more water in the tank, thus eliminating the possibility of vortex formation and air intrusion to the HPCI pump suction. Since this proposed change ensures the HPCI system automatic suction transfer function occurs without adversely impacting HPCI system operation, it 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?**

No. As discussed above, the proposed change involves increasing the TS allowable value for the HPCI low level automatic transfer function from the CST to the SP at ≥36 inches to ≥40.5 inches above the CST tank bottom. This change ensures the HPCI automatic transfer function occurs without introducing the possibility of vortex formation or air intrusion in the HPCI pump suction path. All HPCI system support functions remain unaffected by this change. This TS change does not introduce the possibility of a new accident because the HPCI automatic transfer function is not an initiator of any accident and no new failure modes are introduced. There are no new types of failures or new or different kinds of accidents or transients that could be created by these changes. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

No. The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are

initiated. The proposed change involves increasing the allowable level at which the HPCI automatic suction transfer from the CST to the SP must occur to avoid the possibility of vortex formation or air intrusion into the HPCI pump. This change does not result in a change to the level switch setpoint, which initiates the HPCI suction transfer from the CST to the SP. Although the allowable value for the transfer is now closer to the process setpoint for activation of the level switch, this reduction in operating margin was reviewed and determined to be acceptable. The level switch setpoint tolerances were established based on historical instrument data and instrument characteristics. These tolerances provide adequate margin to the proposed TS allowable value of 40.5 inches above the CST bottom. The tolerances further ensure the transfer will occur prior to level reaching the technical specification allowable value.

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

5.2 Applicable Regulatory Requirements/Criteria

There are no regulatory requirements associated with use of the Condensate Storage Tank as the non-safety related suction source for HPCI. The design safety related source of water is the Suppression Pool. This proposed change is conservative and it ensures the automatic transfer from the CST to the SP occurs without adversely impacting HPCI system operation.

6.0 ENVIRONMENTAL CONSIDERATIONS

10 CFR 51.22(c)(9) identifies certain licensing and regulatory actions, which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility does not require an environmental assessment if operation of the facility in accordance with the proposed amendment would not (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or (3) result in a significant increase in individual or cumulative occupational radiation exposure. PPL has evaluated the proposed change and has determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Accordingly, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the amendment. This determination, using the above criteria, is:

1. As demonstrated in the No Significant Hazards Consideration Evaluation, the proposed amendment does not involve a significant hazards consideration.

2. There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

7.0 REFERENCES

1. Sanders, R.R. Smith, L.A., Padmanabhaw, M. Johansson, A., and Hafer, D.R., "Air Entrainment in a Partially Filled Horizontal Pump Suction Line," proceedings of 2001 International Joint Power Conference, New Orleans, June 4-7 , 2001.

Attachment to PLA-6235

Proposed Units 1 & 2 Technical Specification Changes (Mark-ups)

Table 3.3.5.1-1 (page 3 of 6)
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
2. LPCI System (continued)					
f. Manual Initiation	1,2,3, 4[a], 5[a]	2 1 per subsystem	C	SR 3.3.5.1.5	NA
3. High Pressure Coolant Injection (HPCI) System					
a. Reactor Vessel Water Level—Low, Level 2	1, 2[e], 3[e]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -45 inches
b. Drywell Pressure—High	1, 2[e], 3[e]	4	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 1.88 psig
c. Reactor Vessel Water Level—High, Level 8	1, 2[e], 3[e]	2	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 55.5 inches 40.5
d. Condensate Storage Tank Level—Low	1, 2[e], 3[e]	2	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ ~~36.0~~ inches above tank bottom

(continued)

(a) When the associated subsystem(s) are required to be OPERABLE.

(e) With reactor steam dome pressure > 150 psig.

3.10 SPECIAL OPERATIONS

3.10.8 SHUTDOWN MARGIN (SDM) Test - Refueling

LCO 3.10.8 The reactor mode switch position specified in Table 1.1-1 for MODE 5 may be changed to include the startup/hot standby position, and operation considered not to be in MODE 2, to allow SDM testing, provided the following requirements are met:

a. LCO 3.3.1.1, "Reactor Protection System Instrumentation," MODE 2 requirements for Functions 2.a, 2.d, and 2.e of Table 3.3.1.1-1;

b. 1. LCO 3.3.2.1, "Control Rod Block Instrumentation," MODE 2 requirements for Function 2 of Table 3.3.2.1-1, with the banked position withdrawal sequence requirements of SR 3.3.2.1.8 changed to require the control rod sequence to conform to the SDM test sequence.

OR

2. Conformance to the approved control rod sequence for the SDM test is verified by a second licensed operator or other qualified member of the technical staff;

c. Each withdrawn control rod shall be coupled to the associated CRD;

d. All control rod withdrawals that are not in conformance with the BPWS shall be made in notch out mode;

e. No other CORE ALTERATIONS are in progress; and

f. CRD charging water header pressure $\geq$ 940 psig.

APPLICABILITY: MODE 5 with the reactor mode switch in startup/hot standby position.

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 Coolant Injection (HPCI) System					
a. Reactor Vessel Water Level—Low Low, Level 2	1, 2(e), 3(e)	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -45 inches
b. Drywell Pressure—High	1, 2(e), 3(e)	4	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 1.88 psig
c. Reactor Vessel Water Level—High, Level 8	1 2(e), 3(e)	2	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 55.5 inches
d. Condensate Storage Tank Level—Low	1, 2(e), 3(e)	2	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ ~~36.0~~ 40.5 inches above tank bottom
e. Manual Initiation	1, 2(e), 3(e)	1	C	SR 3.3.5.1.5	NA

(continued)

(a) When the associated subsystem(s) are required to be OPERABLE.

(e) With reactor steam dome pressure > 150 psig.

3.10 SPECIAL OPERATIONS

3.10.8 SHUTDOWN MARGIN (SDM) Test - Refueling

LCO 3.10.8 The reactor mode switch position specified in Table 1.1-1 for MODE 5 may be changed to include the startup/hot standby position, and operation considered not to be in MODE 2, to allow SDM testing, provided the following requirements are met:

a. LCO 3.3.1.1, "Reactor Protection System Instrumentation," MODE 2 requirements for Functions 2.a, 2.d and 2.e of Table 3.3.1.1-1;

b. 1. LCO 3.3.2.1, "Control Rod Block Instrumentation," MODE 2 requirements for Function 2 of Table 3.3.2.1-1, with the banked position withdrawal sequence requirements of SR 3.3.2.1.8 changed to require the control rod sequence to conform to the SDM test sequence.

OR

2. Conformance to the approved rod sequence for the SDM test is verified by a second licensed operator or other qualified member of the technical staff;

c. Each withdrawn control rod shall be coupled to the associated CRD;

d. All control rod withdrawals that are not in conformance with the BPWS shall be made in notch out mode;

e. No other CORE ALTERATIONS are in progress; and

f. CRD charging water header pressure ≥ 940 psig.

APPLICABILITY: MODE 5 with the reactor mode switch in startup/hot standby position.