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November 17, 2015
GO2-15-152

10 CFR 50.90

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397 RESPONSE TO SECOND REQUEST FOR ADDITIONAL INFORMATION ON LICENSE AMENDMENT REQUEST FOR ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE (TSTF)-425, REVISION 3**

References:
1. Letter, GO2-15-007, dated March 17, 2015, WG Hettel (Energy Northwest) to NRC, "License Amendment Request for Adoption of Technical Specification Task Force Traveler (TSTF)-425, Revision 3
2. Email, dated November 3, 2015, Balwant Singal (NRC) to Lisa Williams (Energy Northwest), "License Amendment Request for Adoption of Technical Specification Task Force (TSTF) - 425, Revision 3, Request for Additional Information (CAC No. MF6042)"

Dear Sir or Madam:

By Reference 1, Energy Northwest submitted for approval the License Amendment Request (LAR) to adopt TSTF-425, Revision 3.

Via Reference 2, the Nuclear Regulatory Commission (NRC) submitted Requests for Additional Information (RAIs) to Energy Northwest for response. Attachment 1 provides the requested information. Attachment 2 provides the revised Technical Specification (TS) and revised "Information Only" TS Bases showing the results of the RAI resolutions.

This letter and its attachment contain no regulatory commitments.

If there are any questions or if additional information is needed, please contact Ms. L. L. Williams, Licensing Supervisor, at 509-377-8148.

I declare under penalty of perjury that the foregoing is true and correct. Executed this 16TH day of NOVEMBER, 2015.

Respectfully,

W. G. Hettel
Vice President, Operations

Attachments: As Stated.

cc: NRC Region IV Administrator
NRC NRR Project Manager
NRC Sr. Resident Inspector - 988C
CD Sonoda - BPN1399 (email)
WA Horin - Winston & Strawn
RR Cowley -WDOH (email)
EFSECutc.wa.gov-- EFSEC (email)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) (TECHNICAL SPECIFICATION BRANCH)

NRC Request

STSB-RAI-1

In Attachment-3, "Markup of Proposed Technical Specification Pages," of the LAR submittal, the licensee proposed to revise surveillance requirement (SR) 3.3.1.1.15 by changing the frequency from "24 months on a STAGGERED TEST BASIS" to "In accordance with the Surveillance Frequency Control Program." The notes in SR 3.3.1.1.15 were not revised to reflect this change, and they still provide instruction concerning the "STAGGERED TEST BASIS." Since the STAGGERED TEST BASIS is part of the SR frequency that is being transferred to the Surveillance Frequency Control Program (SFCP), please justify why this information should remain in the SR notes. This RAI applies to both versions of the SR 3.3.1.1.15 revision that were submitted (i.e., "Prior to Implementation of PRNM [Power Range Neutron Monitoring] Upgrade" and "After Implementation of PRNM Upgrade").

Energy Northwest Response:

The notes associated with STAGGERED TEST BASIS should have been removed in the original submittal of TSTF-425, Revision 3, license amendment request (LAR). The notes associated with STAGGERED TEST BASIS will be removed from the Columbia TS SR 3.3.1.1.15 as part of this LAR and added to the Frequency Control Program. The new marked up pages no longer show these notes.

Columbia implemented the PRNM upgrade in refueling outage 22. The "Prior to Implementation of PRNM Upgrade" TS SR 3.3.1.1.15 will not be sent with the change since the "Prior to Implementation of PRNM Upgrade" TS SR 3.3.1.1.15 is no longer applicable. The revised markup and clean pages for "After Implementation of PRNM Upgrade" TS 3.3.1.1 are provided in Attachment 2.

NRC Request

STSB-RAI-2

In multiple technical specification (TS) sections of Attachment 3 (e.g., 3.2.4, 3.3.1.1, 3.3.1.3, 3.3.2.1, 3.4.1, 3.10.8), the licensee provided two versions of page markups for the proposed SR revisions. The versions were titled, "Prior to Implementation of PRNM Upgrade" and "After Implementation of PRNM Upgrade." In the license submittal, there was no sufficient discussion concerning the reason for submitting the two versions, and, and, in at least two cases, a "Prior" version of a revised SR was submitted with no corresponding "After" version (i.e., TS sections 3.2.4 and 3.3.1.3). Also, for the "After Implementation of PRNM Upgrade" version of the SR revisions, the licensee did not submit TS bases.

Please provide the following: (1) a discussion of why two versions (i.e., "Prior" versus "After") of TS markups were submitted, (2) a justification for not submitting both a "Prior" and "After" version for each proposed SR revision, and (3) the TS bases for the "After Implementation of PRNM Upgrade" SR revisions.

Energy Northwest Response:

(1) Columbia recognizes the original LAR submittal for TSTF-425, Revision3, should have included a discussion on why two versions of TS 3.2.4, TS 3.3.1.1, TS 3.3.1.3, TS 3.3.2.1, TS 3.4.1, and TS 3.10.8 were included in the LAR.

The reason for a "Prior to Implementation of PRNM Upgrade" and "After Implementation of PRNM Upgrade" is that the LAR submittal for TSTF-425, Revision 3 was made prior to the implementation of Columbia Generating Station (Columbia) License Amendment (LA) 226, "Columbia Generating Station – Issuance of Amendment RE: Implementation of Power Range Neutron Monitoring/Average Power Range Monitor/Rod block Monitor/Technical Specifications/Maximum Extended Load Line Limit Analysis (PRNM/ARTS/MELLA)" (ADAMS Accession No. ML13317B623). LA 226 was received January 31, 2014 before the PRNM upgrade would be installed in the plant during refueling outage 22 in May 2015. The two versions shown in TSTF-425 markup reflect the Columbia License at the time of the TSTF-425 LAR submittal.

Columbia implemented the PRNM upgrade in refueling outage 22 which was completed in June 2015. Since PRNM has been implemented, the "Prior to Implementation of PRNM" surveillance frequencies proposed in TSTF-425 license amendment request (LAR) for TS 3.2.4, TS 3.3.1.1, TS 3.3.1.3, TS

3.3.2.1, TS 3.4.1, and TS 3.10.8 are being removed since they are no longer applicable.

(2) The reason there are no markups for "After Implementation of PRNM Upgrade" for TS 3.2.4, Average Power Range Monitor (APRM) Gain and Setpoint, and TS 3.3.1.3, Oscillation Power Range Monitor (OPRM) Instrumentation, in the original LAR submittal for TSTF-425, Revision 3, is that after implementation of PRNM, TS 3.2.4 and TS 3.3.1.3 are no longer applicable.

