Industry/TSTF Standard Technical Specification Change Traveler

Extend the Completion Time for inoperable isolation valve to a closed system to 72 hours

Classification: Improve Specifications

NUREGs Affected: ☑ 1430 ☑ 1431 ☑ 1432 ☑ 1433 ☑ 1434

Description:

Extend the Completion Time for a closed system flow path with an inoperable isolation valve to 72 hours. A Reference to Standard Review Plan 6.2.4 is added and subsequent references in the Bases are appropriately renumbered.

Justification:

General Design Criteria (GDC) 57 allows the use of a closed system in combination with a containment isolation valve to provide two containment barriers against the release of radioactive material following an accident. Currently, LCO 3.6.3 does not allow the use of a closed system to isolate a failed containment isolation valve even though the closed system is subjected to a Type A containment leakage test, is missile protected, and seismic category I piping. A closed system also typically has flow through it during normal operation such that any loss of integrity could be continually observed through leakage detection system within containment and system walkdowns for closed systems outside containment. As such, the use of a closed system is no different from isolating a failed containment isolation valve by use of a single valve as specified in Required Action A.1. Therefore, LCO 3.6.3, Required Action C.1 is revised to allow 72 hours to isolate a failed valve associated with a closed system. This 72 hour period provides the necessary time to perform repairs on a failed containment isolation valve when relying on an intact closed system. A Completion Time of 72 hours is considered appropriate given that certain valves may be located inside containment, the reliability of the closed system, and that 72 hours is typically provided for losing one train of redundancy throughout the NUREGs. If the closed system and associated containment isolation valve were both inoperable, the plant would be in LCO 3.0.3 since there is no specific Condition specified.

Affected Technical Specifications

Ref. 3.6.3 Bases	Containment Isolation Valves	NUREG(s)- 1430 1431 1432 Only
Action 3.6.3.C	Containment Isolation Valves	NUREG(s)- 1430 1431 1432 Only
Action 3.6.3.C Bases	Containment Isolation Valves	NUREG(s)- 1430 1431 1432 Only
SR 3.6.3.1 Bases	Containment Isolation Valves	NUREG(s)- 1430 1431 1432 Only
SR 3.6.3.6 Bases	Containment Isolation Valves	NUREG(s)- 1430 1432 Only
Action 3.6.3.D Bases	Containment Isolation Valves	NUREG(s)- 1430 Only
SR 3.6.3.7 Bases	Containment Isolation Valves	NUREG(s)- 1430 Only
Action 3.6.3.E Bases	Containment Isolation Valves	NUREG(s)- 1431 1432 Only
LCO 3.6.3 Bases	Containment Isolation Valves	NUREG(s)- 1431 Only
SR 3.6.3.8 Bases	Containment Isolation Valves	NUREG(s)- 1432 Only
Ref. 3.6.1.3 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1433 1434 Only
Action 3.6.1.3.C	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1433 1434 Only
Action 3.6.1.3.C Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1433 1434 Only

SR 3.6.1.3.13 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1433 Only
SR 3.6.1.3.15 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1433 Only
SR 3.6.1.3.1 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1434 Only
SR 3.6.1.3.9 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1434 Only
SR 3.6.1.3.10 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1434 Only
SR 3.6.1.3.11 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1434 Only
SR 3.6.1.3.12 Bases	Primary Containment Isolation Valves (PCIVs)	NUREG(s)- 1434 Only

WOG Review Information

WOG-34

Originating Plant: Date Provided to OG: 14-Nov-97 Needed By:

Owners Group History:

Owners Group Resolution: Approved Date: 14-Nov-95

TSTF Review Information

TSTF Received Date: 02-Nov-95 Date Distributed to OGs for Review: 02-Nov-95

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

Accepted by all OGs

TSTF Resolution: Approved Date: 14-Nov-95 **TSTF- 30**

NRC Review Information

NRC Received Date: 16-Nov-95 NRC Reviewer: C. Shulton Reviewer Phone #:

Reviewer Comments:

11/30/95 - pkg referred to Tech Branch and TSB requested decision by 12/22/95.
2/2/96 - Tech Branch approved change
2/7/96 C. Shulten modified NOTE for BWRs, 3.6.1.3, Action C, to include at the end of NOTE, "...and a closed system." Forwarded package to C. Grimes to review.
6/11/96 - C. Grimes comment: TSTF-30 is probably OK. Generally 72 hours closed systems OK. C. Grimes would like for SRXB to "buy into the wording." TSTF-30 may need a Generic Letter.
9/18/96 - NRC accepts with modification. Revise BWR 3.6.1.3, Action C NOTE markup to explicitly restrict the application of the change to a closed system.
9/18/96 - TSTF accepts the modifications and will provide a revision.
10/15/96 - New revision forwarded to the TSTF for review.
1/3/97 - Rev. 1 received by the NRC.
3/10/97 - Reviewer recommends modification. TSTF should provide References 7 & 8 for page B 3.6-32 in the BWR/4 NUREG.
4/10/97 - Reviewed References for CIV and PCIV Bases for all NUREGs and corrected as necessary in Revision 2.

Final Resolution: NRC Action Pending Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 18-Sep-96 Proposed by: NRC

Revision Description:
NRC accepts with modification. Revise BWR 3.6.1.3, Action C NOTE markup to explicitly restrict the application of the change to a closed system.
9/18/96 - TSTF accepts the modifications and will provide a revision.
12/19/96 - Approved by the TSTF with minor editorial comments.

Distributed to TSTF: 11/20/96 Resolution: Approved Date: 19-Dec-96 Rev to NRC: 1/17/97

TSTF Revision 2 Revision Date: 10-Apr-97 Proposed by: NRC

Revision Description:
Reviewed References for CIV and PCIV Bases for all NUREGs and corrected as necessary.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

TSTF-30, Rev. 2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. --------NOTE-------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ---------- One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.2 --------NOTE-------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	~~[4]~~ 72 hours Once per 31 days
[D. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	D.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange]. AND	24 hours]

(continued)

BASES

TSTF-30, Rev. 2

ACTIONS

B.1 (continued)

operated under administrative controls and the probability of their misalignment is low.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two containment isolation valves. Condition A of this LCO addresses the condition of one containment isolation valve inoperable in this type of penetration flow path.

C.1 and C.2

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within the ~~4~~ 72 hour Completion Time. The specified time period is reasonable, considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. In the event the affected penetration is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative controls and the probability of their misalignment is low.

The closed system must meet the requirements of Reference 6.

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. This Note is necessary since this Condition is

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BASES

TSTF-30, Rev 2

ACTIONS

D.1, D.2, and D.3 (continued)

not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment purge valve with resilient seal that is isolated in accordance with Required Action D.1, SR 3.6.3.6 must be performed at least once every [ ] days. This provides assurance that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.3.6, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 10). Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [ ] days was chosen and has been shown acceptable based on operating experience.

B

E.1 and E.2

If the Required Actions and associated Completion Times are not met, 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Each [48] inch containment purge valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the

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BASES

TSTF-30, Rev 2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1 (continued)

sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 6), related to containment purge valve use during unit operations. (7) In the event purge valve leakage requires entry into Condition D, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.

SR 3.6.3.2

This SR ensures that the minipurge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the minipurge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The minipurge 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 containment isolation valve requirements discussed in SR 3.6.3.3.

SR 3.6.3.3

This SR requires verification that each containment isolation manual valve and blind flange located outside containment 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 containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those containment isolation valves outside containment and capable

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BASES

TSTF-30, Rev. 2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.4 (continued)

probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.5

Verifying that the isolation time of each power operated and automatic containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses. [The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program or 92 days.]

SR 3.6.3.6

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of once per 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 8).

Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (greater than that occurring to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.

SR 3.6.3.7

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of

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BASES

TSTF-30, Rev 2

REFERENCES (continued)

4. FSAR, Section [5.3].
5. FSAR, Section [5.3].
~~7~~ 7. Generic Issue B-24.
~~8~~ 8. Generic Issue B-20.
6. Standard Review Plan 6.2.4

TSTF-30, Rev.2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE--------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ---------- One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	(4) hours (72)
	AND	
	C.2 --------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days
[D. Shield building bypass leakage not within limit.]	D.1 Restore leakage within limit.	[4 hours]
[E. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.]	E.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange].	[24 hours]
	AND	

(continued)

TSTF-30, Rev. 2

BASES (continued)

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The [42] inch purge valves must be maintained sealed closed [or have blocks installed to prevent full opening]. [Blocked purge valves also actuate on an automatic signal.] The valves covered by this LCO are listed along with their associated stroke times in the FSAR (Ref. 2).

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 3.6.2

Purge valves with resilient seals [and secondary containment bypass valves] must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing.

