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RS-05-104

10 CFR 50.90

September 21, 2005

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Clinton Power Station
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Revised Technical Specification Pages for License Amendment Related to Revision of Instrument Channel Trip Setpoint Allowable Values

References:

1. Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Request for License Amendment Related to Revision of Instrument Channel Trip Setpoint Allowable Values," dated November 11, 2003

2. Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Response to Request for Supporting Information for License Amendment Related to Revision of Instrument Channel Trip Setpoint Allowable Values," dated April 16, 2004

3. Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Response to Request for Additional Information for License Amendment Related to Revision of Instrument Channel Trip Setpoint Allowable Values," dated September 10, 2004

4. Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Response to Request for Additional Information for License Amendment Related to Revision of Instrument Channel Trip Setpoint Allowable Values," dated March 30, 2005

In Reference 1, AmerGen Energy Company, LLC (AmerGen) submitted a request for a change to Appendix A, Technical Specifications (TS), of Facility Operating License No. NPF-62 for Clinton Power Station (CPS). Specifically, the proposed change requested revisions to instrument channel trip setpoint allowable values for thirteen TS defined functions. The current allowable values for these functions were determined to require revision during a detailed review of all CPS instrumentation setpoints and allowable values. References 2, 3, and 4 all provided additional information requested by the NRC in support of their review of Reference 1.

In Reference 4, AmerGen provided NRC requested additional information pertaining to AmerGen's use of Instrument Society of America (ISA) recommended practice ISA-RP67.04-1994, Part II, "Methodologies for Determination of Setpoints for Nuclear Safety-Related Instrumentation," Method 3, to establish the allowable values. As part of this response, AmerGen proposed to add a Note to the affected TS pages. The proposed Note would require the affected channel to be re-adjusted to within the established setting tolerance band of the Nominal Trip Setpoint when the actual Trip Setpoint value is found outside its calibration tolerance band. Attachment 2 to Reference 4 provided revised markups for the affected TS pages.

Subsequent to submittal of Reference 4, discussions between AmerGen and the NRC resulted in an agreement on how to address the use of Method 3 calculated Allowable Values in TS. As a result, AmerGen is revising the proposed TS Note and is applying the Note only to the calibration surveillance requirements (SR) for Functions with revised allowable values in those TS that implement Limiting Safety System Settings (LSSS). For a boiling water reactor (BWR), the systems these instruments are typically associated with are the Reactor Protection System (RPS) and the Emergency Core Cooling System (ECCS). However, during the AmerGen review of the proposed changes identified in Reference 1, it was determined that the relief function specified in TS 3.3.6.5, "Relief and LLS Instrumentation," meets the definition of a LSSS. Therefore, the proposed Note will also be added to TS SR 3.3.6.5.2 and 3.3.6.5.3.

Attachment 1 to this letter provides revised markups for the affected TS pages. Attachment 2 provides retyped TS pages for both the changes proposed in Reference 1, and the additional changes proposed in this letter. The proposed changes provided in Attachments 1 and 2 supersede the changes proposed in References 1 and 4. Attachment 3 contains copies of the markups of the associated TS Bases pages. These markups are provided for information only.

AmerGen has reviewed the information supporting a finding of no significant hazards consideration that was previously provided to the NRC in Attachment 1 of Reference 1. The supplemental information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration.

As part of the resolution of the Method 3 setpoint issue, a Technical Specification Task Force (TSTF) generic TS change will be developed. AmerGen recognizes the importance of evaluating this proposed change for implementation at CPS once it has been developed and approved. Therefore, AmerGen commits to performing this

evaluation upon approval of the TSTF change by the NRC. This regulatory commitment is documented in Attachment 4 to this letter.

If you have any questions concerning this letter, please contact Mr. Timothy A. Byam at (630) 657-2804.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 21st day of September 2005.

Respectfully,

Keith R. Jury
Director, Licensing and Regulatory Affairs
AmerGen Energy Company, LLC

Attachments:
1. Markup of Proposed Technical Specifications Pages
2. Retyped Technical Specifications Pages
3. Markup of Proposed Technical Specification Bases Pages (For Information Only)
4. Commitments

ATTACHMENT 1
Markup of Proposed Technical Specifications Pages

CLINTON POWER STATION

FACILITY OPERATING LICENSE NO. NPF-62

REVISED TECHNICAL SPECIFICATIONS PAGES

3.3-8
3.3-29
3.3-39
3.3-40
3.3-41
3.3-42
3.3-43
3.3-47
3.3-55
3.3-56
3.3-57
3.3-58
3.3-59
3.3-60
3.3-64
3.3-68
3.3-72
3.3-74

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Vessel Steam Dome Pressure - High	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 1080 psig
4. Reactor Vessel Water Level-Low, Level 3	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≥ 8.3 inches
5. Reactor Vessel Water Level-High, Level 8	≥ 21.6 % RTP	4	F	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 52.6 inches 13 9/0
6. Main Steam Isolation Valve-Closure	1	4	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 12% closed (c)
7. Drywell Pressure-High	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 1.88 psig
8. Scram Discharge Volume Water Level-High					
a. Transmitter	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 40-1/4 inches for 1C11-N601A,B and ≤ 39-3/16 inches for 1C11-N601C,D
	5[a]	4	I	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 40-1/4 inches for 1C11-N601A,B and ≤ 39-3/16 inches for 1C11-N601C,D

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(c) Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Remove the associated recirculation pump from service. OR C.2 Be in MODE 2.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.4.2.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.4.2.3	Calibrate the trip units.	92 days
SR 3.3.4.2.4	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level-Low Low, Level 2: ≥ -50.0 inches; and b. Reactor Steam Dome Pressure-High: ≤ 1150 psig. 1143	18 months
SR 3.3.4.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	18 months

Table 3.3.5.1-1 (page 1 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
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3, 4[a],5[a]	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.7 inches
b. Drywell Pressure-High	1,2,3	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. LPCI Pump A Start-Time Delay Logic Card	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 4.5 seconds and ≤ 5.5 seconds
d. Reactor Vessel Pressure-Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 452 and ≤ 478 psig
	4[a],5[a]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 452 and ≤ 478 psig
e. LPCS Pump Discharge Flow-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 3.3.5.1.4 SR 3.3.5.1.5	≥ 750 gpm
f. LPCI Pump A Discharge Flow-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 3.3.5.1.4 SR 3.3.5.1.5	≥ 900 gpm
g. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.5	NA

(continued)

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

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

(e) Insert 1

Table 3.3.5.1-1 (page 2 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
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3, 4[a],5[a]	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.7 inches
b. Drywell Pressure-High	1,2,3	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. LPCI Pump B Start-Time Delay Logic Card	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 4.5 seconds and ≤ 5.5 seconds
d. Reactor Vessel Pressure-Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 452 psig and ≤ 478 psig
	4[a],5[a]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 452 psig and ≤ 478 psig
e. LPCI Pump B and LPCI Pump C Discharge Flow-Low (Bypass)	1,2,3, 4[a],5[a]	1 per pump	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 900 gpm
f. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.5	NA

(continued)

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

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

(e) Insert 1

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 3.3.5.1.4 SR 3.3.5.1.5	≥ -47.7 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 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 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 3.3.5.1.4 SR 3.3.5.1.5	≤ 54.2 inches
d. RCIC 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 3.3.5.1.4 SR 3.3.5.1.5	≥ 2.5 inches
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 3.3.5.1.4 SR 3.3.5.1.5	≤ 12 inches
f. HPCS Pump Discharge Pressure-High (Bypass)	1,2,3, 4[a],5[b]	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 120 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 3.3.5.1.4 SR 3.3.5.1.5	≥ 500 gpm
h. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.5	NA

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.
(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 RCIC storage tank while tank water level is not within the limits of SR 3.5.2.2.