(3) The reason there are no markups for "After Implementation of PRNM Upgrade" for TS 3.2.4 and TS 3.3.1.3 in the TSTF-425, Revision 3 original LAR submittal is that after implementation of PRNM, TS 3.2.4 and TS 3.3.1.3 are no longer applicable. Therefore, no TS Bases markups are provided for TS 3.2.4 and TS 3.3.1.3 for the "After Implementation of PRNM Upgrade."

The Bases markups for the "After Implementation of PRNM Upgrade" TS 3.3.1.1, TS 3.3.2.1, TS 3.4.1 and TS 3.10.8 are provided in Attachment 2 for information only.

NRC Request

STSB-RAI-3

On marked-up TS bases page B 3.3.1.1-23 submitted by the licensee, a reference to the "7 day frequency" still remains in the revised bases description for SR 3.3.1.1.2. Since, SR 3.3.1.1.2 is being incorporated into the SFCP, this represents erroneous information.

Please justify why this information should be retained in the TS bases or revise the bases description appropriately.

Energy Northwest Response:

The reference to the "7 day frequency" will be removed from the Bases for TS SR 3.3.1.1.2. The revised TS 3.3.1.1 Bases is provided in Attachment 2 for information only.

NRC Request

STSB-RAI-4

On marked-up TS bases page B 3.6.1.3-14 submitted by the licensee, the following language associated with SR 3.6.1.3.8 was deleted:

The nominal 10 year interval is based on performance testing. Furthermore, any EFCV [excess flow check valve] failures will be evaluated to determine if additional testing in that test interval is warranted to ensure overall reliability is maintained. Operating experience has demonstrated that these components are highly reliable and that failures to isolate are very infrequent. Therefore, testing of a representative sample was concluded to be acceptable from a reliability standpoint (Reference 5).

Also, Reference 5 (i.e., NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation," dated June 2000) was deleted from a list of references on page B 3.6.1.3-16.

This deleted information relates directly to the basis for “representative sample,” which is the language used in SR 3.6.1.3.8. The NRC staff issued a previous safety evaluation (SE) approving a Topical Report (i.e., Safety Evaluation by the Office of Nuclear Reactor Regulation Boiling Water Reactor Owners Group General Electric Nuclear Energy Topical Report B21-00658-01 “Excess Flow Check Valve Testing Relaxation; March 14, 2000") (ADAMS Accession No. ML003729011) that allows relaxation associated with the EFCV testing (i.e., allowance of representative sampling). One of the staff’s findings in the SE was that “representative sampling” needed to be defined, and it was acceptable to locate the definition in the TS bases. The exact wording deleted in the TS bases submittal was the same wording referenced in the SE. Also, the Reviewer’s Note of NUREG-1433, Revision 4, “Standard Technical Specifications, General Electric BWR/4 Plants, Revision 4.0,” (ADAMS Accession No. ML12104A192) states that this information applies to the representative sample that is allowed by this specification.

Since this change relates to representative sampling versus SR frequency, please provide a justification for removing this language from the TS bases or revise the submittal appropriately.

Energy Northwest Response:

The deleted discussion, “The nominal 10 year interval is based on performance testing. Furthermore, any EFCV…Therefore, testing of a representative sample was concluded to be acceptable from a reliability standpoint (Reference 5),” proposed in this LAR is restored in the TS Bases for TS SR 3.6.1.3.8. The revised Bases for TS 3.6.1.3 is provided in Attachment 2 for information only.

RESPONSE TO SECOND REQUEST FOR ADDITIONAL INFORMATION ON LICENSE AMENDMENT REQUEST FOR ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE (TSTF)-425, REVISION 3
Attachment 2

Attachment 2 contains the following:

Per Energy Northwest Response for STSB-RAI-1 in Attachment 2:

Markup of proposed TS 3.3.1.1"After Implementation of PRNM Upgrade" which includes pages 3.3.1.1-11 through 3.3.1.1-14

Clean pages of proposed of TS 3.3.1.1 "After Implementation of PRNM Upgrade" which includes pages 3.3.1.1-9 through 3.3.1.1-20

Per Energy Northwest Response for STSB-RAI-2 question (3) in Attachment 2:

The Bases markups for "After Implementation of PRNM Upgrade" TS 3.3.1.1, TS 3.3.2.1, TS 3.4.1 and TS 3.10.8 are provided for information only.

Bases markup TS 3.3.1.1 includes pages B 3.3.1.1-23 through B 3.3.1.1-25, B 3.3.1.1-27 through B 3.3.1.1-30, and B 3.3.1.1-32 through B 3.3.1.1-36

Bases markup for 3.3.2.1 includes pages B 3.3.2.1-7 through B 3.3.2.1-13

Bases markup for TS 3.4.1 includes pages B 3.4.1-4 and B 3.4.1-5

Bases markup for RS 3.10.8 includes pages B 3.10.8-4 and B 3.10.8-5

Per Energy Northwest Response STSB-RAI-3 in Attachment 2:

The Bases markup TS 3.3.1.1 is provided above for information only.

Per Energy Northwest Response STSB-RAI-4 in Attachment 2:

The Bases markup for TS 3.6.1.3 is provided for information only.

Bases markup TS 3.6.1.3 includes pages B 3.6.1.3-8 through B 3.6.1.3-16

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations. AND ----------NOTE---------- LCO 3.0.4 is not applicable. ---------- I.2 Restore required channels to OPERABLE	12 hours 120 days
J. Required Action and associated Completion Time of Condition I not met.	J.1 Reduce THERMAL POWER to less than the value specified in the COLR.	4 hours