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

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BASES

TSTF-30, Rev. 2

ACTIONS (continued)

C.1 and C.2

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve flow path must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration flow path. Required Action C.1 must be completed within the [4] hour Completion Time. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4. In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration flow path is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

(72)

The closed system must meet the requirements of Ref. 3

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system.

Required Action C.2 is modified by a Note that applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

(continued)

BASES

TSTF-30, Rev 2

ACTIONS

E.1, E.2, and E.3 (continued)

automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment purge valve with resilient seal that is isolated in accordance with Required Action E.1, SR 3.6.3.7 must be performed at least once every [92] days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.3.7, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 3, 4). Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [92] days was chosen and has been shown to be acceptable based on operating experience.

F.1 and F.2

If the Required Actions and associated Completion Times are not met, 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 6 hours and to MODE 5 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.

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BASES (continued)

TSTF-30, Rev 2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Each [42] inch containment purge valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 4), related to containment purge valve use during plant operations. In the event purge valve leakage requires entry into Condition E, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.

(5)

SR 3.6.3.2

This SR ensures that the minipurge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the minipurge valves are open for the reasons stated. The valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The minipurge 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 containment isolation valve requirements discussed in SR 3.6.3.3.

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TSTF-30, Rev 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.7

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 4).

Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.

SR 3.6.3.8

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. 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 this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

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BASES

TSTF-30, Rev. 2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.11 (continued)

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. This method of quantifying maximum pathway leakage is only to be used for this SR (i.e., Appendix J maximum pathway leakage limits are to be quantified in accordance with Appendix J). The Frequency is required by 10 CFR 50, Appendix J, as modified by approved exemptions (and therefore, the Frequency extensions of SR 3.0.2 may not be applied), since the testing is an Appendix J, Type C test. This SR simply imposes additional acceptance criteria.

[By pass leakage is considered part of L_a. [Reviewer's Note: Unless specifically exempted].]

REFERENCES

1. FSAR, Section [15].
2. FSAR, Section [6.2].
4. ~~3.~~ Generic Issue B-20, "Containment Leakage Due to Seal Deterioration."
5. ~~4.~~ Generic Issue B-24.

3. Standard Review Plan 6.2.4.

TSTF-30, Rev 2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE--------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ---------- One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	~~[4]~~ 72 hours
	AND	
	C.2 --------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days
[D. Secondary containment bypass leakage not within limit.	D.1 Restore leakage within limit.	4 hours]
E. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	E.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve with resilient seals, closed manual valve with resilient seals, or blind flange].	24 hours
	AND	

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BASES

TSTF-30, Rev 2

ACTIONS

C.1 and C.2 (continued)

path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within the [4] hour Completion Time. The specified time period is reasonable, considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. In the event the affected penetration is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration flow path is isolated is appropriate considering the valves are operated under administrative controls and the probability of their misalignment is low.

[72]

The closed system must meet the requirements of Reference 3.

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system.

Required Action C.2 is modified by a Note that applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

[D.1

With the secondary containment bypass leakage rate not within limit, the assumptions of the safety analysis are not]

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BASES

TSTF-30, Rev.2

ACTIONS

E.1, E.2, and E.3 (continued)

isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment purge valve with resilient seal that is isolated in accordance with Required Action E.1, SR 3.6.3.6 must be performed at least once every [92] days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.3.6, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 3, 4). Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [92] days was chosen and has been shown to be acceptable based on operating experience.

F.1 and F.2

If the Required Actions and associated Completion Times are not met, 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Each [42] inch containment purge valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious

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BASES

TSTF-30, Rev.2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1 (continued)

opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 4), related to containment purge valve use during unit operations. This SR is not required to be met while in Condition E of this LCO. This is reasonable since the penetration flow path would be isolated.

SR 3.6.3.2

This SR ensures that the minipurge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The minipurge 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 containment isolation valve requirements discussed in SR 3.6.3.3.

SR 3.6.3.3

This SR requires verification that each containment isolation manual valve and blind flange located outside containment 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

(continued)

BASES

TSTF-30, Rev 2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.4 (continued)

administrative means 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 containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.5

Verifying that the isolation time of each power operated and automatic containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analysis. [The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program or 92 days.]

SR 3.6.3.6

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J (Ref. 5), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 4).

Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.

(continued)

BASES

TSTF-30, Rev 2

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.7

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures each automatic containment isolation valve will actuate to its isolation position on a containment isolation actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency was developed considering it is prudent that this SR be performed only during a unit outage, since isolation of penetrations would eliminate cooling water flow and disrupt normal operation of many critical components. Operating experience has shown that these components usually pass this SR when performed on the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.3.8

Reviewer's Note: This SR is only required for those units with resilient seal purge valves allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices on the valves that are not permanently installed.

Verifying that each [42] inch containment purge valve is blocked to restrict opening to ≤ [50]% is required to ensure (1) that the valves can close under DBA conditions within the times assumed in the analyses of References 2 and 3. If a (2) LOCA occurs, the purge valves must close to maintain containment leakage within the valves assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. The [18] month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.

SR 3.6.3.9

This SR ensures that the combined leakage rate of all secondary containment bypass leakage paths is less than or

(continued)

BASES

TSTF-30, Rev. 2

SURVEILLANCE REQUIREMENTS

SR 3.6.3.9 (continued)

equal to the specified leakage rate. This provides assurance that the assumptions in the safety analysis 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. This method of quantifying maximum pathway leakage is only to be used for this SR (i.e., Appendix J maximum pathway leakage limits are to be quantified in accordance with Appendix J). The Frequency is required by 10 CFR 50, Appendix J, as modified by approved exemptions (and therefore, the Frequency extensions of SR 3.0.2 may not be applied), since the testing is an Appendix J, Type C test. This SR simply imposes additional acceptance criteria.

[Bypass leakage is considered part of L_a. [Reviewer's Note: Unless specifically exempted].]

REFERENCES

1. FSAR, Section [ ].
2. FSAR, Section [ ].
3. Standard Review Plan 6.2.4.
4. Generic Issue B-20.
5. Generic Issue B-24.
6. 10 CFR 50, Appendix J.

TSTF-30, Rev 2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ---------NOTE--------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with two PCIVs inoperable [except for purge valve leakage not within limit].	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour (72)
C. ---------NOTE--------- Only applicable to penetration flow paths with only one PCIV. ---------- One or more penetration flow paths with one PCIV inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.2 --------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	[4] hours except for excess flow check valves (EFCVs) AND 12 hours [for EFCVs] Once per 31 days
[D. Secondary containment bypass leakage rate not within limit.	D.1 Restore leakage rate to within limit.	4 hours]

(continued)

BASES

TSTF-30, Rev 2

ACTIONS

A.1 and A.2 (continued)

allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these devices, once they have been verified to be in the proper position, is low.

B.1

With one or more penetration flow paths with two PCIVs inoperable, either the inoperable PCIVs must be restored to OPERABLE status or the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two PCIVs. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions.

C.1 and C.2

With one or more penetration flow paths with one PCIV inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within the [4] hour Completion Time. The Completion Time of [4] hours is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during

72

(continued)

BASES

TSTF-30, Rev. 2

ACTIONS

C.1 and C.2 (continued)

The closed system must meet the requirements of Ref. 5.

MODES 1, 2, and 3. The Completion Time of 12 hours is reasonable considering the instrument and the small pipe diameter of penetration (hence, reliability) to act as a penetration isolation boundary and the small pipe diameter of the affected penetrations. In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

Condition C is modified by a Note indicating that this Condition is only applicable to penetration flow paths with only one PCIV. For penetration flow paths with two PCIVs, Conditions A and B provide the appropriate Required Actions.

Required Action C.2 is modified by a Note that applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is low.

D.1

With the secondary containment bypass leakage rate or MSIV leakage rate not within limit, the assumptions of the safety analysis may not be met. Therefore, the leakage must be restored to within limit within 4 hours. Restoration can be accomplished by isolating the penetration that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated, the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed

(continued)

BASES

TSTF-30, Rev 2

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.13

The analyses in References 7 and 8 are based on leakage that is less than the specified leakage rate. Leakage through each MSIV must be ≤ [11.5] scfh when tested at ≥ P_t ([28.8] psig). The MSIV leakage rate must be verified to be in accordance with the leakage test requirements of 10 CFR 50, Appendix J (Ref. 3), as modified by approved exemptions. Note 1 is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required. This ensures that MSIV leakage is properly accounted for in determining the overall primary containment leakage rate. The Frequency is required by 10 CFR 50, Appendix J, as modified by approved exemptions; thus, SR 3.0.2 (which allows Frequency extensions) does not apply.

SR 3.6.1.3.14

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of Reference 2 are met. The combined leakage rates must be demonstrated in accordance with the leakage rate test Frequency of 10 CFR 50, Appendix J (Ref. 3), as modified by approved exemptions; thus SR 3.0.2 (which allows Frequency extensions) does not apply.