(e) Insert 1

Table 3.3.5.1-1 (page 4 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
4. Automatic Depressurization System (ADS) Trip System 1 (Logic A and B)					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.7 inches
b. Drywell Pressure-High	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. ADS Initiation Timer	1,2[d],3[d]	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 117 seconds
d. Reactor Vessel Water Level-Low, Level 3 (Confirmatory)	1,2[d],3[d]	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 8.3 inches and ≤ 176.3 psig
e. LPCS Pump Discharge Pressure-High	1,2[d],3[d]	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 125 psig
f. LPCI Pump A Discharge Pressure-High	1,2[d],3[d]	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 115 psig and ≤ 135 psig
g. ADS Drywell Pressure Bypass Timer	1,2[d],3[d]	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 6.5 minutes
h. Manual Initiation	1,2[d],3[d]	2	G	SR 3.3.5.1.5	NA

(continued)

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

(e) Insert 1

Table 3.3.5.1-1 (page 5 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
5. ADS Trip System 2 (Logic B and F)					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.7 inches
b. Drywell Pressure-High	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. ADS Initiation Timer	1,2[d],3[d]	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 117 seconds
d. Reactor Vessel Water Level-Low, Level 3 (Confirmatory)	1,2[d],3[d]	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 8.3 inches and ≤ 135 psig
e. LPCI Pumps B & C Discharge Pressure-High	1,2[d],3[d]	2 per pump	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 115 psig
f. ADS Drywell Pressure Bypass Timer	1,2[d],3[d]	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 6.5 minutes
g. Manual Initiation	1,2[d],3[d]	2	G	SR 3.3.5.1.5	NA

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

(e) Insert 1

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	≥ -47.7 inches -48.1
2. Reactor Vessel Water Level-High, Level 8	2	C	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ 52.6 inches 3.0
3. RCIC Storage Tank Level-Low	2	D	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	≥ 2.5 inches -5
4. Suppression Pool Water Level-High	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ -3 inches
5. Manual Initiation	1	C	SR 3.3.5.2.5	NA

Table 3.3.6.1-1 (page 1 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -147.7 inches -148.1
b. Main Steam Line Pressure-Low	1	4	H	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 837 psig 840
c. Main Steam Line Flow-High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 284 psid
d. Condenser Vacuum-Low	1,2[(a)], 3[(a)]	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 7.6 inches Hg vacuum
e. Main Steam Tunnel Temperature-High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
f. Main Steam Line Turbine Building Temperature-High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	Modules 1-4 ≤ 142°F, Module 5 ≤ 150°F
g. Manual Initiation	1,2,3	4	J	SR 3.3.6.1.6	NA

(continued)

(a) With any turbine stop valve not closed.

Table 3.3.6.1-1 (page 2 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment and Drywell Isolation					
a. Reactor Vessel Water Level-Low Low, Level 2	1,2,3	4 [b]	K	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -47.7 inches
	[c]	4	O	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -47.7 inches
b. Drywell Pressure-High	1,2,3	4 [b]	K	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
c. Deleted					
d. Drywell Pressure-High (ECCS Divisions 1 and 2)	1,2,3	4 [b]	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
e. Reactor Vessel Water Level-Low Low, Level 2 (HPCS NSPS Div 3 and 4)	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -47.7 inches
f. Drywell Pressure-High (HPCS NSPS Div 3 and 4)	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig

(continued)

(b) Also required to initiate the associated drywell isolation function.

(c) During operations with a potential for draining the reactor vessel.

Table 3.3.6.1-1 (page 3 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment and Drywell Isolation (continued)					
g. Containment Building Fuel Transfer Pool Ventilation Plenum Radiation-High	(c), (d)	4	N	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 500 mR/hr
h. Containment Building Exhaust Radiation-High	1,2,3	4 (b)	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
	(c), (d)	4	N	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
i. Containment Building Continuous Containment Purge (CCP) Exhaust Radiation-High	1,2,3	4 (b)	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
	(c), (d)	4	N	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
j. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3	4 (b)	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -147.7 inches -148.1
	(c)	4	O	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -147.7 inches
k. Containment Pressure-High	(e)	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 3.0 psid
l. Manual Initiation	1,2,3	2 (b)	J	SR 3.3.6.1.6	NA
	(c), (d)	2	N	SR 3.3.6.1.6	NA

(continued)

(b) Also required to initiate the associated drywell isolation function.

(c) During operations with a potential for draining the reactor vessel.

(d) During movement of recently irradiated fuel assemblies in the primary or secondary containment.

(e) MODES 1, 2, and 3 with the associated PCIVs not closed.

Table 3.3.6.1-1 (page 4 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. Auxiliary Building RCIC Steam Line Flow-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 118.5 inches water
b. RCIC Steam Line Flow-High, Time Delay	1,2,3	2	I	SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 13 seconds
c. RCIC Steam Supply Line Pressure-Low	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 52 psig
d. RCIC Turbine Exhaust Diaphragm Pressure-High	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 20 psig
e. RCIC Equipment Room Ambient Temperature-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 207°F
f. Main Steam Line Tunnel Ambient Temperature-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
g. Main Steam Line Tunnel Temperature Timer	1,2,3	2	I	SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 28 minutes
h. Reactor Vessel Water Level-Low Low, Level 2	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ ~~-47.7~~ -48.1 inches
i. Drywell RCIC Steam Line Flow - High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 188 inches water

(continued)

Table 3.3.6.1-1 (page 5 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. RCIC System Isolation (continued)					
j. Drywell Pressure - High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
k. Manual Initiation	1,2,3	1	J	SR 3.3.6.1.6	NA
4. Reactor Water Cleanup (RWCU) System Isolation					
a. Differential Flow - High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 66.1 gpm
b. Differential Flow-Timer	1,2,3	2	I	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 47 seconds
c. RWCU Heat Exchanger Equipment Room Temperature-High	1,2,3	2 per room	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 205°F
d. RWCU Pump Rooms Temperature-High	1,2,3	2 per room	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 202°F
e. Main Steam Line Tunnel Ambient Temperature-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
f. Reactor Vessel Water Level-Low Low, Level 2	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -47.7 inches -48.1
	(c)	4	O	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -47.7 inches
g. Standby Liquid Control System Initiation	1,2	2	L	SR 3.3.6.1.6	NA
h. Manual Initiation	1,2,3	2	J	SR 3.3.6.1.6	NA
	(c), (d)	2	N	SR 3.3.6.1.6	NA

(continued)

(c) During operations with a potential for draining the reactor vessel.
(d) During movement of recently irradiated fuel assemblies in the primary or secondary containment.