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. 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 RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	~~12 hours~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.2	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ---------- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 25% RTP.	~~7 days~~
SR 3.3.1.1.3	----------NOTE---------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program ~~7 days~~
SR 3.3.1.1.4	Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~
SR 3.3.1.1.5	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR 3.3.1.1.6	----------NOTE---------- Only required to be met during entry into MODE 2 from MODE 1. ---------- Verify the IRM and APRM channels overlap.	~~7 days~~
SR 3.3.1.1.7	Calibrate the local power range monitors.	~~1130 MWD/T average core exposure~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.8	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.1.1.9	Deleted.	
SR 3.3.1.1.10	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 3. For Functions 2.b and 2.f, the recirculation flow transmitters that feed the APRMs are included. ---------- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program ~~18 months for Functions 1, 3, 4, 6, 7, and 9 through 11~~ ~~AND~~ ~~24 months for Functions 2, 5, and 8~~
SR 3.3.1.1.11	Deleted.	
SR 3.3.1.1.12	Verify Turbine Throttle Valve - Closure, and Turbine Governor Valve Fast Closure Trip Oil Pressure - Low Functions are not bypassed when THERMAL POWER is ≥ 30% RTP.	~~18 months~~
SR 3.3.1.1.13	Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.14	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~
SR 3.3.1.1.15	----------NOTES---------- 1. Neutron detectors are excluded. 2. Channel sensors for Functions 3 and 4 are excluded. ~~3. For Function 5, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency.~~ ~~4. For Function 2.e, "n" equals 8 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. Testing of APRM and oscillation power range monitor (OPRM) outputs shall alternate.~~ ---------- Verify the RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~
SR 3.3.1.1.16	----------NOTES---------- 1. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.b and 2.f, the CHANNEL FUNCTIONAL TEST includes the recirculation flow input processing, excluding the flow transmitters. ---------- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program ~~184 days~~
SR 3.3.1.1.17	Verify the OPRM is not bypassed when APRM Simulated Thermal Power is greater than or equal to the value specified in the COLR and recirculation drive flow is less than the value specified in the COLR.	~~24 months~~

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1 after implementation of Power Range Neutron Monitor (PRNM) upgrade.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip. OR ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- A.2 Place associated trip system in trip.	12 hours 12 hours
----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- B. One or more Functions with one or more required channels inoperable in both trip systems.	B.1 Place channel in one trip system in trip. OR B.2 Place one trip system in trip.	6 hours 6 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more Functions with RPS trip capability not maintained.	C.1 Restore RPS trip capability.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1 Reduce THERMAL POWER to < 30% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1 Be in MODE 2.	6 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations. AND ----------NOTE---------- LCO 3.0.4 is not applicable. ---------- I.2 Restore required channels to OPERABLE	12 hours 120 days
J. Required Action and associated Completion Time of Condition I not met.	J.1 Reduce THERMAL POWER to less than the value specified in the COLR.	4 hours

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. 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 RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	In Accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.2	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ----------	
	Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 25% RTP.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.3	----------NOTE---------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ----------	
	Perform CHANNEL FUNCTIONAL TEST.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.4	Perform CHANNEL FUNCTIONAL TEST.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.5	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.6	----------NOTE---------- Only required to be met during entry into MODE 2 from MODE 1. ---------- Verify the IRM and APRM channels overlap.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.7	Calibrate the local power range monitors.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.8	Perform CHANNEL FUNCTIONAL TEST.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.9	Deleted.	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.10	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 3. For Functions 2.b and 2.f, the recirculation flow transmitters that feed the APRMs are included. ---------- Perform CHANNEL CALIBRATION.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.11	Deleted.	
SR 3.3.1.1.12	Verify Turbine Throttle Valve - Closure, and Turbine Governor Valve Fast Closure Trip Oil Pressure - Low Functions are not bypassed when THERMAL POWER is $\geq$ 30% RTP.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.13	Perform CHANNEL FUNCTIONAL TEST.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.14	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In Accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.15	----------NOTES---------- 1. Neutron detectors are excluded. 2. Channel sensors for Functions 3 and 4 are excluded. ---------- Verify the RPS RESPONSE TIME is within limits.	In Accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.16	----------NOTES---------- 1. For Function 2.a, not required to be performedwhen entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.b and 2.f, the CHANNEL FUNCTIONAL TEST includes the recirculation flow input processing, excluding the flow transmitters. ---------- Perform CHANNEL FUNCTIONAL TEST.	In Accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.17	Verify the OPRM is not bypassed when APRM Simulated Thermal Power is greater than or equal to the value specified in the COLR and recirculation drive flow is less than the value specified in the COLR.	In Accordance with the Surveillance Frequency Control Program

Table 3.3.1.1-1 (page 1 of 4)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux - High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.5 SR 3.3.1.1.6 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 122/125 divisions of full scale
	5[(a)]	3	H	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 122/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.3 SR 3.3.1.1.14	NA
	5[(a)]	3	H	SR 3.3.1.1.4 SR 3.3.1.1.14	NA
2. Average Power Range Monitors					
a. Neutron Flux - High (Setdown)	2	3[(b)]	G	SR 3.3.1.1.1 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.10[(d),(e)] SR 3.3.1.1.16	≤ 20% RTP
b. Simulated Thermal Power - High	1	3[(b)]	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.10[(d),(e)] SR 3.3.1.1.16	≤ 0.63W + 64.0% RTP and ≤ 114.9% RTP[(c)]

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

(b) Each APRM/OPRM channel provides inputs to both trip systems.

(c) ≤ 0.63W + 60.8% RTP and ≤ 114.9% RTP when reset for single loop operation per LCO 3.4.1, “Recirculation Loops Operating.”

(d) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(e) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the surveillance procedures (Nominal Trip Setpoint) to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in the Licensee Controlled Specifications.

Table 3.3.1.1-1 (page 2 of 4)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors					
c. Neutron Flux - High	1	3[(b)]	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.10[(d),(e)] SR 3.3.1.1.16	≤ 120% RTP
d. Inop	1,2	3[(b)]	G	SR 3.3.1.1.16	NA
e. 2-Out-of-4 Voter	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.14 SR 3.3.1.1.15 SR 3.3.1.1.16	NA
f. OPRM Upscale	(f)	3[(b)]	I	SR 3.3.1.1.1 SR 3.3.1.1.7 SR 3.3.1.1.10[(d),(e)] SR 3.3.1.1.16 SR 3.3.1.1.17	NA[(g)]

(b) Each APRM/OPRM channel provides inputs to both trip systems.

(d) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(e) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the surveillance procedures (Nominal Trip Setpoint) to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in the Licensee Controlled Specifications.

(f) THERMAL POWER greater than or equal to the value specified in the COLR.

(g) The OPRM Upscale does not have an Allowable Value. The Period Based Detection Algorithm (PBDA) trip setpoints are specified in the COLR.