[This SR has been modified by a Note that states that these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3, since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.]

[SR 3.6.1.3.15

[Reviewer's Note: This SR is only required for those plants with purge valves with resilient seals allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices that are not permanently installed on the valves.]]

(continued)

BASES

TSTF-30, Rev. 2

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.15 (continued)

Verifying each [ ] inch primary containment purge valve is blocked to restrict opening to ≤ [50]% is required to ensure that the valves can close under DBA conditions within the times assumed in the analysis of References 2 and 6. [The SR is modified by a Note stating that this SR is only required to be met in MODES 1, 2, and 3.] If a LOCA occurs, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. The [18] month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.

REFERENCES

1. FSAR, Chapter [15].
2. FSAR, Table [6.2-5].
3. 10 CFR 50, Appendix J.
4. FSAR, Section [6.2].
5. FSAR, Section [15.1.39].

5. Standard Review Plan 6.2.4

4. Generic Issue B-24

ACTIONS (continued) TSTF-30, Rev 2

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ---------NOTE--------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with two PCIVs inoperable [except for purge valve leakage not within limit].	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ---------NOTE--------- Only applicable to penetration flow paths with only one PCIV. ---------- One or more penetration flow paths with one PCIV inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	~~4~~ 72 hours
	AND	
	C.2 --------NOTE--------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days
[D. Secondary containment bypass leakage rate not within limit.	D.1 Restore leakage rate to within limit.	4 hours]

(continued)

BASES

TSTF-30, Rev 2

ACTIONS

B.1 (continued)

Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1.1.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two PCIVs. For penetration flow paths with one PCIV, Condition C provides the appropriate Required Actions.

C.1 and C.2

When one or more penetration flow paths with one PCIV inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within [4] hours. The [4] hour Completion Time is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting primary containment OPERABILITY during MODES 1, 2, and 3. In the event the affected penetration is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

72

The closed system must meet the requirements of Ref. 5

Condition C is modified by a Note indicating this Condition is applicable only to those penetration flow paths with only one PCIV. For penetration flow paths with two PCIVs, Conditions A and B provide the appropriate Required Actions. This Note is necessary since this Condition is written

(continued)

BASES

TSTF-30, Rev 2

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1 (continued)

limit offsite doses. Primary containment purge valves that are sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The 31 day Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 5), related to primary containment purge valve use during unit operations.

(6)

This SR allows a valve that is open under administrative controls to not meet the SR during the time the valve is open. Opening a purge valve under administrative controls is restricted to one valve in a penetration flow path at a given time (refer to discussion for Note 1 of the ACTIONS) in order to effect repairs to that valve. This allows one purge valve to be opened without resulting in a failure of the Surveillance and resultant entry into the ACTIONS for this purge valve, provided the stated restrictions are met. Condition E must be entered during this allowance, and the valve opened only as necessary for effecting repairs. Each purge valve in the penetration flow path may be alternately opened, provided one remains sealed closed, if necessary, to complete repairs on the penetration.

The SR is modified by a Note stating that primary containment purge valves are only required to be sealed closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves or the release of radioactive material will exceed limits prior to the closing of the purge valves. At other times when the purge valves are required to be capable of closing (e.g., during movement of irradiated fuel assemblies), pressurization concerns are not present and the purge valves are allowed to be open.

SR 3.6.1.3.2

This SR verifies that the [20] inch primary containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.6 (continued)

(e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

SR 3.6.1.3.7

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 analyses. The Frequency of this SR is [in accordance with the Inservice Testing Program or 18 months].

SR 3.6.1.3.8

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 SR 3.3.6.1.6 overlaps this SR to provide complete testing of the safety function. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.1.3.9

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 of Reference 2 are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of

(2)

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.9 (continued)

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. This method of quantifying maximum pathway leakage is only to be used for this SR (i.e., Appendix J maximum pathway leakage limits are to be quantified in accordance with Appendix J). The Frequency is required by 10 CFR 50, Appendix J, as modified by approved exemptions (and therefore, the Frequency extensions of SR 3.0.2 may not be applied), since the testing is an Appendix J, Type C test. This SR simply imposes additional acceptance criteria.

Note 1 is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required.

[Bypass leakage is considered part of L_a. [Reviewer's Note: Unless specifically exempted].]

SR 3.6.1.3.10

The analyses in References (2) and (3) are based on leakage that is less than the specified leakage rate. Leakage through all four MSIVs must be $\leq$ [100] scfh when tested at P_t ([11.5] psig). The MSIV leakage rate must be verified to be in accordance with the leakage test requirements of Reference 4, as modified by approved exemptions. Note 1 is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required. This ensures that MSIV leakage is properly accounted for in determining the overall primary containment leakage rate. The Frequency is required by 10 CFR 50, Appendix J (Ref. 4), as modified by approved

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.10 (continued)

exemptions; thus, SR 3.0.2 (which allows Frequency extensions) does not apply.

SR 3.6.1.3.11

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of References 2 and 3 are met. The combined leakage rates must be demonstrated to be in accordance with the leakage test frequency of Reference 4, as modified by approved exemptions; thus SR 3.0.2 (which allows Frequency extensions) does not apply.

[This SR is modified by a Note that states that these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3 since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.]

SR 3.6.1.3.12

Reviewer's Note: This SR is only required for those plants with purge valves with resilient seals allowed to be open during [MODE 1, 2, or 3] and having blocking devices on the valves that are not permanently installed.

Verifying that each [ ] inch primary containment purge valve is blocked to restrict opening to ≤ [50%] is required to ensure that the valves can close under DBA conditions within the time limits assumed in the analyses of References 2 and 3.

The SR is modified by a Note stating that this SR is only required to be met in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of irradiated fuel assemblies), pressurization

(continued)

BASES

TSTF-30, Rev. 2

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.12 (continued)

concerns are not present, thus the purge valves can be fully open. The [18] month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.

REFERENCES

1. FSAR, Chapter [15].
2. FSAR, Section [6.2].
3. FSAR, [Table 6.2-44].
4. 10 CFR 50, Appendix J.
5. Standard Review Plan 6.2.4.
6. Generic Issue B-24

Industry/TSTF Standard Technical Specification Change Traveler

Add example of SFDP to the 3.0.6 Bases

Classification: Improve Specifications

NUREGs Affected: ☑ 1430 ☑ 1431 ☑ 1432 ☑ 1433 ☑ 1434

Description:

A brief example of the application of the Safety Function Determination Program is added in the Bases for LCO 3.0.6.

Justification:

The application of LCO 3.0.6 is the cause of a great deal of confusion. The application can be explained using examples similar to those attached. This change to the Bases does not alter the technical content of LCO 3.0.6. The example is similar to one previously included in the Safety Function Determination Program.

Affected Technical Specifications

LCO 3.0.6 Bases LCO Applicability

CEOG Review Information

CEOG-24

Originating Plant: Palo Verde Date Provided to OG: 14-Mar-96 Needed By: 01-Sep-96

Owners Group History:

Owners Group Resolution: Approved Date: 14-Mar-96

TSTF Review Information

TSTF Received Date: 12-Apr-96 Date Distributed to OGs for Review: 12-Apr-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

Other OGs requested that example be bracketed. CEOG agreed.

TSTF Resolution: Approved Date: 12-May-96 **TSTF- 71**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: N. Gilles Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
3/18/97 - NRC requested editorial revisions to the package. TSTF agreed to provide.
4/11/97 - Revision 1 prepared.

Final Resolution: NRC Requests Changes: TSTF Will Revise Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Editorial revision to insert requested by NRC for clarify.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

INSERT 1

a. A required system redundant to system(s) supported by the inoperable support system is also inoperable; or (EXAMPLE B3.0.6-1)

b. A required system redundant to system(s) in turn supported by the inoperable supported system is also inoperable; or (EXAMPLE B3.0.6-2)

c. A required system redundant to support system(s) for the supported systems (a) and (b) above is also inoperable. (EXAMPLE B3.0.6-3)

EXAMPLE B3.0.6-1
If System 2 of Train A is inoperable, and System 5 of Train B is inoperable, a loss of safety function exists in supported System 5.

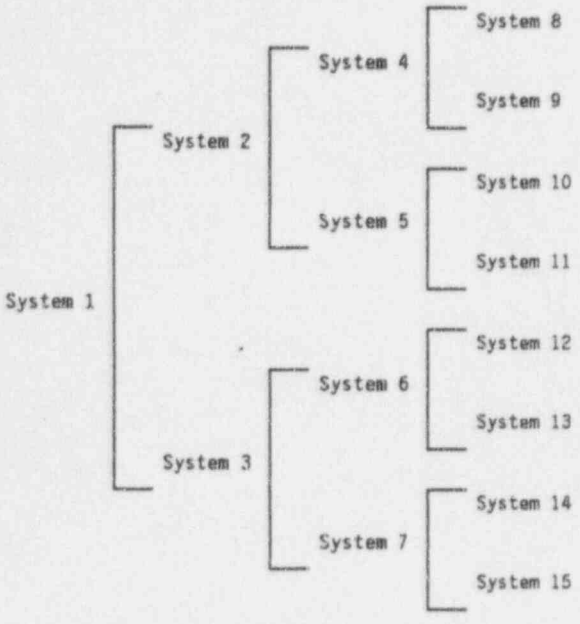
EXAMPLE B3.0.6-2
If System 2 of Train A is inoperable, and System 11 of Train B is inoperable, a loss of safety function exists in System 11 which is in turn supported by System 5.