Table 3.3.6.1-1 (page 6 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. RHR System Isolation					
a. RHR Heat Exchanger Ambient Temperature-High	1,2,3	2 per room	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 160°F
b. Reactor Vessel Water Level - Low, Level 3	1,2,3[f]	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 8.3 inches
c. Reactor Vessel Water Level - Low, Level 3	3[g],4,5	4[h]	M	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 8.3 inches (-148.1)
d. Reactor Vessel Water Level - Low Low Low, Level 1	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ (-147.7) inches
e. Reactor Vessel Pressure-High	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 110 psig
f. Drywell Pressure-High	1,2,3	8	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
g. Manual Initiation	1,2,3	2	J	SR 3.3.6.1.6	NA

(f) With reactor steam dome pressure greater than or equal to the RHR cut in permissive pressure.

(g) With reactor steam dome pressure less than the RHR cut in permissive pressure.

(h) Only one trip system required in MODES 4 and 5 with RHR Shutdown Cooling System integrity maintained

Table 3.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Reactor Vessel Water Level-Low Low, Level 2	1,2,3,(a)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5	≥ -47.7 inches -48.1
2.	Drywell Pressure-High	1,2,3	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 1.88 psig
3.	Containment Building Fuel Transfer Pool Ventilation Plenum Exhaust Radiation-High	(a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 500 mR/hr
4.	Containment Building Exhaust Radiation-High	1,2,3, (a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 400 mR/hr
5.	Containment Building Continuous Containment Purge (CCP) Exhaust Radiation-High	1,2,3, (a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 400 mR/hr
6.	Fuel Building Exhaust Radiation-High	1,2,3, (c)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 17 mR/hr
7.	Manual Initiation	1,2,3, (a),(b)	1	SR 3.3.6.2.5	NA

(a) During operations with a potential for draining the reactor vessel.

(b) During movement of recently irradiated fuel assemblies in the primary or secondary containment.

(c) During movement of recently irradiated fuel assemblies in the fuel building.

Table 3.3.6.3-1 (page 1 of 1)
RHR Containment Spray System Instrumentation

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Drywell Pressure-High	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4 SR 3.3.6.3.5	≤ 1.88 psig
2. Containment Pressure-High	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4 SR 3.3.6.3.5	≤ 22.4 psia
3. Reactor Vessel Water Level-Low Low Low, Level 1	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4 SR 3.3.6.3.5	≥ -147.7 inches
4. Timers, System A and System B	1	C	SR 3.3.6.3.2 SR 3.3.6.3.4 SR 3.3.6.3.5	≥ 10.10 minutes and ≤ 10.23 minutes
5. Timer, System B Only	1	C	SR 3.3.6.3.2 SR 3.3.6.3.4 SR 3.3.6.3.5	≤ 90.6 seconds
6. Manual Initiation	1	C	SR 3.3.6.3.5	NA

-148.1

Table 3.3.6.4-1 (page 1 of 1)
Suppression Pool Makeup System Instrumentation

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Drywell Pressure-High	2	B	SR 3.3.6.4.1 SR 3.3.6.4.2 SR 3.3.6.4.3 SR 3.3.6.4.6 SR 3.3.6.4.7	≤ 1.88 psig
2. Reactor Vessel Water Level-Low Low Low, Level 1	2	B	SR 3.3.6.4.1 SR 3.3.6.4.2 SR 3.3.6.4.3 SR 3.3.6.4.6 SR 3.3.6.4.7	≥ -147.7 inches (-148.1)
3. Suppression Pool Water Level-Low Low	2	B	SR 3.3.6.4.1 SR 3.3.6.4.2 SR 3.3.6.4.4 SR 3.3.6.4.6 SR 3.3.6.4.7	≥ 29 inches
4. Timer	1	C	SR 3.3.6.4.2 SR 3.3.6.4.5 SR 3.3.6.4.7	≤ 30 minutes
5. Manual Initiation	2	C	SR 3.3.6.4.7	NA

SURVEILLANCE REQUIREMENTS

---NOTE---
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains LLS or relief initiation capability, as applicable.

SURVEILLANCE		FREQUENCY
SR 3.3.6.5.1	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.6.5.2	Calibrate the analog trip module.	92 days
SR 3.3.6.5.3	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Relief Function Low: 1103 ± 15 psig Medium: 1113 ± 15 psig High: 1123 ± 15 psig b. LLS Function Low open: 1033 ± 15 psig close: 926 ± 15 psig Medium open: 1073 ± 15 psig close: 936 ± 15 psig High open: 1113 ± 15 psig close: 946 ± 15 psig	18 months
SR 3.3.6.5.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

Insert 2

Insert 2

≤ 1118
≤ 1128
≤ 1138

≤ 1044
≤ 937
≤ 1084
≤ 947
≤ 1124
≤ 957

ATTACHMENT 1
Markup of Proposed Technical Specifications Pages

TS INSERT 1

1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

TS INSERT 2

----------NOTE----------

1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

ATTACHMENT 2
Retyped Technical Specifications Pages

CLINTON POWER STATION

FACILITY OPERATING LICENSE NO. NPF-62

REVISED TECHNICAL SPECIFICATIONS PAGES

3.3-8
3.3-29
3.3-39
3.3-40
3.3-41
3.3-42
3.3-43
3.3-47
3.3-55
3.3-56
3.3-57
3.3-58
3.3-59
3.3-60
3.3-64
3.3-68
3.3-72
3.3-74

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Vessel Steam Dome Pressure - High	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 1080 psig
4. Reactor Vessel Water Level-Low, Level 3	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≥ 8.3 inches
5. Reactor Vessel Water Level-High, Level 8	≥ 21.6 % RTP	4	F	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 52.6 inches
6. Main Steam Isolation Valve-Closure	1	4	G	SR 3.3.1.1.9 SR 3.3.1.1.13[c] SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 13% closed
7. Drywell Pressure-High	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 1.88 psig
8. Scram Discharge Volume Water Level-High					
a. Transmitter	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 40-1/4 inches for 1C11-N601A,B and ≤ 39-3/16 inches for 1C11-N601C,D
	5[a]	4	I	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 40-1/4 inches for 1C11-N601A,B and ≤ 39-3/16 inches for 1C11-N601C,D

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(c) 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Remove the associated recirculation pump from service. OR C.2 Be in MODE 2.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.4.2.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.4.2.3	Calibrate the trip units.	92 days
SR 3.3.4.2.4	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level-Low Low, Level 2: $\geq$ -50.0 inches; and b. Reactor Steam Dome Pressure-High: $\leq$ 1143 psig.	18 months
SR 3.3.4.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	18 months

Table 3.3.5.1-1 (page 1 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
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3, 4[a],5[a]	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ -148.1 inches
b. Drywell Pressure-High	1,2,3	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. LPCI Pump A Start-Time Delay Logic Card	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 4.5 seconds and ≤ 5.5 seconds
d. Reactor Vessel Pressure-Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 454 psig and ≤ 494 psig
	4[a],5[a]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 454 psig and ≤ 494 psig
e. LPCS Pump Discharge Flow-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 3.3.5.1.4 SR 3.3.5.1.5	≥ 750 gpm
f. LPCI Pump A Discharge Flow-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 3.3.5.1.4 SR 3.3.5.1.5	≥ 900 gpm
g. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.5	NA

(continued)

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

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

(e) 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

Table 3.3.5.1-1 (page 2 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
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3, 4[a],5[a]	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ -148.1 inches
b. Drywell Pressure-High	1,2,3	2[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. LPCI Pump B Start-Time Delay Logic Card	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 4.5 seconds and ≤ 5.5 seconds
d. Reactor Vessel Pressure-Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 454 psig and ≤ 494 psig
	4[a],5[a]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 454 psig and ≤ 494 psig
e. LPCI Pump B and LPCI Pump C Discharge Flow-Low (Bypass)	1,2,3, 4[a],5[a]	1 per pump	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 900 gpm
f. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.5	NA