Table 3.3.1.1-1 (page 3 of 4)
Reactor Protection System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3.	Reactor Vessel Steam Dome Pressure - High	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14 SR 3.3.1.1.15	≤ 1079 psig
4.	Reactor Vessel Water Level - Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14 SR 3.3.1.1.15	≥ 9.5 inches
5.	Main Steam Isolation Valve - Closure	1	8	F	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14 SR 3.3.1.1.15	≤ 12.5% closed
6.	Primary Containment Pressure - High	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 1.88 psig
7.	Scram Discharge Volume Water Level - High					
	a. Transmitter/Trip Unit	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
		5[(a)]	2	H	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
	b. Float Switch	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
		5[(a)]	2	H	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
8.	Turbine Throttle Valve - Closure	≥ 30% RTP	4	E	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.12 SR 3.3.1.1.14 SR 3.3.1.1.15	≤ 7% closed

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

Table 3.3.1.1-1 (page 4 of 4)
Reactor Protection System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
9.	Turbine Governor Valve Fast Closure, Trip Oil Pressure - Low	≥ 30% RTP	2	E	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.12 SR 3.3.1.1.14 SR 3.3.1.1.15	≥ 1000 psig
10.	Reactor Mode Switch - Shutdown Position	1,2	2	G	SR 3.3.1.1.13 SR 3.3.1.1.14	NA
		5[(a)]	2	H	SR 3.3.1.1.13 SR 3.3.1.1.14	NA
11.	Manual Scram	1,2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.14	NA
		5[(a)]	2	H	SR 3.3.1.1.4 SR 3.3.1.1.14	NA

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

BASES

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each RPS instrumentation Function are located in the SRs column of Table 3.3.1.1-1.

The Surveillances are modified by a Note to indicate that, 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 trip capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the RPS reliability analysis (Ref. 11) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RPS will trip when necessary.

SR 3.3.1.1.1

Performance of a CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a qualitative assessment, by observation, of channel behavior during operation. This determination includes, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A significant deviation could indicate gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.2

To ensure that the APRMs are accurately indicating the true core average power, the APRMs are calibrated to the reactor power calculated from a heat balance. ~~The Frequency of once per 7 days is based on minor changes in LPRM sensitivity, which could affect the APRM reading between performances of SR 3.3.1.1.7.~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

A restriction to satisfying this SR when < 25% RTP is provided that requires the SR to be met only at ≥ 25% RTP because it is difficult to accurately maintain APRM indication of core THERMAL POWER consistent with a heat balance when < 25% RTP. At low power levels, a high degree of accuracy is unnecessary because of the large inherent margin to thermal limits (MCPR and APLHGR). At ≥ 25% RTP, the Surveillance is required to have been satisfactorily performed ~~within the last 7 days~~ in accordance with SR 3.0.2. A Note is provided which allows an increase in THERMAL POWER above 25% if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after reaching or exceeding 25% RTP. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

SR 3.3.1.1.3

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

As noted, SR 3.3.1.1.3 is not required to be performed when entering MODE 2 from MODE 1 since testing of the MODE 2 required IRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or movable links. This allows entry into MODE 2 if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after entering MODE 2 from MODE 1. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

~~A Frequency of 7 days provides an acceptable level of system average unavailability over the Frequency interval and is based on reliability analysis (Ref. 11).~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.4

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended Function. ~~A Frequency of 7 days provides an acceptable level of system average availability over the Frequency and is based on the reliability analysis of Reference 11. The Manual Scram Functions CHANNEL FUNCTIONAL TEST Frequency was credited in the analysis to extend many automatic scram Functions Frequencies.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.1.5 and SR 3.3.1.1.6

These Surveillances are established to ensure that no gaps in neutron flux indication exist from subcritical to power operation for monitoring core reactivity status.

The overlap between SRMs and IRMs is required to be demonstrated to ensure that reactor power will not be increased into a region without adequate neutron flux indication. This is required prior to withdrawing SRMs from the fully inserted position since indication is being transitioned from the SRMs to the IRMs.

The overlap between IRMs and APRMs is of concern when reducing power into the IRM range. On power increases, the system design will prevent further increases (initiate a rod block) if adequate overlap is not maintained. Overlap between IRMs and APRMs exists when sufficient IRMs and APRMs concurrently have onscale readings such that the transition between MODE 1 and MODE 2 can be made without either APRM downscale rod block, or IRM upscale rod block. Overlap between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are above mid-scale on range 1 before SRMs have reached the upscale rod block. The IRM/APRM and SRM/IRM overlaps are also acceptable if a ½ decade overlap exists.

As noted, SR 3.3.1.1.6 is only required to be met during entry into MODE 2 from MODE 1. That is, after the overlap requirement has been met and indication has transitioned to the IRMs, maintaining overlap is not required (APRMs may be reading downscale once in MODE 2).

If overlap for a group of channels is not demonstrated (e.g., IRM/APRM overlap), the reason for the failure of the Surveillance should be determined and the appropriate channel(s) declared inoperable. Only those appropriate channel(s) that are required in the current MODE or condition should be declared inoperable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~A Frequency of 7 days is reasonable based on engineering judgment and the reliability of the IRMs and APRMs.~~The Surveillance Frequency for SR 3.3.1.1.6 is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.1.7

LPRM gain settings are determined from the local flux profiles measured by the Traversing Incore Probe (TIP) System. This establishes the relative local flux profile for appropriate representative input to the APRM System. ~~The 1130 MWD/T Frequency is based on operating experience with LPRM sensitivity changes.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.1.8 and SR 3.3.1.1.13

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. ~~The 92 day Frequency of SR 3.3.1.1.8 is based on the reliability analysis of Reference 11.~~

~~The 24 month Frequency of SR 3.3.1.1.13 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 24 month Frequency.~~The Surveillance Frequencies are controlled under the Surveillance Frequency Control Program.

SR 3.3.1.1.9 - Not Used

SR 3.3.1.1.10

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. For the APRM Simulated Thermal Power – High Function, this SR also includes calibrating the associated recirculation loop flow channel.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 ~~1130 MWD/T~~ LPRM calibration against the TIPs (SR 3.3.1.1.7). A second Note is provided that requires the IRM SRs to be performed within 12 hours of entering MODE 2 from MODE 1. Testing of the MODE 2 IRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or moveable links. This Note allows entry into MODE 2 from MODE 1 if the associated Frequency is not met per SR 3.0.2. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~The Frequency of SR 3.3.1.1.10 is based on the assumption of an 18 month calibration interval for Functions 1, 3, 4, 6, 7, and 9 through 11 in the determination of the magnitude of equipment drift in the setpoint analysis.~~

~~A Frequency of 24 months is assumed for Functions 2, 5 and 8 because the position switches that perform these Functions are not susceptible to instrument drift.~~

Note (d) requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is not the Limiting Trip Setpoint (LTSP) but is conservative with respect to the Allowable Value. For digital channel components, no as-found tolerance or as-left tolerance can be specified. Where a setpoint more conservative than the LTSP is used in the plant surveillance procedures (i.e. nominal trip setpoint, or NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. 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. Any nonconformance will be entered into the Corrective Action Program which will ensure required review and documentation of the condition for continued OPERABILITY.