EXAMPLE B3.0.6-3
If System 2 of Train A is inoperable, and System 1 of Train B is inoperable, a loss of safety function exists in Systems 2, 4, 5, 8, 9, 10 and 11.

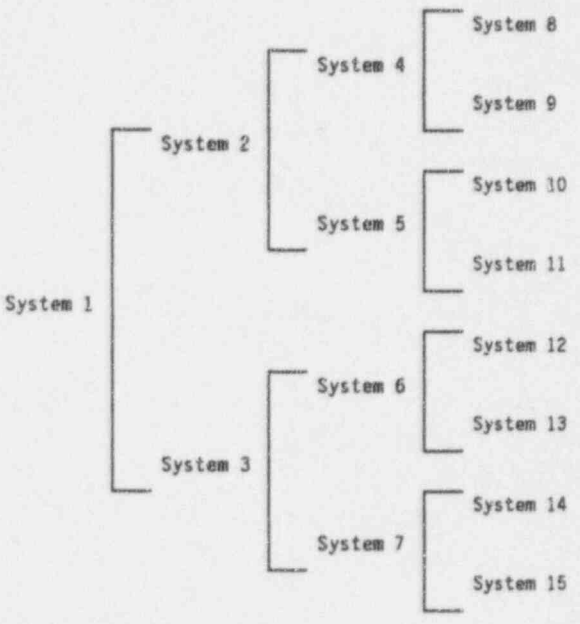
INSERT 2

EXAMPLES

TRAIN A



TRAIN B



LCO 3.0.6 (continued)

When a support system is inoperable and there is an LCO specified for it in the TS, the supported system(s) are required to be declared inoperable if determined to be inoperable as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Actions unless directed to do so by the support system's Required Actions. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported systems' LCOs' Conditions and Required Actions are eliminated by providing all the actions that are necessary to ensure the unit is maintained in a safe condition in the support system's Required Actions.

However, there are instances where a support system's Required Action may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Actions for the supported system. This may occur immediately or after some specified delay to perform some other Required Action. Regardless of whether it is immediate or after some delay, when a support system's Required Action directs a supported system to be declared inoperable or directs entry in Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

Specification 5.5.15, "Safety Function Determination Program (SFDP)," ensures loss of safety function is detected and appropriate actions are taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other limitations, remedial actions, or compensatory actions may be identified as a result of the support system inoperability and corresponding exception to entering supported system Conditions and Required Actions. The SFDP implements the requirements of LCO 3.0.6.

Cross train checks to identify a loss of safety function for those support systems that support multiple and redundant safety systems are required. The cross train check verifies that the supported systems of the remaining OPERABLE support systems are OPERABLE, thereby ensuring safety function is retained. If this evaluation determines that a loss of safety function exists, the appropriate Conditions and

Insert 1

(continued

LCO 3.0.6 (continued)

Required Actions of the LCO in which the loss of safety function exists are required to be entered.

Insert 2 →

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Test Exception LCOs [3.1.9, 3.1.10, 3.1.11, and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Test Exception LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Test Exception LCOs is optional. A special operation may be performed either under the provisions of the appropriate Test Exception LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Test Exception LCO, the requirements of the Test Exception LCO shall be followed.

TSTF-71, Rev. 1

BASES

Insert 1

LCO 3.0.6 (continued)

system are OPERABLE, thereby ensuring safety function is retained. If this evaluation determines that a loss of safety function exists, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

Insert 2 →

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Test Exception LCOs [3.1.9, 3.1.10, 3.1.11, and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Test Exception LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Test Exception LCOs is optional. A special operation may be performed either under the provisions of the appropriate Test Exception LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Test Exception LCO, the requirements of the Test Exception LCO shall be followed.

insert 1

LCO 3.0.6 (continued) retained. If this evaluation determines that a loss of safety function exists, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

Insert 2

LCO 3.0.7 Special tests and operations are required at various times over the unit's life to demonstrate performance characteristics, to perform maintenance activities, and to perform special evaluations. Because TS normally preclude these tests and operations, special test exceptions (STEs) allow specified requirements to be changed or suspended under controlled conditions. STEs are included in applicable sections of the Specifications. Unless otherwise specified, all other TS requirements remain unchanged and in effect as applicable. This will ensure that all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed or suspended to perform the special test or operation will remain in effect.

The Applicability of an STE LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with STE LCOs is optional.

A special test may be performed under either the provisions of the appropriate STE LCO or the other applicable TS requirements. If it is desired to perform the special test under the provisions of the STE LCO, the requirements of the STE LCO shall be followed. This includes the SRs specified in the STE LCO.

Some of the STE LCOs require that one or more of the LCOs for normal operation be met (i.e., meeting the STE LCO requires meeting the specified normal LCOs). The Applicability, ACTIONS, and SRs of the specified normal LCOs, however, are not required to be met in order to meet the STE LCO when it is in effect. This means that, upon failure to meet a specified normal LCO, the associated ACTIONS of the STE LCO apply, in lieu of the ACTIONS of the normal LCO. Exceptions to the above do exist. There are instances when the Applicability of the specified normal LCO must be met, where its ACTIONS must be taken, where certain of its Surveillances must be performed, or where all of

(continued)

(continued) specified for it in the TS, the supported system(s) are required to be declared inoperable if determined to be inoperable as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Actions unless directed to do so by the support system's Required Actions. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported systems' LCOs' Conditions and Required Actions are eliminated by providing all the actions that are necessary to ensure the plant is maintained in a safe condition in the support system's Required Actions.

However, there are instances where a support system's Required Action may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Actions for the supported system. This may occur immediately or after some specified delay to perform some other Required Action. Regardless of whether it is immediate or after some delay, when a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

Specification 5.5.12, "Safety Function Determination Program (SFDP)," ensures loss of safety function is detected and appropriate actions are taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other limitations, remedial actions, or compensatory actions may be identified as a result of the support system inoperability and corresponding exception to entering supported system Conditions and Required Actions. The SFDP implements the requirements of LCO 3.0.6.

Cross division checks to identify a loss of safety function for those support systems that support safety systems are required. The cross division check verifies that the supported systems of the redundant OPERABLE support system are OPERABLE, thereby ensuring safety function is retained. Insert 1 → If this evaluation determines that a loss of safety function exists, the appropriate Conditions and Required Actions of

(continued)

LCO 3.0.6 (continued) the LCO in which the loss of safety function exists are required to be entered.

Insert 2 →

LCO 3.0.7 There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Special Operations LCOs in Section 3.10 allow specified TS requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Special Operations LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Special Operations LCOs is optional. A special operation may be performed either under the provisions of the appropriate Special Operations LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Special Operations LCO, the requirements of the Special Operations LCO shall be followed. When a Special Operations LCO requires another LCO to be met, only the requirements of the LCO statement are required to be met regardless of that LCO's Applicability (i.e., should the requirements of this other LCO not be met, the ACTIONS of the Special Operations LCO apply, not the ACTIONS of the other LCO). However, there are instances where the Special Operations LCO ACTIONS may direct the other LCOs' ACTIONS be met. The Surveillances of the other LCO are not required to be met, unless specified in the Special Operations LCO. If conditions exist such that the Applicability of any other LCO is met, all the other LCO's requirements (ACTIONS and SRs) are required to be met concurrent with the requirements of the Special Operations LCO.

LCO 3.0.6 (continued)

Cross division checks to identify a loss of safety function for those support systems that support safety systems are required. The cross division check verifies that the supported systems of the redundant OPERABLE support system are OPERABLE, thereby ensuring safety function is retained. If this evaluation determines that a loss of safety function exists, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

Insert 1

Insert 2

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Special Operations LCOs in Section 3.10 allow specified TS requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Special Operations LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Special Operations LCOs is optional. A special operation may be performed either under the provisions of the appropriate Special Operations LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Special Operations LCO, the requirements of the Special Operations LCO shall be followed. When a Special Operations LCO requires another LCO to be met, only the requirements of the LCO statement are required to be met regardless of that LCO's Applicability (i.e., should the requirements of this other LCO not be met, the ACTIONS of the Special Operations LCO apply, not the ACTIONS of the other LCO). However, there are instances where the Special Operations LCO ACTIONS may direct the other LCOs' ACTIONS be met. The Surveillances of

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Change Specification 3.3.4 SR to agree with CEN-327

Classification: Correct Specifications

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

Remove RTCBs from SR 3.3.4.1 and SR 3.3.3.1 (Digital) Channel Functional Tests and make CFT of the RTCBs on a 31 day frequency.