(continued)

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

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

(e) 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

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[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ -48.1 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 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 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[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≤ 54.6 inches
d. RCIC 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[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 3.0 inches
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[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≤ 11 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 3.3.5.1.4 SR 3.3.5.1.5	≥ 120 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 3.3.5.1.4 SR 3.3.5.1.5	≥ 500 gpm
h. Manual Initiation	1,2,3, 4[a],5[a]	1	C	SR 3.3.5.1.5	NA

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.
(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 RCIC storage tank while tank water level is not within the limits of SR 3.5.2.2.
(e) 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

Table 3.3.5.1-1 (page 4 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
4. Automatic Depressurization System (ADS) Trip System 1 (Logic A and E)					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ -148.1 inches
b. Drywell Pressure-High	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. ADS Initiation Timer	1,2[d],3[d]	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 117 seconds
d. Reactor Vessel Water Level-Low, Level 3 (Confirmatory)	1,2[d],3[d]	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 8.3 inches
e. LPCS Pump Discharge Pressure-High	1,2[d],3[d]	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 125 psig and ≤ 176.3 psig
f. LPCI Pump A Discharge Pressure-High	1,2[d],3[d]	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 115 psig and ≤ 135 psig
g. ADS Drywell Pressure Bypass Timer	1,2[d],3[d]	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 6.5 minutes
h. Manual Initiation	1,2[d],3[d]	2	G	SR 3.3.5.1.5	NA

(continued)

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

(e) 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

Table 3.3.5.1-1 (page 5 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
5. ADS Trip System 2 (Logic B and F)					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ -148.1 inches
b. Drywell Pressure-High	1,2[d],3[d]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.88 psig
c. ADS Initiation Timer	1,2[d],3[d]	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 117 seconds
d. Reactor Vessel Water Level-Low, Level 3 (Confirmatory)	1,2[d],3[d]	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 8.3 inches
e. LPCI Pumps B & C Discharge Pressure-High	1,2[d],3[d]	2 per pump	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3[e] SR 3.3.5.1.4[e] SR 3.3.5.1.5	≥ 115 psig and ≤ 135 psig
f. ADS Drywell Pressure Bypass Timer	1,2[d],3[d]	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 6.5 minutes
g. Manual Initiation	1,2[d],3[d]	2	G	SR 3.3.5.1.5	NA

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

(e) 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.
2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable.
3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM.

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	≥ -48.1 inches
2. Reactor Vessel Water Level-High, Level 8	2	C	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ 52.6 inches
3. RCIC Storage Tank Level-Low	2	D	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	≥ 3.0 inches
4. Suppression Pool Water Level-High	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4 SR 3.3.5.2.5	≤ -5 inches
5. Manual Initiation	1	C	SR 3.3.5.2.5	NA

Table 3.3.6.1-1 (page 1 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -148.1 inches
b. Main Steam Line Pressure-Low	1	4	H	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 840 psig
c. Main Steam Line Flow-High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 284 psid
d. Condenser Vacuum-Low	1,2[(a)], 3[(a)]	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 7.6 inches Hg vacuum
e. Main Steam Tunnel Temperature-High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
f. Main Steam Line Turbine Building Temperature-High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	Modules 1-4 ≤ 142°F, Module 5 ≤ 150°F
g. Manual Initiation	1,2,3	4	J	SR 3.3.6.1.6	NA

(continued)

(a) With any turbine stop valve not closed.

Table 3.3.6.1-1 (page 2 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment and Drywell Isolation					
a. Reactor Vessel Water Level-Low Low, Level 2	1,2,3	4 [b]	K	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -48.1 inches
	[c]	4	O	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -48.1 inches
b. Drywell Pressure-High	1,2,3	4 [b]	K	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
c. Deleted					
d. Drywell Pressure-High (ECCS Divisions 1 and 2)	1,2,3	4 [b]	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
e. Reactor Vessel Water Level-Low Low, Level 2 (HPCS NSPS Div 3 and 4)	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -48.1 inches
f. Drywell Pressure-High (HPCS NSPS Div 3 and 4)	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig

(continued)

(b) Also required to initiate the associated drywell isolation function.

(c) During operations with a potential for draining the reactor vessel.

Table 3.3.6.1-1 (page 3 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment and Drywell Isolation (continued)					
g. Containment Building Fuel Transfer Pool Ventilation Plenum Radiation-High	(c), (d)	4	N	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 500 mR/hr
h. Containment Building Exhaust Radiation-High	1,2,3	4[b]	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
	(c), (d)	4	N	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
i. Containment Building Continuous Containment Purge (CCP) Exhaust Radiation-High	1,2,3	4[b]	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
	(c), (d)	4	N	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 400 mR/hr
j. Reactor Vessel Water Level-Low Low Low, Level 1	1,2,3	4[b]	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -148.1 inches
	(c)	4	O	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -148.1 inches
k. Containment Pressure-High	(e)	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 3.0 psid
l. Manual Initiation	1,2,3	2[b]	J	SR 3.3.6.1.6	NA
	(c), (d)	2	N	SR 3.3.6.1.6	NA

(continued)

(b) Also required to initiate the associated drywell isolation function.

(c) During operations with a potential for draining the reactor vessel.

(d) During movement of recently irradiated fuel assemblies in the primary or secondary containment.

(e) MODES 1, 2, and 3 with the associated PCIVs not closed.

Table 3.3.6.1-1 (page 4 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. Auxiliary Building RCIC Steam Line Flow-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 118.5 inches water
b. RCIC Steam Line Flow-High, Time Delay	1,2,3	2	I	SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 13 seconds
c. RCIC Steam Supply Line Pressure-Low	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 52 psig
d. RCIC Turbine Exhaust Diaphragm Pressure-High	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 20 psig
e. RCIC Equipment Room Ambient Temperature-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 207°F
f. Main Steam Line Tunnel Ambient Temperature-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
g. Main Steam Line Tunnel Temperature Timer	1,2,3	2	I	SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 28 minutes
h. Reactor Vessel Water Level-Low Low, Level 2	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -48.1 inches
i. Drywell RCIC Steam Line Flow - High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 188 inches water

(continued)

Table 3.3.6.1-1 (page 5 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. RCIC System Isolation (continued)					
j. Drywell Pressure - High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
k. Manual Initiation	1,2,3	1	J	SR 3.3.6.1.6	NA
4. Reactor Water Cleanup (RWCU) System Isolation					
a. Differential Flow - High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 66.1 gpm
b. Differential Flow-Timer	1,2,3	2	I	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 47 seconds
c. RWCU Heat Exchanger Equipment Room Temperature-High	1,2,3	2 per room	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 205°F
d. RWCU Pump Rooms Temperature-High	1,2,3	2 per room	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 202°F
e. Main Steam Line Tunnel Ambient Temperature-High	1,2,3	2	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
f. Reactor Vessel Water Level-Low Low, Level 2	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -48.1 inches
	(c)	4	O	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -48.1 inches
g. Standby Liquid Control System Initiation	1,2,3	2	L	SR 3.3.6.1.6	NA
h. Manual Initiation	1,2,3	2	J	SR 3.3.6.1.6	NA
	(c), (d)	2	N	SR 3.3.6.1.6	NA

(continued)

(c) During operations with a potential for draining the reactor vessel.
(d) During movement of recently irradiated fuel assemblies in the primary or secondary containment.