Note (e) requires that the as-left setting for the instrument be returned to within an acceptable as-left tolerance around the LTSP. Where a setpoint more conservative than the LTSP is used in the plant surveillance procedures (i.e., nominal trip setpoint, or NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical limit is maintained. If the as-left instrument setting cannot be returned to the LTSP, then the instrument channel shall be declared

inoperable. The LTSPs are specified in the Licensee Controlled Specifications.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.11 – Not Used

SR 3.3.1.1.12

This SR ensures that scrams initiated from the Turbine Throttle Valve - Closure and Turbine Governor Valve Fast Closure, Trip Oil Pressure - Low Functions will not be inadvertently bypassed when THERMAL POWER is ≥ 30% RTP. This involves calibration of the bypass channels. Adequate margins for the instrument setpoint methodology are incorporated into the Allowable Value and the actual setpoint. Because main turbine bypass flow can affect this setpoint nonconservatively (THERMAL POWER is derived from turbine first stage pressure), the main turbine bypass valves must remain closed during an in-service calibration at THERMAL POWER ≥ 30% RTP to ensure that the calibration is valid.

If any bypass channel setpoint is nonconservative (i.e., the Functions are bypassed at ≥ 30% RTP, either due to open main turbine bypass valve(s) or other reasons), then the affected Turbine Throttle Valve - Closure and Turbine Governor Valve Fast Closure, Trip Oil Pressure - Low Functions are considered inoperable. Alternatively, the bypass channel can be placed in the conservative condition (nonbypass). If placed in the nonbypass condition, this SR is met and the channel is considered OPERABLE.

~~The Frequency of 18 months is based on engineering judgment and reliability of the components.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.1.14

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The functional testing of control rods, in LCO 3.1.3, "Control Rod OPERABILITY," and SDV vent and drain valves, in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 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 was performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The LOGIC SYSTEM FUNCTIONAL TEST for APRM Function 2.e simulates APRM or OPRM trip conditions at the 2-Out-of-4 Voter channel inputs to check all combinations of two tripped inputs to the 2-Out-of-4 logic in the voter channels and APRM related redundant RPS relays. The initiation of the input to the RPS logic commences in the 2-Out-of-4 Voter as a vote either for the APRM UPSC/Inop or OPRM UPSC/Inop. The APRM modules are not divisional and do not provide a direct input to RPS.

SR 3.3.1.1.15

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. This test may be performed in one measurement or in overlapping segments, with verification that all components are tested. The RPS RESPONSE TIME acceptance criteria are included in Reference 12.

As noted (Note 1), neutron detectors for Function 2 are excluded from RPS RESPONSE TIME testing because the principles of detector operation virtually ensure an instantaneous response time. In addition, Note 2 states that channel sensors for Functions 3 and 4 are excluded and therefore, it is not required to quantitatively measure the sensor response time to satisfy the requirement to verify RPS RESPONSE TIME. This is acceptable since the sensor response time can be qualitatively verified by other methods (Ref. 13). If the response time of the sensor is not quantitatively measured, the acceptance criteria must be reduced by the time assumed for sensor response in the design analyses, as verified by statistical analyses or vendor data.

RPS RESPONSE TIME for the APRM 2-Out-of-4 Voter function (Function 2.e) includes the output relays of the voter and the associated RPS relays and contractors. (The digital portion of the APRM and 2-Out-of-4 Voter channels are excluded from RPS RESPONSE TIME testing because self-testing and calibration checks the time base of the digital electronics. Confirmation of the time base is adequate to assure required response times are met. Neutron detectors are excluded from RPS RESPONSE TIME testing because the principles of dector operation virtually ensure an instantaneous response time.) ~~The staggered test basis will test both the APRM and the OPRM outputs of the 2-Out-of-4 Voter during each iteration of the surveillance. Each iteration will also test both the "X" and "Y" outputs of the voter. Each successive test will alternate the RPS divisions. Each successive test on the specific voter, every 4th test, will test the opposite "X" and "Y" output from the voter. This will accomplish alternating APRM and OPRM and "X" and "Y" outputs of the voter in a specific test while alternating RPS divisions during subsequent tests.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~RPS RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS. Note 2 requires STAGGERED TEST BASIS Frequency to be determined based on 4 channels per trip system, in lieu of the 8 channels specified in Table 3.3.1.1-1 for the MSIV Closure Function. This Frequency is based on the logic interrelationships of the various channels required to produce an RPS scram signal. Therefore, staggered testing results in response time verification of these devices every 24 months. The 24 month Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious time degradation, but not channel failure, are infrequent occurrences.~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.1.16

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. For the APRM Functions, this test supplements the automatic self-test functions that operate continuously in the APRM and voter channels. The APRM CHANNEL FUNCTIONAL TEST covers the APRM channels (including recirculation flow processing – applicable to Functions 2.b and 2.f only), the 2-Out-of-4 Voter channels, and the interface connections into the RPS trip system from the voter channels. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. ~~The 184 day Frequency of SR 3.3.1.1.16 is based on the reliability analysis of Reference 14.~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. (NOTE: The actual voting logic of the 2-Out-of-4 Voter Function is tested as part of SR 3.3.1.1.14.)

A Note is provided for Function 2.a that requires this SR to be performed within 12 hours of entering MODE 2 from MODE 1. Testing of the MODE 2 APRM Function cannot be performed in MODE 1 without utilizing jumpers or lifted leads. This Note allows entry into MODE 2 from MODE 1 if the associated frequency is not met per SR 3.0.2.

SR 3.3.1.1.17

This SR ensures that scrams initiated from OPRM Upscale Function (Function 2.f) will not be inadvertently bypassed when APRM Simulated Thermal Power is greater than or equal to the value specified in the COLR and recirculation drive flow is less than the value specified in the COLR. This normally involves confirming the bypass setpoints, which are considered to be nominal values as discussed in Reference 21. The actual surveillance ensures that the OPRM Upscale Function is enabled

(not bypassed) for the correct values of APRM Simulated Thermal Power and recirculation drive flow. Other surveillances ensure that the APRM

BASES

SURVEILLANCE REQUIREMENTS (continued)

Simulated Thermal Power and recirculation flow properly correlate with THERMAL POWER (SR 3.3.1.1.2) and core flow (SR 3.3.1.1.10), respectively.