Justification:

CEN-327-A, RPS/ESFAS Extended Test Interval Evaluation, Supplement 1, Section 4.0 states that the SR extension to 92 days is applicable to the bistables, bistable relays, logic matrix relays, K relays, and manual trip. The SR for the RTCBs should have a 31 day frequency.

Affected Technical Specifications

SR 3.3.3.1	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.2
SR 3.3.3.1	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Added new surveillance
SR 3.3.3.1 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Added new surveillance
SR 3.3.3.1 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.2
SR 3.3.3.2	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.3
SR 3.3.3.2 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.3
SR 3.3.3.3	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.4
SR 3.3.3.3 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.4
Ref. 3.3.4 Bases	RPS Logic and Trip Initiation (Digital)	
SR 3.3.4.1	RPS Logic and Trip Initiation (Digital)	
	Change Description:	Renumbered to 3.3.4.2
SR 3.3.4.1	RPS Logic and Trip Initiation (Digital)	
	Change Description:	Added new surveillance
SR 3.3.4.1 Bases	RPS Logic and Trip Initiation (Digital)	
	Change Description:	Added new surveillance
SR 3.3.4.1 Bases	RPS Logic and Trip Initiation (Digital)	
	Change Description:	Renumbered to 3.3.4.2

SR 3.3.4.2	RPS Logic and Trip Initiation (Digital)
	Change Description: Renumbered to 3.3.4.3
SR 3.3.4.2 Bases	RPS Logic and Trip Initiation (Digital)
	Change Description: Renumbered to 3.3.4.3
SR 3.3.4.3	RPS Logic and Trip Initiation (Digital)
	Change Description: Renumbered to 3.3.4.4
SR 3.3.4.3 Bases	RPS Logic and Trip Initiation (Digital)
	Change Description: Renumbered to 3.3.4.4

CEOG Review Information

CEOG-33

Originating Plant: Palo Verde Date Provided to OG: 14-Mar-96 Needed By: 01-Sep-96

Owners Group History:

Owners Group Resolution: Approved Date: 14-Mar-96

TSTF Review Information

TSTF Received Date: 12-Apr-96 Date Distributed to OGs for Review: 12-Apr-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

NA WOG, BWOG, BWRs

TSTF Resolution: Approved Date: 14-May-96 **TSTF- 79**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: C. Schulten Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
10/31/96 - Reference the topical report in the Bases insert to SR 3.3.4.1 (digital) and add the topical report to the list of references on Bases page B 3.3.78.
3/17/97 - Include Reference 4 in the proposed insert "CEN-327, June 2, 1986, including Supplement 1, March 3, 1989."
3/18/97 - TSTF agreed to make change.
4/11/97 - Revision prepared.

Final Resolution: NRC Requests Changes: TSTF Will Revise Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Included references to CEN-327 in the digital spec insert and added CEN-327 to list of references for digital.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

Insert (analog)

A CHANNEL FUNCTIONAL TEST is performed on each RTCB channel every 3 days. This verifies proper operation of each RTCB. The RTCB must then be closed prior to testing the other RTCBs, or a reactor trip may result. The Frequency of 31 days is based on the reliability analysis presented in Topical Report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," (Ref. 5).

Insert (digital)

SR 3.3.4.1

A CHANNEL FUNCTIONAL TEST is performed on each RTCB channel every 3 days. This verifies proper operation of each RTCB. The RTCB must then be closed prior to testing the other RTCBs, or a reactor trip may result. The Frequency of 31 days is based on the reliability analysis presented in Topical Report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," (Ref. 4).

TSTF-79, Rev. 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with two or more Manual Trip, Matrix Logic, Initiation Logic, or RTCB channels inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.~~2~~ 2	Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel. ~~and RTCB channel.~~	[92] days
SR 3.3.3.~~3~~ 3	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup
[SR 3.3.3.~~4~~ 4	Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	[18] months]
SR 3.3.3.1	Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel	[31] days

TSTF-79, Rev 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.4.~~1~~ 2 Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel. ~~and RTCB channel.~~	[92] days
SR 3.3.4.~~2~~ 3 Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	[18] months
SR 3.3.4.~~3~~ 4 Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup
SR 3.3.4.1 Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel	[31] days

BASES (continued)

SURVEILLANCE REQUIREMENTS

Reviewer's Note: In order for a plant to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that unit (Ref. 4).

INSERT (Analog)

SR 3.3.3.~~1~~ 2

A CHANNEL FUNCTIONAL TEST on each RPS Logic channel ~~and RTCB channel~~ is performed every [92] days to ensure the entire channel will perform its intended function when needed.

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference 3. These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. The first test, the bistable test, is addressed by SR 3.3.1.4 in LCO 3.3.1.

This SR addresses the two tests associated with the RPS Logic: Matrix Logic and Trip Path.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic such as may be caused by faulty bistable relay or trip channel bypass contacts.

Trip Path Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

(continued)

SURVEILLANCE REQUIREMENTS

Trip Path Tests (continued)

The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 5).

SR 3.3.3.2 (3)

A CHANNEL FUNCTIONAL TEST on the Manual Trip channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. The Manual Trip Function can be tested either at power or shutdown. However, the simplicity of this circuitry and the absence of drift concern makes this Frequency adequate. Additionally, operating experience has shown that these components usually pass the Surveillance when performed once within 7 days prior to each reactor startup.

SR 3.3.3.3 (4)

Each RTCB is actuated by an undervoltage coil and a shunt trip coil. The system is designed so that either de-energizing the undervoltage coil or energizing the shunt trip coil will cause the circuit breaker to open. When an RTCB is opened, either during an automatic reactor trip or by using the manual push buttons in the control room, the undervoltage coil is de-energized and the shunt trip coil is energized. This makes it impossible to determine if one of the coils or associated circuitry is defective.

Therefore, once every 18 months, a CHANNEL FUNCTIONAL TEST is performed that individually tests all four sets of undervoltage coils and all four sets of shunt trip coils. During undervoltage coil testing, the shunt trip coils shall remain de-energized, preventing their operation. Conversely, during shunt trip coil testing, the undervoltage coils shall remain energized, preventing their operation. This Surveillance ensures that every undervoltage coil and every shunt trip coil is capable of performing its intended function and that no single active failure of any RTCB component will prevent a reactor trip. 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.~~6~~ 4 (continued)

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

If one set of RTCBs has been opened in response to a single RTCB channel, Initiation Logic channel, or Manual Trip channel failure, the affected set of RTCBs may be closed for up to 1 hour for Surveillance on the OPERABLE Initiation Logic, RTCB, and Manual Trip channels. In this case, the redundant set of RTCBs will provide protection if a trip should be required. It is unlikely that a trip will be required during the Surveillance, coincident with a failure of the remaining series RTCB channel. If a single matrix power supply or vital bus failure has opened two sets of RTCBs, Manual Trip and RTCB testing on the closed breakers cannot be performed without causing a trip.

REFERENCES

1. 10 CFR 50, Appendix A.
2. 10 CFR 100.
3. FSAR, Section [7.2].
4. NRC Safety Evaluation Report, [Date].
5. CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.

TSTF-79, Rev. 1

BASES

ACTIONS

D.1 (continued)

If the affected RTCB cannot be opened, Required Action E is entered. This would only occur if there is a failure in the Manual Trip circuitry or the RTCB(s).

E.1 and E.2

Condition E is entered if Required Actions associated with Condition A, B, or D are not met within the required Completion Time or, if for one or more Functions, more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel is inoperable for reasons other than Condition A or D.

If the RTCBs associated with the inoperable channel cannot be opened, the reactor must be shut down within 6 hours and all the RTCBs opened. A Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems and for opening RTCBs. All RTCBs should then be opened, placing the plant in a MODE where the LCO does not apply and ensuring no CEA withdrawal occurs.

SURVEILLANCE REQUIREMENTS

In order for a unit to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that unit (Ref. 4).

Insert (digital)

SR 3.3.4.~~1~~2

A CHANNEL FUNCTIONAL TEST on each RPS Logic channel ~~and RTCB channel~~ is performed every [92] days to ensure the entire channel will perform its intended function when needed.

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference 3. These tests verify that the RPS is capable of performing its intended function, from

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.4.2 (continued)

bistable input through the RTCBs. The first test, the bistable test, is addressed by SR 3.3.1.7 in LCO 3.3.1.

This SR addresses the two tests associated with the RPS Logic: Matrix Logic and Trip Path.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic such as may be caused by faulty bistable relay or trip channel bypass contacts.

Trip Path Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 5).