Table 3.3.6.1-1 (page 6 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. RHR System Isolation					
a. RHR Heat Exchanger Ambient Temperature-High	1,2,3	2 per room	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 160°F
b. Reactor Vessel Water Level - Low, Level 3	1,2,3[f]	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 8.3 inches
c. Reactor Vessel Water Level - Low, Level 3	3[g],4,5	4[h]	M	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 8.3 inches
d. Reactor Vessel Water Level - Low Low Low, Level 1	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ -148.1 inches
e. Reactor Vessel Pressure-High	1,2,3	4	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 110 psig
f. Drywell Pressure-High	1,2,3	8	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 1.88 psig
g. Manual Initiation	1,2,3	2	J	SR 3.3.6.1.6	NA

(f) With reactor steam dome pressure greater than or equal to the RHR cut in permissive pressure.

(g) With reactor steam dome pressure less than the RHR cut in permissive pressure.

(h) Only one trip system required in MODES 4 and 5 with RHR Shutdown Cooling System integrity maintained.

Table 3.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Reactor Vessel Water Level-Low Low, Level 2	1,2,3,(a)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5	≥ -48.1 inches
2.	Drywell Pressure-High	1,2,3	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 1.88 psig
3.	Containment Building Fuel Transfer Pool Ventilation Plenum Exhaust Radiation-High	(a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 500 mR/hr
4.	Containment Building Exhaust Radiation-High	1,2,3, (a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 400 mR/hr
5.	Containment Building Continuous Containment Purge (CCP) Exhaust Radiation-High	1,2,3, (a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 400 mR/hr
6.	Fuel Building Exhaust Radiation-High	1,2,3, (c)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.4 SR 3.3.6.2.5	≤ 17 mR/hr
7.	Manual Initiation	1,2,3, (a),(b)	1	SR 3.3.6.2.5	NA

(a) During operations with a potential for draining the reactor vessel.

(b) During movement of recently irradiated fuel assemblies in the primary or secondary containment.

(c) During movement of recently irradiated fuel assemblies in the fuel building.

Table 3.3.6.3-1 (page 1 of 1)
RHR Containment Spray System Instrumentation

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Drywell Pressure-High	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4 SR 3.3.6.3.5	≤ 1.88 psig
2. Containment Pressure-High	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4 SR 3.3.6.3.5	≤ 22.4 psia
3. Reactor Vessel Water Level-Low Low Low, Level 1	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4 SR 3.3.6.3.5	≥ -148.1 inches
4. Timers, System A and System B	1	C	SR 3.3.6.3.2 SR 3.3.6.3.4 SR 3.3.6.3.5	≥ 10.10 minutes and ≤ 10.23 minutes
5. Timer, System B Only	1	C	SR 3.3.6.3.2 SR 3.3.6.3.4 SR 3.3.6.3.5	≤ 90.6 seconds
6. Manual Initiation	1	C	SR 3.3.6.3.5	NA

Table 3.3.6.4-1 (page 1 of 1)
Suppression Pool Makeup System Instrumentation

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Drywell Pressure-High	2	B	SR 3.3.6.4.1 SR 3.3.6.4.2 SR 3.3.6.4.3 SR 3.3.6.4.6 SR 3.3.6.4.7	≤ 1.88 psig
2. Reactor Vessel Water Level-Low Low Low, Level 1	2	B	SR 3.3.6.4.1 SR 3.3.6.4.2 SR 3.3.6.4.3 SR 3.3.6.4.6 SR 3.3.6.4.7	≥ -148.1 inches
3. Suppression Pool Water Level-Low Low	2	B	SR 3.3.6.4.1 SR 3.3.6.4.2 SR 3.3.6.4.4 SR 3.3.6.4.6 SR 3.3.6.4.7	≥ 29 inches
4. Timer	1	C	SR 3.3.6.4.2 SR 3.3.6.4.5 SR 3.3.6.4.7	≤ 30 minutes
5. Manual Initiation	2	C	SR 3.3.6.4.7	NA

SURVEILLANCE REQUIREMENTS

---NOTE---
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains LLS or relief initiation capability, as applicable.

SURVEILLANCE		FREQUENCY
SR 3.3.6.5.1	Perform CHANNEL FUNCTIONAL TEST.	92 days
	---NOTE--- 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. 2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable. 3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM. --- Calibrate the analog trip module.	92 days
	---NOTE--- 1. If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. 2. The instrument channel setpoint shall be reset to a value within the As-Left Tolerance of the Actual Trip Setpoint; otherwise, the channel shall be declared inoperable. 3. The Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the predefined As-Found Tolerance and As-Left Tolerance bands shall be specified in the ORM. --- Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Relief Function Low: $\leq$ 1118 psig Medium: $\leq$ 1128 psig High: $\leq$ 1138 psig b. LLS Function Low open: $\leq$ 1044 psig close: $\leq$ 937 psig Medium open: $\leq$ 1084 psig close: $\leq$ 947 psig High open: $\leq$ 1124 psig close: $\leq$ 957 psig	18 months
SR 3.3.6.5.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

ATTACHMENT 3
Markup of Proposed Technical Specification Bases Pages

Revised Bases Pages
(Provided for Information Only)
B 3.3-1
B 3.3-2
B 3.3-3
B 3.3-27
B 3.3-85
B 3.3-91
B 3.3-92
B 3.3-120
B 3.3-208
B 3.3-210
B 3.3-213

B 3.3 INSTRUMENTATION

B 3.3.1.1 Reactor Protection System (RPS) Instrumentation

BASES

BACKGROUND

The RPS initiates a reactor scram when one or more monitored parameters exceed their specified limit, to preserve the integrity of the fuel cladding and the Reactor Coolant System (RCS), and minimize the energy that must be absorbed following a loss of coolant accident (LOCA). This can be accomplished either automatically or manually.

The protection and monitoring functions of the RPS have been designed to ensure safe operation of the reactor. This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the RPS, as well as LCOs on other reactor system parameters, and equipment performance. The LSSS are defined in this Specification as the Allowable Values, which, in conjunction with the LCOs, establish the threshold for protective system action to prevent exceeding acceptable limits, including Safety Limits (SLs), during Design Basis Accidents (DBAs).

Insert 1

The RPS, as described in USAR, Section 7.2 (Ref. 1), includes sensors, trip modules, bypass circuits, and switches that are necessary to cause initiation of a reactor scram. Functional diversity is provided by monitoring a wide range of dependent and independent parameters. The input parameters to the scram logic are from instrumentation that monitors reactor vessel water level; reactor vessel pressure; neutron flux; main steam line isolation valve position; turbine control valve (TCV) fast closure, trip oil pressure; turbine stop valve (TSV) closure; drywell pressure; and scram discharge volume (SDV) water level; as well as reactor mode switch in shutdown position and manual scram signals. There are at least four redundant sensor input signals from each of these parameters (with the exception of the reactor mode switch in shutdown scram signal). Most channels include electronic equipment (e.g., analog trip modules (ATMs)) that compares measured input signals with pre-established setpoints. When a setpoint is exceeded, the ATM output changes state, providing an RPS trip signal to the trip logic.