If any bypass setpoint is non-conservative (i.e., the OPRM Upscale Function is bypassed when APRM Simulated Thermal Power is greater than or equal to and recirculation drive flow is less than the values in the COLR), then the affected channel is considered inoperable for the OPRM Upscale Function. Alternatively, the bypass setpoint may be adjusted to place the channel in a conservative condition (non-bypass). If placed in the non-bypass condition, this SR is met and the channel is considered OPERABLE.

~~The Frequency of 24 months is based on engineering judgment and reliability of the components.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. FSAR, Section 7.2.
2. FSAR, Section 5.2.2.
3. Columbia Generating Station Calculation NE-02-94-66, Revision 0, November 13, 1995.
4. FSAR, Section 6.3.3.
5. FSAR, Chapter 15.
6. 10 CFR 50.36(c)(2)(ii).
7. FSAR, Section 15.4.1.
8. NEDO-23842, "Continuous Control Rod Withdrawal in the Startup Range," April 18, 1978.
9. FSAR, Section 15.4.9.
10. Letter, P. Check (NRC) to G. Lainas (NRC), "BWR Scram Discharge System Safety Evaluation," December 1, 1980.
11. NEDC-30851-P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System," March 1988.
12. Licensee Controlled Specifications Manual.

BASES

REFERENCES (continued)

13. NEDO 32291-A, "System Analyses for Elimination of Selected Response Time Testing Requirements," October 1995.

14. NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function", October 1995.

15. NEDO-31960-A, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," November 1995.

16. NEDO-31960-A, Supplement 1, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," November 1995.

17. NEDO-32465-A, "BWR Owners' Group Long-Term Stability Detect and Suppress Solutions Licensing Basis Methodology And Reload Applications," March 1996.

18. Letter, LA England (BWROG) to MJ Virgilio, "BWR Owners' Group Guidelines for Stability Interim Corrective Action", June 6, 1994.

19. BWROG Letter 96113, K. P. Donovan (BWROG) to L.E. Phillips (NRC),"Guidelines for Stability Option III 'Enable Region' (TAC M92882)," dated September 17, 1996.

BASES

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each Control Rod Block instrumentation Function are found in the SRs column of Table 3.3.2.1-1.

The Surveillances are modified by a second Note to indicate that when an RBM 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 control rod block capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 7) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that a control rod block will be initiated when necessary.

SR 3.3.2.1.1

A CHANNEL FUNCTIONAL TEST is performed for each RBM channel to ensure that the channel will perform the intended function. It includes the Reactor Manual Control Multiplexing System input.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. ~~The Frequency of 184 days is based on reliability analyses (Ref. 9).~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.2.1.2 and SR 3.3.2.1.3

A CHANNEL FUNCTIONAL TEST is performed for the RWM to ensure that the entire system will perform the intended function. The CHANNEL FUNCTIONAL TEST for the RWM is performed by attempting to withdraw a control rod not in compliance with the prescribed sequence and verifying a control rod block occurs and, for SR 3.3.2.1.2 only, by attempting to select a control rod not in compliance with the prescribed sequence and verifying a selection error occurs. As noted in the SRs, SR 3.3.2.1.2 is not required to be performed until 1 hour after any control rod is withdrawn at $\leq$ 10% RTP in MODE 2, and SR 3.3.2.1.3 is not required to be performed until 1 hour after THERMAL POWER is $\leq$ 10% RTP in MODE 1. This allows entry into MODE 2 (and if entering during a shutdown, concurrent power reduction to $\leq$ 10% RTP) for SR 3.3.2.1.2, and THERMAL POWER reduction to $\leq$ 10% RTP in MODE 1 for SR 3.3.2.1.3, to perform the required Surveillances if the ~~92 day~~ Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs. ~~The 92 day Frequencies~~

~~are based on reliability analysis (Ref. 8).~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.1.4

The RBM setpoints are automatically varied as a function of power. The RBM Allowable Values required in Table 3.3.2.1-1, each within a specific power range, are specified in the COLR. The power at which the control rod block Allowable Values automatically change are based on the APRM simulated thermal power input to each RBM channel. Below the minimum power setpoint, the RBM is automatically bypassed. These control rod block bypass setpoints must be verified periodically to be less than or equal to the specified values. If any power range setpoint is nonconservative, then the affected RBM channel is considered inoperable. Alternatively, the power range channel can be placed in the conservative condition (i.e., enabling the proper RBM setpoint). If placed in this condition, the SR is met and the RBM channel is not considered inoperable. As noted, neutron detectors are excluded from the Surveillance because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.7. ~~The 24 month Frequency is based on the actual trip setpoint methodology utilized for these channels.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.2.1.5

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

As noted, neutron detectors are excluded from the CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.7.

~~The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis (Ref. 9).~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.2.1.5 for RBM Functions 1.a, 1.b and 1.c is modified by two Notes as identified in Table 3.3.2.1-1. Note (d) requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is not the Limiting Trip Setpoint (LTSP) but is conservative with respect to the Allowable Value. For digital channel components, no as-

found tolerance or as-left tolerance can be specified. Evaluation of instrument performance will verify that the instrument will continue to

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. Any nonconformance will be entered into the Corrective Action Program which will ensure required review and documentation of the condition for continued OPERABILITY.

Note (e) requires that the as-left setting for the instrument be returned to within an acceptable as-left tolerance around the LTSP. If the as-left instrument setting cannot be returned to the LTSP, then the instrument channel shall be declared inoperable. The Allowable Values for Rod Block Monitor Functions 1.a, 1.b and 1.c are specified in the COLR. The LTSPs are specified in the Licensee Controlled Specifications.

SR 3.3.2.1.6

The RWM is automatically bypassed when power is above a specified value. The power level is determined from a steam flow signal. The automatic bypass setpoint must be verified periodically to be > 10% RTP. If the RWM low power setpoint is nonconservative, then the RWM is considered inoperable. Alternately, the low power setpoint channel can be placed in the conservative condition (nonbypass). If placed in the nonbypassed condition, the SR is met and the RWM is not considered inoperable. ~~The Frequency is based on instrument drift analysis and the trip setpoint methodology utilized for the low power setpoint channel.~~The Frequency is controlled under the Surveillance Frequency Control Porgam.

SR 3.3.2.1.7

A CHANNEL FUNCTIONAL TEST is performed for the Reactor Mode Switch - Shutdown Position Function to ensure that the entire channel will perform the intended function. The CHANNEL FUNCTIONAL TEST for the Reactor Mode Switch - Shutdown Position Function is performed by attempting to withdraw any control rod with the reactor mode switch in the shutdown position and verifying a control rod block occurs.