Additionally, operating experience has shown that these components usually pass the Surveillance when performed at a Frequency of once every 7 days prior to each reactor startup.

SR 3.3.4.3

Each RTCB is actuated by an undervoltage coil and a shunt trip coil. The system is designed so that either de-energizing the undervoltage coil or energizing the shunt trip coil will cause the circuit breaker to open. When an RTCB is opened, either during an automatic reactor trip or

(continued)

TSTF-79, Rev. 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.4.~~2~~3 (continued)

by using the manual push buttons in the control room, the undervoltage coil is de-energized and the shunt trip coil is energized. This makes it impossible to determine if one of the coils or associated circuitry is defective.

Therefore, once every [18] months, a CHANNEL FUNCTIONAL TEST is performed that individually tests all four sets of undervoltage coils and all four sets of shunt trip coils. During undervoltage coil testing, the shunt trip coils must remain de-energized, preventing their operation. Conversely, during shunt trip coil testing, the undervoltage coils must remain energized, preventing their operation. This Surveillance ensures that every undervoltage coil and every shunt trip coil is capable of performing its intended function and that no single active failure of any RTCB component will prevent a reactor trip. 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 these components usually pass the Surveillance when performed at the Frequency of once every [18] months.

SR 3.3.4.~~3~~4

A CHANNEL FUNCTIONAL TEST on the Manual Trip channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. The Manual Trip Function can only be tested at shutdown. However, the simplicity of this circuitry and the absence of drift concern make this Frequency adequate.

REFERENCES

1. 10 CFR 50, Appendix A.

2. 10 CFR 100.

3. FSAR, Section [7.2].

4. CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Added Shutdown Track Action for Loss of Load and APD Trips

Classification: Correct Specifications

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

A shutdown track Action was added for the Loss of Load and APD trip functions which requires a power reduction to less than 15% RTP when the Required Actions and associated Completion Times cannot be met.

Also, a footnote was added to Table 3.3.1-1 for the Loss of Load and APD Trip functions which changes the Applicability for the Functions to Mode 1 above 15% RTP. Note that this change is duplicative of the changes made in TSTF-85. If TSTF-85 is approved, the additional footnote is not needed.

Justification:

The Loss of Load and APD trip functions are bypassed when Thermal Power is less than 15% RTP and the bypass is required to be automatically removed when Thermal Power is greater than or equal to 15% RTP. See LCO 3.3.1 Bases, Items 8 and 10 and Table 3.3.1-1, Notes (b) and (d). APD is bypassed because there is insufficient neutron flux reaching the excore detectors to provide an accurate measurement of Axial Power Distribution. Note that SRs 3.3.1.2 and 3.3.1.3 do not require calibration of the excore detectors before reactor power exceeds 20%. Loss of Load is bypassed because the turbine is not latched and a loss of load would have no effect on the reactor. As a result, the safety analyses do not credit the action of the APD or Loss of Load trips for events that occur below 15% power and the trips are not required to be operable.

The Applicability of LCO 3.3.1 is Modes 1 and 2. Therefore, the APD and Loss of Load trips are required to be operable in Mode 2, even though they are bypassed and are not required to perform their safety function. This conflicts with 10 CFR 50.36 which states that the LCO is the lowest functional capability or performance levels of equipment required for safe operation of the facility. Clearly, in Mode 2 the APD and Loss of Load trips do not meet that requirement. This is also inconsistent with the Applicability Bases, which state that the APD - High trip and Loss of Load are only applicable in Mode 1.

NUREG-1432, Specification 3.3.1 (digital) specifies that the Applicability of the Loss of Load function is Mode 1, not Modes 1 and 2 (See Table 3.3.1-1, Function 13). (Note that the digital plants do not have an APD trip.)

Therefore, a Note is added to Table 3.3.1-1, Items 8 and 10, which states that the APD and Loss of Load trips are only applicable in Mode 1 >= 15% power. This table associates Surveillance requirements to RPS functions. Without this Note, the referenced Surveillances would have to be able to be met or the function is inoperable per SR 3.0.1. These Surveillances may not be able to be performed when the Functions are bypassed and are certainly not required for operability.

This change also adds a Condition for inoperable APD or Loss of Load trips. The Required Action is to reduce reactor power below 15% RTP; a regime in which the APD and Loss of Load trips are not required. This is consistent with other Required Actions which direct the plant to be taken out of the mode of applicability.

These changes accurately describe the safety function performed by the APD and Loss of Load trips and provide appropriate Surveillances and Required Actions.

Affected Technical Specifications

LCO 3.3.1 Bases	RPS Instrumentation - Operating (Analog)
Appl. 3.3.1 Bases	RPS Instrumentation - Operating (Analog)

SR 3.3.1	RPS Instrumentation - Operating (Analog)
	Change Description: Table 3.3.1-1, Items 8 and 10, added Note (e)
Action 3.3.1.F	RPS Instrumentation - Operating (Analog)
	Change Description: Renumbered to Action G
Action 3.3.1.F	RPS Instrumentation - Operating (Analog)
	Change Description: Added new Action
Action 3.3.1.F Bases	RPS Instrumentation - Operating (Analog)
	Change Description: Renumbered to Action G
Action 3.3.1.F Bases	RPS Instrumentation - Operating (Analog)
	Change Description: Added new Action

CEOG Review Information

CEOG-34

Originating Plant: Calvert Cliffs Date Provided to OG: 14-Mar-96 Needed By: 01-Sep-96

Owners Group History:

Owners Group Resolution: Approved Date: 14-Mar-96

TSTF Review Information

TSTF Received Date: 12-Apr-96 Date Distributed to OGs for Review: 12-Apr-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

NA WOG, BWOG, BWRs

TSTF Resolution: Approved Date: 14-May-96 **TSTF- 80**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: C. Schulten Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
10/31/96 - Lacks technical justification for changes that eliminate Mode 2 requirements for Axial Power and Loss of Load RPS functions. In addition, the package is incomplete. It does not include markup of all affected Table and LCO pages.
3/14/97 - Package is rejected due to lack of justification and need.
4/11/97 - Revision prepared addressing the NRC's basis for rejection. TSTF to contact C. Schulten to determine in what way the package is incomplete.

Final Resolution: NRC Rejects: TSTF to Pursue Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Revised Justification based on NRC comment that change had insufficient justification. For simplicity of review, removed reference to TSTF-85 from the Table 3.3.1-1 markup. An additional Bases markup for Loss of Load (page B 3.3-22) was added.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

5/15/97

TSTF-80, Rev. 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. (continued)	D.2.2.1 Restore bypass removal channel and affected trip units to OPERABLE status.	[48] hours
	[OR	
	D.2.2.2 Place affected trip units in trip.]	48 hours
E. One or more Functions with two automatic bypass removal channels inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	E.1 Disable bypass channels.	1 hour
	[OR	
	E.2.1 Place one affected trip unit in bypass and place the other in trip for each affected trip Function.	1 hour
	AND	
	E.2.2 Restore one bypass channel and the associated trip unit to OPERABLE status for each affected trip Function.]	[48] hours
F. (G) Required Action and associated Completion Time not met.	F. (G) 1 Be in MODE 3.	6 hours

except for Axial Power Distribution or Loss of Load Trip Functions

F. Required Action and associated Completion Time not met for Axial Power Distribution and Loss of Load Trip Functions | F.1 Reduce THERMAL POWER to < 15% RTP | 6 hours

TSTF-80, Rev. 1

Table 3.3.1-1 (page 2 of 2)
Reactor Protective System Instrumentation

FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
8. Axial Power Distribution – High(d)(e)	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	Figure 3.3.1-3
9a. Thermal Margin/Low Pressure (TM/LP)(b)	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 [SR 3.3.1.8] SR 3.3.1.9	Figures 3.3.1-1 and 3.3.1-2
9b. Steam Generator Pressure Difference(b)	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [135] psid
10. Loss of Load (turbine stop valve control oil pressure)(d)(e)	SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8	≥ [800] psig

(b) Trips may be bypassed when THERMAL POWER is < [1E-4]%. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP. During testing pursuant to LCO 3.4.17, trips may be bypassed below 5% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ 5% RTP.

(d) Trip may be bypassed when THERMAL POWER is < [15]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [15]% RTP.

(e) Trip is only applicable in MODE 1 ≥ 15% RTP.

LCO (continued) 7a, 7b. Steam Generator Level—Low

This LCO requires four channels of Steam Generator Level—Low per steam generator to be OPERABLE in MODES 1 and 2.

The Allowable Value is sufficiently below the normal operating level for the steam generators so as not to cause a reactor trip during normal plant operations. The trip setpoint is high enough to ensure a reactor trip signal is generated before water level drops below the top of the feed ring. The difference between the Allowable Value and the measurement value includes 10 inches of measurement uncertainty. The specified setpoint ensures there will be sufficient water inventory to provide a 10 minute margin before auxiliary feedwater is required for the removal of decay heat.