(continued)

Bases Insert 1:

except Function 6 in Technical Specification Table 3.3.1.1-1 (the Nominal Trip Setpoint defines the LSSS for this Function),

BASES

BACKGROUND (continued)

The RPS is comprised of four independent trip logic divisions (1, 2, 3, and 4) as described in Reference 1. Each RPS input for a variable is independently monitored by one instrument channel in each of the four divisions. Each instrument channel combines the four RPS Function inputs for that variable in a two-out-of-four logic. Each instrument channel in turn provides an input to all four RPS trip logic divisions. The four RPS trip logic divisions are also combined in a two-out-of-four arrangement. Each RPS trip logic division provides four output signals to load drivers which de-energize the scram pilot valve solenoids. Each trip logic division can be reset by use of a reset switch. If a logic division trips or a full scram occurs (two-out-of-four trip logic divisions trip), a solid state time delay prevents reset of the trip logic division for 10 seconds after the signal is received. This 10 second delay on reset ensures that the scram function will be completed.

Two scram pilot valves are located in the hydraulic control unit (HCU) for each control rod drive (CRD). Each scram pilot valve is solenoid operated, with the solenoids normally energized. The scram pilot valves control the air supply to the scram inlet and outlet valves for the associated CRD. When either scram pilot valve solenoid is energized, air pressure holds the scram valves closed and, therefore, both scram pilot valve solenoids must be de-energized to cause a control rod to scram. The scram valves control the supply and discharge paths for the CRD water during a scram. One of the scram pilot valve solenoids for each CRD is controlled by two trip logic divisions, and the other solenoid is controlled by the other two trip logic divisions. De-energizing both solenoids results in the air bleeding off, scram valves opening, and control rod scram.

The backup scram valves, which energize on a scram signal to depressurize the scram air header, are also controlled by the RPS. Additionally, the RPS System controls the SDV vent and drain valves such that when a scram signal is generated, the SDV vent and drain valves close to isolate the SDV.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The actions of the RPS are assumed in the safety analyses of References 2, 3, and 4. The RPS initiates a reactor scram when monitored parameter values exceed the ~~Allowable Values~~ specified by the setpoint methodology ~~and listed in~~

(continued)

trip setpoints

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~Table 3.3.1.1-1~~ to preserve the integrity of the fuel cladding, the reactor coolant pressure boundary (RCPB), and the containment by minimizing the energy that must be absorbed following a LOCA.

RPS instrumentation satisfies Criterion 3 of the NRC Policy Statement. Functions not specifically credited in the accident analysis are retained for the RPS as required by the NRC approved licensing basis.

The OPERABILITY of the RPS is dependent on the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.1.1-1. Each Function must have four OPERABLE channels, with their setpoints within the specified Allowable Value, where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. Each channel must also respond within its assumed response time.

Allowable Values are specified for each RPS Function specified in the Table. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the actual setpoints do not exceed the Allowable Value between successive 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 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., analog trip module) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. ~~The Allowable Values are derived from the analytic limits, corrected for calibration, 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

Insert 2

(continued)

Bases Insert 2:

The Allowable Values and trip setpoints are derived from the analytic limits, accounting for applicable process errors, severe environment errors, instrument errors (e.g., drift), and calibration errors in accordance with the setpoint methodology documented in the Operational Requirements Manual (ORM).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.9 and SR 3.3.1.1.12 (continued)

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.

SR 3.3.1.1.10

The calibration of analog trip modules 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 3.3.1.1-1. 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 analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

The Frequency of 92 days for SR 3.3.1.1.10 is based on the reliability analysis of Reference 9.

SR 3.3.1.1.11 and SR 3.3.1.1.13

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.

Insert 3 →

Note 1 states that neutron detectors are excluded from CHANNEL CALIBRATION because of the difficulty of simulating a meaningful signal. Changes in neutron detector sensitivity are compensated for by performing the 7 day calorimetric calibration (SR 3.3.1.1.2) and the 1000 MWD/T LPRM calibration against the TIPs (SR 3.3.1.1.8). A second Note is provided that requires the APRM and the IRM SRs to be performed within 12 hours of entering MODE 2 from MODE 1.

(continued)

BASES INSERT 3:

The SR 3.3.1.1.13 calibration for selected Functions is modified by a Note as identified in Table 3.3.1.1-1. This Note, which applies only to those Functions identified in Table 3.3.1.1-1, is divided into three parts. Part 1 of the Note requires evaluation of instrument performance for the condition where the as-found setting for these instrument channels is outside its As-Found Tolerance (AFT) but conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design-basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. Initial evaluation will be performed by the technician performing the surveillance who will evaluate the instrument's ability to maintain a stable setpoint within the As-Left Tolerance (ALT). The technician's evaluation will be reviewed by on-shift operations personnel during the approval of the surveillance data. Subsequent to returning the instrument to service, the deviation is entered into the Corrective Action Program. In accordance with procedures, entry into the Corrective Action Program will require review and documentation of the condition for operability by on-shift operations personnel. Additional evaluation and potential corrective actions as necessary will ensure that any as-found setting found outside the AFT is evaluated for long-term operability trends. If the as-found channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. Part 2 of the Note requires that the instrument channel setpoint shall be reset to within the ALT of the Actual Trip Setpoint (ATSP). The ATSP is equivalent to or more conservative than the Nominal Trip Setpoint (NTSP). The NTSP is the limiting value of the sensed process variable at which a trip may be set in accordance with the methodology documented in the ORM. Therefore, the NTSP is equivalent to the Limiting Safety System Setting (LSSS) required by 10 CFR 50.36, "Technical specifications." The Actual Trip Setpoint is also calculated in accordance with the plant-specific setpoint methodology as documented in the CPS ORM and may include additional margin. The ATSP will ensure that sufficient margin to the safety and/or analytical limit is maintained. If the as-left instrument channel setpoint cannot be returned to within the ALT of the Actual Trip Setpoint, then the channel shall be declared inoperable. Part 3 of the Note indicates that the Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the As-Found Tolerance and the As-Left Tolerance bands are specified in the ORM.

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 4

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," and LCO 3.8.1, "AC Sources-Operating." In addition, the ECCS instrumentation that actuates HPCS also actuates the Division 3 Shutdown Service Water (SX) subsystem, including automatic start of the Division 3 SX pump and automatic actuation of the associated subsystem isolation valves. The equipment involved with this subsystem is described in the Bases for LCO 3.7.2, "Division 3 Shutdown Service Water (SX) Subsystem."

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 analog trip modules (ATMs). The outputs of the four ATMs (two ATMs from each of the two variables) are connected to solid state logic which is arranged in a one-out-of-two taken twice configuration. The logic can also be initiated by use of a manual push button. The initiation signal is a sealed in signal and must be manually reset. Upon receipt of an initiation signal, the LPCS pump is started immediately after power is available.

(continued)

Bases Insert 4:

This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the ECCS instrumentation, as well as LCOs on other reactor system parameters, and equipment performance. The LSSS are defined in this Specification as the Allowable Values, except Functions 1.a, 1.d, 2.a, 2.d, 3.a, 3.c, 3.d, 3.e, 4.a, 4.e, 4.f, 5.a, and 5.e in Technical Specification Table 3.3.5.1-1 (the Nominal Trip Setpoint defines the LSSS for these Functions), which, in conjunction with the LCOs, establish the threshold for protective system action to prevent exceeding acceptable limits, including Safety Limits (SLs), during Design Basis Accidents (DBAs) and Anticipated Operational Occurrences (AOOs).