As noted in the SR, the Surveillance is not required to be performed until 1 hour after the reactor mode switch is in the shutdown position, since testing of this interlock with the reactor mode switch in any other position cannot be performed without using jumpers, lifted leads, or movable links. This allows entry into MODES 3 and 4 if the ~~24 month~~ Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating

experience and in consideration of providing a reasonable time in which to complete the SRs.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 24 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 these components usually pass the Surveillance when performed at the 24 month Frequency.~~The surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.2.1.8

The RWM will only enforce the proper control rod sequence if the rod sequence is properly input into the RWM computer. This SR ensures that the proper sequence is loaded into the RWM so that it can perform its intended function. The Surveillance is performed once prior to declaring RWM OPERABLE following loading of sequence into RWM, since this is when rod sequence input errors are possible.

REFERENCES

1. FSAR, Section 7.7.1.8.
2. FSAR, Section 7.7.1.10.
3. NEDC-33507P, Revision 1, “Energy Northwest Columbia Generating Station APRM/RBM/Technical Specifications/Maximum Extended Load Line Limit Analysis (ARTS/MELLLA),” January 2012.
4. 10 CFR 50.36(c)(2)(ii).
5. FSAR, Section 15.4.9.
6. NRC SER, "Acceptance of Referencing of Licensing Topical Report NEDE-24011-P-A," "General Electric Standard Application for Reactor Fuel, Revision 8, Amendment 17," December 27, 1987.
7. GENE-770-06-1-A, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," December 1992.
~~8. NEDC-30851-P-A, Supplement 1, "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," October 1988.~~
~~9. NEDC-32410P, “Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function”, October 1995.~~

BASES

ACTIONS (continued)

reverse flow is detected, the condition should be alleviated by changing pump speeds to re-establish forward flow or by tripping the pump.

With the requirements of the LCO not met for reasons other than Condition A (e.g., one loop is "not in operation"), the recirculation loops must be restored to operation with matched flows within 4 hours. A recirculation loop is considered not in operation when the pump in that loop is idle or when the mismatch between total jet pump flows of the two loops is greater than required limits for greater than 2 hours (i.e., Required Action A.1 has been taken). Should a LOCA occur with one recirculation loop not in operation, the core flow coastdown and resultant core response may not be bounded by the LOCA analyses. Therefore, only a limited time is allowed to restore the inoperable loop to operating status.

Alternatively, if the single loop requirements of the LCO are applied to operating limits and RPS setpoints, operation with only one recirculation loop would satisfy the requirements of the LCO and the initial conditions of the accident sequence.

The 2 and 4 hour Completion Times are based on the low probability of an accident occurring during this time period, on a reasonable time to complete the Required Action, and on frequent core monitoring by operators allowing abrupt changes in core flow conditions to be quickly detected.

C.1

With the Required Action and associated Completion Time of Condition A or B not met, the unit is required to be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours. In this condition, the recirculation loops are not required to be operating because of the reduced severity of DBAs and minimal dependence on the recirculation loop coastdown characteristics. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

This SR ensures the recirculation loop flows are within the allowable limits for mismatch. At low core flow (i.e., < 70% of rated core flow, 75.95 x 10^6 lbm/hr), the MCPR requirements provide larger margins to the fuel cladding integrity Safety Limit such that the potential adverse effect of

BASES

SURVEILLANCE REQUIREMENTS (continued)

early boiling transition during a LOCA is reduced. A larger flow mismatch can therefore be allowed when core flow is < 70% of rated core flow.

The mismatch is measured in terms of percent of rated recirculation loop drive flow. If the flow mismatch exceeds the specified limits, the loop with the lower flow is considered not in operation. This SR is not required when both loops are not in operation since the mismatch limits are meaningless during single loop or natural circulation operation. The Surveillance must be performed within 24 hours after both loops are in operation. ~~The 24 hour Frequency is consistent with the Frequency for jet pump OPERABILITY verification and has been shown by operating experience to be adequate to detect off normal jet pump loop flows in a timely manner.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Porgram.

REFERENCES

1. FSAR, Sections 6.3 and 15.6.
2. FSAR, Section 6.3.3.7.2.
3. FSAR, Section 5.4.1.
4. FSAR, Section 6.3.3.8 and 15.0.2.1.
5. 10 CFR 50.36(c)(2)(ii).

BASES

ACTIONS (continued)

B.1

With one or more of the requirements of this LCO not met, for reasons other than an uncoupled control rod, the testing should be immediately stopped by placing the reactor mode switch in the shutdown or refuel position. This results in a condition that is consistent with the requirements for MODE 5 where the provisions of this Special Operations LCO are no longer required.

SURVEILLANCE REQUIREMENTS

SR 3.10.8.1, SR 3.10.8.2, and SR 3.10.8.3

LCO 3.3.1.1, Functions 2.a, 2.d, and 2.e, made applicable in this Special Operations LCO, are required to have applicable Surveillances met to establish that this Special Operations LCO is being met (SR 3.10.8.1). However, the control rod withdrawal sequences during the SDM tests may be enforced by the RWM (LCO 3.3.2.1, Function 2, MODE 2 requirements) or by a second licensed operator (Reactor Operator or Senior Reactor Operator) or other qualified member of the technical staff. As noted, either the applicable SRs for the RWM (LCO 3.3.2.1) must be satisfied according to the applicable Frequencies (SR 3.10.8.2), or the proper movement of control rods must be verified (SR 3.10.8.3). This latter verification (i.e., SR 3.10.8.3) must be performed during control rod movement to prevent deviations from the specified sequence. These Surveillances provide adequate assurance that the specified test sequence is being followed.

SR 3.10.8.4

Periodic verification of the administrative controls established by this LCO will ensure that the reactor is operated within the bounds of the safety analysis. ~~The 12 hour Frequency is intended to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.10.8.5

Coupling verification is performed to ensure the control rod is connected to the control rod drive mechanism and will perform its intended function when necessary. The verification is required to be performed any time a control rod is withdrawn to the "full-out" notch position or prior to declaring the control rod OPERABLE after work on the control rod or CRD System

BASES

SURVEILLANCE REQUIREMENTS (continued)

that could affect coupling. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved as well as operating experience related to uncoupling events.

SR 3.10.8.6

CRD charging water header pressure verification is performed to ensure the motive force is available to scram the control rods in the event of a scram signal. Since the reactor is depressurized in MODE 5, there is insufficient reactor pressure to scram the control rods. Verification of charging water header pressure ensures that if a scram were required, capability for rapid control rod insertion would exist. The minimum pressure of 940 psig is well below the expected pressure of 1400 psig to 1500 psig while still ensuring sufficient pressure for rapid control rod insertion. ~~The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. FSAR, Chapter 15.