8. Axial Power Distribution (APD)—High

This LCO requires four channels of APD—High to be OPERABLE in MODE 1 $\geq$ 15% RTP.

The Allowable Value curve was derived from an analysis of many axial power shapes with allowances for instrumentation inaccuracies and the uncertainty associated with the excore to incore ASI relationship.

The APD trip is automatically bypassed at < 15% RTP, where it is not required for reactor protection.

9. Thermal Margin

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

This LCO requires four channels of TM/LP to be OPERABLE in MODES 1 and 2.

The Allowable Value includes allowances for equipment response time, measurement uncertainties, processing error, and a further allowance to compensate for the time delay associated with providing effective termination

(continued)

TSTF-80, Rev. 1

BASES

LCO

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

of the occurrence that exhibits the most rapid decrease in margin to the SL.

This trip may be manually bypassed when THERMAL POWER falls below 1E-4% RTP. This bypass is part of the ZPMB circuitry, which also bypasses the Reactor Coolant Flow – Low trip and provides a ΔT power block signal to the Q power select logic. This ZPMB allows low power physics testing at reduced RCS temperatures and pressures. It also allows heatup and cooldown with shutdown CEAs withdrawn.

b. Steam Generator Pressure Difference

This LCO requires four channels of Steam Generator Pressure Difference to be OPERABLE in MODES 1 and 2.

The Allowable Value is high enough to avoid trips caused by normal operation and minor transients, but ensures DNBR protection in the event of Design Basis Events. The difference between the Allowable Value and the 175 psia analysis setpoint allows for 40 psia of measurement uncertainty.

The trip may be bypassed when THERMAL POWER falls below 1E-4% RTP. The Steam Generator Pressure Difference is subject to the ZPMB, since it is an input to the TM/LP trip and is not required for protection at low power levels.

10. Loss of Load

≥ 15% RTP

The LCO requires four Loss of Load trip channels to be OPERABLE in MODE 1.

The Loss of Load trip may be bypassed when THERMAL POWER falls below 15%, since it is no longer needed to prevent lifting of the pressurizer safety valves, steam generator safety valves, or PORVs in the event of a Loss of Load. The Nuclear Steam Supply System

(continued)

LCO

10. Loss of Load (continued)

and the Steam Dump System are capable of accommodating the Loss of Load without requiring the use of the above equipment.

Interlocks/Bypasses

The LCO on bypass permissive removal channels requires that the automatic bypass removal feature of all four operating bypass channels be OPERABLE for each RPS Function with an operating bypass in the MODES addressed in the specific LCO for each Function. All four bypass removal channels must be OPERABLE to ensure that none of the four RPS channels are inadvertently bypassed.

The LCO applies to the bypass removal feature only. If the bypass enable Function is failed so as to prevent entering a bypass condition, operation may continue.

The interlock Allowable Values are based on analysis requirements for the bypassed functions. These are discussed above as part of the LCO discussion for the affected Functions.

APPLICABILITY

This LCO is applicable in MODES 1 and 2. Most RPS trips are required to be OPERABLE in MODES 1 and 2 because the reactor is critical in these MODES. The trips are designed to take the reactor subcritical, maintaining the SLs during AOOs and assisting the ESFAS in providing acceptable consequences during accidents. Exceptions are addressed in footnotes to the table. Exceptions to this APPLICABILITY are:

≥ 15% RTP

- The APD—High Trip and Loss of Load are only applicable in MODE 1 because they may be automatically bypassed at < 15% RTP, where they are no longer needed.

- The Power Rate of Change—High trip, RPS Logic, RTCBs, and Manual Trip are also required in MODES 3, 4, and 5, with the RTCBs closed, to provide protection for boron dilution and CEA withdrawal events. The Power Rate of Change—High trip in these lower MODES is addressed in LCO 3.3.2, "Reactor Protective System

(continued)

TSTF-80, Rev. 1

BASES

ACTIONS

E.1, E.2.1, and E.2.2 (continued)

INSERT F.1

failure affecting both of the OPERABLE channels during the [48] hours permitted is remote.

6 F.1

Condition 6 is entered when the Required Action and E F associated Completion Time of Condition A, B, C, D, or E are not met.

If the Required Actions associated with these Conditions cannot be completed within the required Completion Times, the reactor must be brought to a MODE in which the Required Actions do not apply. The allowed Completion Time of 6 hours to be in MODE 3 is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

The SRs for any particular RPS Function are found in the SR column of Table 3.3.1-1 for that Function. Most Functions are subject to CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, CHANNEL CALIBRATION, and response time testing.

[Reviewer's Note: In order for a plant to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff SER that establishes the acceptability of each topical report for that plant (Ref. 8).]

SR 3.3.1.1

Performance of the CHANNEL CHECK once every 12 hours ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication

(continued)

TSTF-80, Rev. 1

INSERT F.1

F.1

Condition F is entered when the Required Action and associated Completion Time of Condition A, B, C, D, or E are not met for the Axial Power Distribution and Loss of Load Trip Functions.

If the Required Actions associated with these Conditions cannot be completed within the required Completion Times, the reactor must be brought to a MODE in which the Required Actions do not apply. The allowed Completion Time of 6 hours to reduce THERMAL POWER to < 15% RTP is reasonable, based on operating experience to decrease power to < 15% RTP from full power conditions in an orderly manner and without challenging plant systems.

Industry/TSTF Standard Technical Specification Change Traveler

Move Allowable Value from LCO 3.3.2 to SR 3.3.2.4

Classification: Consistency/Standardization

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

The Allowable Value for the Power Rate of Change - High Trip function in LCO 3.3.2 was moved from the LCO to SR 3.3.2.4.

Justification:

The ITS convention is to provide Allowable Values in the Surveillances, not in the LCO. (See the Specifications in Sections 3.3, 3.4, and 3.7). This change is for consistency.

Affected Technical Specifications

LCO 3.3.2	RPS Instrumentation - Shutdown (Analog)
LCO 3.3.2	RPS Instrumentation - Shutdown (Digital)
LCO 3.3.2 Bases	RPS Instrumentation - Shutdown (Analog)
LCO 3.3.2 Bases	RPS Instrumentation - Shutdown (Digital)
SR 3.3.2.4	RPS Instrumentation - Shutdown (Analog)
SR 3.3.2.4	RPS Instrumentation - Shutdown (Digital)
SR 3.3.2.4 Bases	RPS Instrumentation - Shutdown (Analog)
SR 3.3.2.4 Bases	RPS Instrumentation - Shutdown (Digital)

CEOG Review Information

CEOG-36

Originating Plant: Calvert Cliffs Date Provided to OG: 14-Mar-96 Needed By: 01-Sep-96

Owners Group History:

Owners Group Resolution: Approved Date: 14-Mar-96

TSTF Review Information

TSTF Received Date: 12-Apr-96 Date Distributed to OGs for Review: 12-Apr-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

NA WOG, BWOG, BWRs

TSTF Resolution: Approved Date: 14-May-96 **TSTF- 82**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: C. Schulten Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
10/13/96 - The package is incomplete without confirming Bases changes. In addition, the proposed changes do not agree in format and substance to the statement of allowable Value requirements used in the STS SRs. Proposed changes should be submitted that agree with the format of SR 3.3.7.2 (Analog): "Verify the Power Rate of Change - High setpoint and Allowable Value is equal to or less than [2.6] dpm."
3/24/97 - C. Grimes modified package based on above comment.
4/11/97 - Revision prepared.

Final Resolution: NRC Requests Changes: TSTF Considering Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Added necessary Bases revision. The NRC suggested revising the SR addition to match SR 3.3.7.2. However, TSTF-186 revises SR 3.3.7.2 because it is incorrect. Therefore, the insert was modeled after NUREG-1430, SR 3.3.15.3 and SR 3.3.16.3. The resulting insert states, "Perform Channel Calibration, including bypass removal functions, with allowable value =< [2.6] dpm."

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

TSTF-82, Rev. 1

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation—Shutdown (Analog)

LCO 3.3.2 Four Power Rate of Change—High RPS trip units and associated instrument channels shall be OPERABLE~~, with an Allowable Value of ≤ [2.6] dpm~~.

APPLICABILITY: MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn.

---NOTE---
Trip may be bypassed when THERMAL POWER is < [1E-4]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One Power Rate of Change—High trip unit or associated instrument channel inoperable.	A.1	Place affected trip unit in bypass or trip.	1 hour
	AND		
	A.2.1	Restore channel to OPERABLE status.	[48] hours
	[OR		
	A.2.2	Place affected trip unit in trip.	48 hours]

(continued)

TSTF-82, Rev. 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform a CHANNEL CHECK of each wide range power channel.	12 hours
SR 3.3.2.2	Perform a CHANNEL FUNCTIONAL TEST on the Power Rate of Change trip function.	92 days
SR 3.3.2.3	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	92 days
SR 3.3.2.4	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform a CHANNEL CALIBRATION, including bypass removal functions.	[18] months

, with allowable value ≤ [2.6] dpm.