BASES

BACKGROUND

Diesel Generators (continued)

started manually from the control room and locally in the associated DG room. The DG initiation signal is a sealed in signal and must be manually reset. The DG initiation logic is reset by resetting the associated ECCS initiation logic. Upon receipt of a LOCA initiation signal, each DG is automatically started, is ready to load in approximately 12 seconds, and will run in standby conditions (rated voltage and speed, with the DG output breaker open). The DGs will only energize their respective Engineered Safety 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.

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, where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. Each ECCS subsystem must also respond within its assumed response time. Table 3.3.5.1-1, footnote (b), is added to show that certain ECCS instrumentation Functions are also required to be OPERABLE to 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

actual

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

setpoint is not within its required Allowable Value. 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., ATM) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. ~~The Allowable Values are derived from the analytic limits, corrected for calibration, 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.

Insert 5

Certain ECCS valves (e.g., minimum flow) also serve the dual function of automatic PCIVs. The signals that provide automatic initiation of the ECCS are also associated with the automatic isolation of these valves. Some instrumentation and ACTIONS associated with these signals are addressed in LCO 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation," and are not included in this LCO.

In general, the individual Functions are required to be OPERABLE in the MODES or other specified conditions that may require ECCS 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

(continued)

Bases Insert 5:

The Allowable Values and trip setpoints are derived from the analytic limits, accounting for applicable process errors, severe environment errors, instrument errors (e.g., drift), and calibration errors in accordance with the setpoint methodology documented in the Operational Requirements Manual (ORM).

BASES

SURVEILLANCE REQUIREMENTS

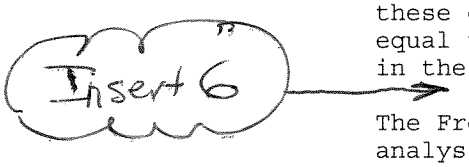
SR 3.3.5.1.2 (continued)

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 analyses of Reference 4.

SR 3.3.5.1.3

The calibration of ATMs 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.

SR 3.3.5.1.4

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 is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.

(continued)

BASES INSERT 6:

The SR 3.3.5.1.3 calibration for selected Functions is modified by a Note as identified in Table 3.3.5.1-1. This Note, which applies only to those Functions identified in Table 3.3.5.1-1, is divided into three parts. Part 1 of the Note requires evaluation of instrument performance for the condition where the as-found setting for these instrument channels is outside its As-Found Tolerance (AFT) but conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design-basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. Initial evaluation will be performed by the technician performing the surveillance who will evaluate the instrument's ability to maintain a stable setpoint within the As-Left Tolerance (ALT). The technician's evaluation will be reviewed by on-shift operations personnel during the approval of the surveillance data. Subsequent to returning the instrument to service, the deviation is entered into the Corrective Action Program. In accordance with procedures, entry into the Corrective Action Program will require review and documentation of the condition for operability by on-shift operations personnel. Additional evaluation and potential corrective actions as necessary will ensure that any as-found setting found outside the AFT is evaluated for long-term operability trends. If the as-found channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. Part 2 of the Note requires that the instrument channel setpoint shall be reset to within the ALT of the Actual Trip Setpoint (ATSP). The ATSP is equivalent to or more conservative than the Nominal Trip Setpoint (NTSP). The NTSP is the limiting value of the sensed process variable at which a trip may be set in accordance with the methodology documented in the ORM. Therefore, the NTSP is equivalent to the Limiting Safety System Setting (LSSS) required by 10 CFR 50.36, "Technical specifications." The Actual Trip Setpoint is also calculated in accordance with the plant-specific setpoint methodology as documented in the CPS ORM and may include additional margin. The ATSP will ensure that sufficient margin to the safety and/or analytical limit is maintained. If the as-left instrument channel setpoint cannot be returned to within the ALT of the Actual Trip Setpoint, then the channel shall be declared inoperable. Part 3 of the Note indicates that the Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the As-Found Tolerance and the As-Left Tolerance bands are specified in the ORM.

BASES INSERT 7:

The SR 3.3.5.1.4 calibration for selected Functions is modified by a Note as identified in Table 3.3.5.1-1. This Note, which applies only to those Functions identified in Table 3.3.5.1-1, is divided into three parts. Part 1 of the Note requires evaluation of instrument performance for the condition where the as-found setting for these instrument channels is outside its As-Found Tolerance (AFT) but conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design-basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. Initial evaluation will be performed by the technician performing the surveillance who will evaluate the instrument's ability to maintain a stable setpoint within the As-Left Tolerance (ALT). The technician's evaluation will be reviewed by on-shift operations personnel during the approval of the surveillance data. Subsequent to returning the instrument to service, the deviation is entered into the Corrective Action Program.

In accordance with procedures, entry into the Corrective Action Program will require review and documentation of the condition for operability by on-shift operations personnel. Additional evaluation and potential corrective actions as necessary will ensure that any as-found setting found outside the AFT is evaluated for long-term operability trends. If the as-found channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. Part 2 of the Note requires that the instrument channel setpoint shall be reset to within the ALT of the Actual Trip Setpoint (ATSP). The ATSP is equivalent to or more conservative than the Nominal Trip Setpoint (NTSP). The NTSP is the limiting value of the sensed process variable at which a trip may be set in accordance with the methodology documented in the ORM. Therefore, the NTSP is equivalent to the Limiting Safety System Setting (LSSS) required by 10 CFR 50.36, "Technical specifications." The Actual Trip Setpoint is also calculated in accordance with the plant-specific setpoint methodology as documented in the CPS ORM and may include additional margin. The ATSP will ensure that sufficient margin to the safety and/or analytical limit is maintained. If the as-left instrument channel setpoint cannot be returned to within the ALT of the Actual Trip Setpoint, then the channel shall be declared inoperable. Part 3 of the Note indicates that the Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the As-Found Tolerance and the As-Left Tolerance bands are specified in the ORM.

B 3.3 INSTRUMENTATION

B 3.3.6.5 Relief and Low-Low Set (LLS) Instrumentation

BASES

BACKGROUND

The safety/relief valves (S/RVs) prevent overpressurization of the nuclear steam system. Instrumentation is provided to support two modes (in addition to the automatic depressurization system (ADS) mode of operation for selected valves) of S/RV operation—the relief function (all valves) and the LLS function (selected valves). Refer to LCO 3.4.4, "Safety/Relief Valves (S/RVs)," and LCO 3.6.1.6, "Low-Low Set (LLS) Safety/Relief Valves (S/RVs)," Applicability Bases for additional information on these modes of S/RV operation. For the ADS mode of operation and associated instrumentation, refer to LCO 3.5.1, "Emergency Core Cooling Systems (ECCS)—Operating," and LCO 3.3.5.1, "ECCS Instrumentation," respectively.

Insert 8

The relief function of the S/RVs prevents overpressurization of the nuclear steam system. The LLS function of the S/RVs is designed to mitigate the effects of postulated pressure loads on the containment by preventing multiple actuations in rapid succession of the S/RVs subsequent to their initial actuation.