2. 10 CFR 50.36(c)(2)(ii).

BASES

ACTIONS (continued)

E.1 and E.2

If any Required Action and associated Completion Time cannot be met in MODE 1, 2, or 3, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1 and F.2

If any Required Action and associated Completion Time cannot be met for PCIV(s) required OPERABLE in MODE 4 or 5, the plant must be placed in a condition in which the LCO does not apply. Action must be immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended. If suspending the OPDRVs would result in closing the residual heat removal (RHR) shutdown cooling isolation valves, an alternative Required Action is provided to immediately initiate action to restore the valves to OPERABLE status. This allows RHR shutdown cooling to remain in service while actions are being taken to restore the valve.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1

This SR verifies that the 24 inch and 30 inch primary containment purge valves are closed as required or, if open, opened for an allowable reason.

The SR is modified by a Note stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for inerting, de-inerting, pressure control, ALARA, or air quality considerations for personnel entry, or for surveillances that require the valves to be open. These primary containment purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. ~~The 31 day Frequency is consistent with other PCIV requirements discussed in SR 3.6.1.3.2.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.2

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the primary containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside primary containment, and not locked, are in the correct position. ~~Since verification of valve position for isolation devices outside primary containment is relatively easy, the 31 day Frequency was chosen to provide added assurance that the isolation devices are in the correct positions.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes are added to this SR. The first Note applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these isolation devices, once they have been verified to be in the proper position, is low. A second Note is included to clarify that PCIVs open under administrative controls are not required to meet the SR during the time the PCIVs are open. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

SR 3.6.1.3.3

This SR verifies that each primary containment manual isolation valve and blind flange located inside primary containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits. For isolation devices inside primary containment, the Frequency of "prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days," is appropriate since these isolation devices are

operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked,

BASES

SURVEILLANCE REQUIREMENTS (continued)

sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes are added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since the primary containment is inerted and access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA and personnel safety. Therefore, the probability of misalignment of these isolation devices, once they have been verified to be in their proper position, is low. A second Note is included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

SR 3.6.1.3.4

The traversing incore probe (TIP) shear isolation valves are actuated by explosive charges. Surveillance of explosive charge continuity provides assurance that TIP valves will actuate when required. Other administrative controls, such as those that limit the shelf life and operating life, as applicable, of the explosive charges, must be followed. ~~The 31 day Frequency is based on operating experience that has demonstrated the reliability of the explosive charge continuity.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.5

Verifying the isolation time of each power operated, automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV full closure isolation time is demonstrated by SR 3.6.1.3.6. The isolation time test ensures that each valve will isolate in a time period less than or equal to that assumed in the safety analysis. The Frequency of this SR is in accordance with the Inservice Testing Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.6

Verifying that the full closure isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The full closure isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA and transient analyses. The Frequency of this SR is in accordance with the Inservice Testing Program.

SR 3.6.1.3.7

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.1, "Primary Containment Isolation Instrumentation," overlaps this SR to provide complete testing of the safety function. ~~The 24 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 this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.8

This SR requires a demonstration that a representative sample of reactor instrument lines' excess flow check valves (EFCVs) are OPERABLE by verifying that each tested valve actuates to the isolation position on an actual or simulated instrument line break condition. The representative sample consists of an approximately equal number of EFCVs, such that each EFCV is tested at least once every 10 years (nominal). In addition, the EFCVs in the sample are representative of the various plant configurations, models, sizes and operating environments. This ensures that any potentially common problem with a specific type or application of EFCV is detected at the earliest possible time. This SR provides assurance that the reactor instrumentation lines' EFCVs will perform as designed. The excess flow check valves in reactor instrument lines are tested by providing an instrument line break signal with pressure at 85 psig to 1050 psig, and at no more than 212°F, RPV coolant temperature, while the EFCV is being exercised. Testing within this

pressure range provides a high degree of assurance that these valves will close during an instrument line break while at normal operating pressure.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 24 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.~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The nominal 10 year interval is based on performance testing. Furthermore, any EFCV failures will be evaluated to determine if additional testing in that test interval is warranted to ensure overall reliability is maintained. Operating experience has demonstrated that these components are highly reliable and that failures to isolate are very infrequent. Therefore, testing of a representative sample was concluded to be acceptable from a reliability standpoint (Reference 5). In addition, due to operational concerns, the Surveillance should not be performed during MODES 1, 2, or 3. This restriction has been established to limit the thermal cycles at the containment penetration.

SR 3.6.1.3.9

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. Other administrative controls, such as those that limit the shelf life and operating life, as applicable, of the explosive charges, must be followed. ~~The Frequency of 24 months on a STAGGERED TEST BASIS is considered adequate given the administrative controls on replacement charges and the frequent checks of circuit continuity (SR 3.6.1.3.4).~~ The Surveillance Frequency is controlled under the Surveillance Frequency Control Progra.

SR 3.6.1.3.10

This SR ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions in the radiological evaluations that form the basis of the FSAR (Ref. 1) are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the

penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Primary Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.11

The radiological consequences associated with MSIV leakage following the design basis LOCA, is based on the testing leakage limit of 16.0 scfh as specified in this Surveillance. The test pressure, P_t (25 psig) specified in this Surveillance is less than the peak accident pressure, P_a. The specified P_t is less than P_a due to testing configuration constraints. The leakage assumed in the design basis LOCA analysis (Ref. 7) is calculated by converting the specified test leakage limit to the equivalent leakage rate for P_a conditions. This Surveillance ensures that MSIV leakage is properly accounted for in determining the overall primary containment leakage rate. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

SR 3.6.1.3.12

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of Reference 1 are met. The acceptance criteria for the combined leakage of all hydrostatically tested lines is $\leq$ 1.0 gpm times the total number of hydrostatically tested PCIVs when tested at 1.1 P_a (41.8 psig). The combined leakage rates must be tested at the Frequency required by the Primary Containment Leakage Rate Testing Program.

REFERENCES

1. FSAR, Chapter 6.2.
2. FSAR, Section 15.2.4.
3. 10 CFR 50.36(c)(2)(ii).
4. Licensee Controlled Specifications Manual.
5. NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation," dated June 2000.
6. FSAR, Section 15.6.4.
7. FSAR, Section 15.6.5.
8. Regulatory Guide 1.183, Appendix A, July 2000.