Upon any S/RV actuation, the LLS logic assigns preset opening setpoints to two preselected S/RVs and reclosing setpoints to five preselected S/RVs. These setpoints are selected to override the normal relief setpoints such that the LLS S/RVs will stay open longer, thus releasing more steam (energy) to the suppression pool; hence more energy (and time) is required for repressurization and subsequent S/RV openings. The LLS logic is divided into three logic groups (the low and medium setpoint groups each control one valve (i.e., valves 1B21-F051D and 1B21-F051C, respectively) and the high setpoint group controls the remaining three valves (i.e., valves 1B21-F047F, 1B21-F051B, and 1B21-F051G)). The LLS logic increases the time between (or prevents) subsequent actuations to limit S/RV subsequent actuations to one valve, so that containment loads will also be reduced.

(continued)

Bases Insert 8:

This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the S/RV relief function instrumentation, as well as LCOs on other reactor system parameters, and equipment performance. The LSSS are defined in this Specification as the Allowable Values, except for the relief Function (the Nominal Trip Setpoint defines the LSSS for this function), which, in conjunction with the LCOs, establish the threshold for protective system action to prevent exceeding acceptable limits, including Safety Limits (SLs), during Anticipated Operational Occurrences (AOOs) and Design Basis Accidents (DBAs).

BASES (continued)

LCO

The LCO requires OPERABILITY of sufficient relief and LLS instrumentation channels to provide adequate assurance of successfully accomplishing the relief and LLS function, assuming any single instrumentation channel failure within the LLS logic. Therefore, two trip systems are required to be OPERABLE. The OPERABILITY of each trip system is dependent upon the OPERABILITY of the reactor steam dome pressure channels associated with required relief and LLS S/RVs. Each required channel shall have its setpoint within the specified Allowable Value. 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.

Allowable Values are specified for each channel in SR 3.3.6.5.3. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the actual 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.~~

actual

Insert 9

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 pressure), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., ATM) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. ~~The Allowable Values are derived from the analytic limits, corrected for calibration, 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.

Insert 10

For relief, the actuating Allowable Values are based on the transient event of main steam isolation valve (MSIV) closure with an indirect scram (i.e., neutron flux). This analysis is described in Reference 1. For LLS, the actuating and reclosing Allowable Values are based on the transient event

(continued)

Bases Insert 9:

A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

Bases Insert 10:

The Allowable Values and trip setpoints are derived from the analytic limits, accounting for applicable process errors, severe environment errors, instrument errors (e.g., drift), and calibration errors in accordance with the setpoint methodology documented in the Operational Requirements Manual (ORM).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.5.2

The calibration of analog trip modules 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 SR 3.3.6.5.3. 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 readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

Insert 11

The Frequency of 92 days is based on the reliability analysis of Reference 3.

SR 3.3.6.5.3

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.

Insert 12

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

SR 3.3.6.5.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic for a specific channel. The system functional testing performed for S/RVs in LCO 3.4.4 and LCO 3.6.1.6 overlaps this Surveillance to provide complete testing of the assumed safety function.

The Self Test System may be utilized to perform this testing for those components that it is designed to monitor. Those portions of the solid-state logic not monitored by the Self Test System may be tested at the frequency recommended by the manufacturer, rather than at the specified 18-month

(continued)

BASES INSERT 11:

The SR 3.3.6.5.2 calibration is modified by a Note. This Note is divided into three parts. Part 1 of the Note requires evaluation of instrument performance for the condition where the as-found setting for these instrument channels is outside its As-Found Tolerance (AFT) but conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design-basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. Initial evaluation will be performed by the technician performing the surveillance who will evaluate the instrument's ability to maintain a stable setpoint within the As-Left Tolerance (ALT). The technician's evaluation will be reviewed by on-shift operations personnel during the approval of the surveillance data. Subsequent to returning the instrument to service, the deviation is entered into the Corrective Action Program. In accordance with procedures, entry into the Corrective Action Program will require review and documentation of the condition for operability by on-shift operations personnel. Additional evaluation and potential corrective actions as necessary will ensure that any as-found setting found outside the AFT is evaluated for long-term operability trends. If the as-found channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. Part 2 of the Note requires that the instrument channel setpoint shall be reset to within the ALT of the Actual Trip Setpoint (ATSP). The ATSP is equivalent to or more conservative than the Nominal Trip Setpoint (NTSP). The NTSP is the limiting value of the sensed process variable at which a trip may be set in accordance with the methodology documented in the ORM. Therefore, the NTSP is equivalent to the Limiting Safety System Setting (LSSS) required by 10 CFR 50.36, "Technical specifications." The Actual Trip Setpoint is also calculated in accordance with the plant-specific setpoint methodology as documented in the CPS ORM and may include additional margin. The ATSP will ensure that sufficient margin to the safety and/or analytical limit is maintained. If the as-left instrument channel setpoint cannot be returned to within the ALT of the Actual Trip Setpoint, then the channel shall be declared inoperable. Part 3 of the Note indicates that the Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the As-Found Tolerance and the As-Left Tolerance bands are specified in the ORM.

BASES INSERT 12:

The SR 3.3.6.5.3 calibration is modified by a Note. This Note is divided into three parts. Part 1 of the Note requires evaluation of instrument performance for the condition where the as-found setting for these instrument channels is outside its As-Found Tolerance (AFT) but conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design-basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. Initial evaluation will be performed by the technician performing the surveillance who will evaluate the instrument's ability to maintain a stable setpoint within the As-Left Tolerance (ALT). The technician's evaluation will be reviewed by on-shift operations personnel during the approval of the surveillance data. Subsequent to returning the instrument to service, the deviation is entered into the Corrective Action Program. In accordance with procedures, entry into the Corrective Action Program will require review and documentation of the condition for operability by on-shift operations personnel. Additional evaluation and potential

corrective actions as necessary will ensure that any as-found setting found outside the AFT is evaluated for long-term operability trends. If the as-found channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. Part 2 of the Note requires that the instrument channel setpoint shall be reset to within the ALT of the Actual Trip Setpoint (ATSP). The ATSP is equivalent to or more conservative than the Nominal Trip Setpoint (NTSP). The NTSP is the limiting value of the sensed process variable at which a trip may be set in accordance with the methodology documented in the ORM. Therefore, the NTSP is equivalent to the Limiting Safety System Setting (LSSS) required by 10 CFR 50.36, "Technical specifications." The Actual Trip Setpoint is also calculated in accordance with the plant-specific setpoint methodology as documented in the CPS ORM and may include additional margin. The ATSP will ensure that sufficient margin to the safety and/or analytical limit is maintained. If the as-left instrument channel setpoint cannot be returned to within the ALT of the Actual Trip Setpoint, then the channel shall be declared inoperable. Part 3 of the Note indicates that the Nominal Trip Setpoint and the methodology used to determine the Nominal Trip Setpoint, the As-Found Tolerance and the As-Left Tolerance bands are specified in the ORM.

ATTACHMENT 4
Commitments

LIST OF COMMITMENTS

The following table identifies those actions committed to by AmerGen Energy Company, LLC (AmerGen), in this document. Any other statements in this submittal are provided for information purposes and are not to be considered commitments.

COMMITMENT	**Due Date/Event**
Evaluate the final Technical Specification Task Force (TSTF) technical specification change related to resolution of the Method 3 setpoint issue for implementation at Clinton Power Station.	Upon approval of the TSTF change by the NRC