TSTF-82, Rev 1

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation—Shutdown (Digital)

LCO 3.3.2 Four RPS Logarithmic Power Level—High trip channels and associated instrument and bypass removal channels shall be OPERABLE. ~~Trip channels shall have an Allowable Value of ≤ [.93]% RTP.~~

APPLICABILITY: MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn.

---NOTE---
Trip may be bypassed when THERMAL POWER is > [1E-4]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≤ [1E-4]% RTP.

ACTIONS

---NOTE---
If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed in accordance with Specification 5.5.1.2.e.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RPS logarithmic power level trip channel inoperable.	A.1	Place channel in bypass or trip.	1 hour
	AND		
	A.2	Restore channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry

(continued)

TSTF-82, Rev 1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.4	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function.	[18] months
SR 3.3.2.5	Verify RPS RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS

- with allowable value for trip channels ≤ [.93]% RTP.

TSTF-82, Rev 1

BASES

LCO (continued)

Actions allow maintenance (trip channel) bypass of individual channels, but the bypass activates interlocks that prevent operation with a second channel in the same Function bypassed. Plants are restricted to 48 hours in a trip channel bypass condition before either restoring the Function to four channel operation (two-out-of-four logic) or placing the channel in trip (one-out-of-three logic). At plants where adequate channel to channel independence has been demonstrated, specific exceptions have been approved by the NRC staff to permit one of the two-out-of-four channels to be bypassed for an extended period of time.

Only the Allowable Values are specified for each RPS trip Function ~~in the LCO~~. Nominal trip setpoints are specified in the plant specific setpoint calculations. The nominal setpoints are selected to ensure the setpoints measured by CHANNEL FUNCTIONAL TESTS do not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable, provided that operation and testing are consistent with the assumptions of the plant specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "Plant Protection System Selection of Trip Setpoint Values" (Ref. 4).

Move to pg. B 3.3-47

This LCO requires four channels of Power Rate of Change—High to be OPERABLE in MODES 3, 4, and 5, when the RTCBs are closed and the CEA Drive System is capable of CEA withdrawal. MODE 1 and 2 requirements are addressed in LCO 3.3.1. This trip is not credited in the safety analysis. Therefore, the Allowable Value is not derived from an analytical limit.

specified in SR 3.3.4.2

APPLICABILITY

This LCO is applicable to the Power Rate of Change—High reactor trip in MODES 3, 4 and 5. MODES 1 and 2 are addressed in LCO 3.3.1.

The power rate of change trip is required in MODES 3, 4, and 5, with the RTCBs closed and a CEA capable of being withdrawn to provide backup protection for boron dilution

(continued)

TSTF-82, Rev 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.4 (continued)

operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

INSERT from pg. B 3.3-40

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [5].

The Frequency is based upon the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift.

The Surveillance is modified by a Note to indicate that the neutron detectors are excluded from CHANNEL CALIBRATION because they are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal.

REFERENCES

1. 10 CFR 50, Appendix A.

2. 10 CFR 100.

3. FSAR, Chapter [14].

4. "Plant Protection System Selection of Trip Setpoint Values."

5. CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.

LCO (continued)

Actions allow maintenance (trip channel) bypass of individual channels, but the bypass activates interlocks that prevent operation with a second channel in the same Function bypassed. With one channel in each Function trip channel bypassed, this effectively places the plant in a two-out-of-three logic configuration in those Functions. Plants are restricted to 48 hours in a trip channel bypass condition before either restoring the function to four channel operation (two-out-of-four logic) or placing the channel in trip (one-out-of-three logic).

Only the Allowable Values are specified for this RPS trip Function ~~in the LCO~~. Nominal trip setpoints are specified in the plant specific setpoint calculations. The nominal setpoint is selected to ensure the setpoint measured by CHANNEL FUNCTIONAL TESTS does not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the plant specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "Plant Protection System Selection of Trip Setpoint Values" (Ref. 4). A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

MOVE to pg. B 3.3-52

This LCO requires all four channels of the Logarithmic Power Level—High to be OPERABLE in MODE 2, and in MODE 3, 4, or 5 when the RTCBs are closed and the CEA Drive System is capable of CEA withdrawal.

specified in SR 3.3.4.2

The Allowable Value is high enough to provide an operating envelope that prevents unnecessary Logarithmic Power Level—High reactor trips during normal plant operations. The Allowable Value is low enough for the system to maintain a safety margin for unacceptable fuel cladding damage should a CEA withdrawal event occur.

The Logarithmic Power Level—High trip may be bypassed when THERMAL POWER is above 1E-4% RTP to allow the reactor to be brought to power during a reactor startup. This bypass is automatically removed when THERMAL POWER decreases below 1E-4% RTP. Above 1E-4% RTP, the Linear Power Level—High

(continued)

TSTF-82, Rev 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.3 (continued)

functions and is performed once within 92 days prior to each startup. This SR is identical to SR 3.3.1.13. Only the Applicability differs.

Proper operation of bypass permissives is critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. Consequently, the appropriate time to verify bypass removal function OPERABILITY is just prior to startup. The allowance to conduct this Surveillance within 92 days of startup is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 6). Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip Function gets inadvertently bypassed. This feature is verified by the trip Function CHANNEL FUNCTIONAL TEST, SR 3.3.2.2. Therefore, further testing of the bypass function after startup is unnecessary.

SR 3.3.2.4

SR 3.3.2.4 is the performance of a CHANNEL CALIBRATION every 18 months. This SR is identical to SR 3.3.1.10. Only the Applicability differs.

CHANNEL CALIBRATION is a complete check of the instrument channel excluding the sensor. The Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

INSERT from pg B 3.3-44

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [3].

The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Add MODES column to Table 3.3.1-1

Classification: Consistency/Standardization

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

An "Applicable Modes or Other Specified Conditions" column is added to Table 3.3.1-1 and the Applicability is changed to "According to Table 3.3.1-1". The Applicability of the APD and Loss of Load trips are changed to Mode 1, instead of Modes 1 and 2. This change is justified in TSTF-80.

Justification:

An "Applicable Modes or Other Specified Conditions" column is added to Table 3.3.1-1 so that it is possible to specify that the Loss of Load and Axial Power Distribution trip functions are applicable in Mode 1 only, not in Modes 1 and 2 as currently specified in the Applicability.

This change also makes Table 3.3.1 consistent with the equivalent table in the NUREG-1432 Digital specifications and LCO 3.3.1 in the B&W, Westinghouse, BWR/4 and BWR/6 specifications.

The only technical change in the Traveler is the change in Applicability for the APD and Loss of Load trips from Modes 1 and 2 to Mode 1. This change is described in TSTF-80.

This change increases the consistency and standardization between the ITS NUREGs and corrects an error in the current Applicability of the APD and Loss of Load trips.

Affected Technical Specifications

Appl. 3.3.1	RPS Instrumentation - Operating (analog)
Appl. 3.3.1 Bases	RPS Instrumentation - Operating (analog)
SR 3.3.1	RPS Instrumentation - Operating (analog)
	Change Description: Table 3.3.1-1

CEOG Review Information

CEOG-39

Originating Plant: Calvert Cliffs Date Provided to OG: 14-Mar-96 Needed By: 01-Sep-96

Owners Group History:

Owners Group Resolution: Approved Date: 14-Mar-96

TSTF Review Information

TSTF Received Date: 12-Apr-96 Date Distributed to OGs for Review: 12-Apr-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

NA WOG, BWOG, BWRs

TSTF Resolution: Approved Date: 14-May-96 **TSTF- 85**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: C. Schulten Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
11 12 96 - Insufficient technical justification and incomplete TS markups.
3/14/97 - Package is rejected due to lack of justification and need.
4/11/97 - Prepared revision providing additional justification for the change. TSTF to contact C. Schulten to determine in what way the package is incomplete.

Final Resolution: NRC Rejects: TSTF to Pursue Final Resolution Date: 14-Mar-97

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Revision addresses comment that by the NRC that the change is unjustified. The Justification section is replaced. While the NRC commented that the package was incomplete, no additional necessary changes were identified.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

TSTF-85, Rev. 1

3.3 INSTRUMENTATION

3.3.1 Reactor Protective System (RPS) Instrumentation—Operating (Analog)

LCO 3.3.1 Four RPS trip units and associated instrument and bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: ~~MODES 1 and 2.~~ According to Table 3.3.1-1

ACTIONS

---NOTE---
Separate Condition entry is allowed for each RPS trip or bypass removal Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one RPS trip unit or associated instrument channel inoperable except for Condition C (excore channel not calibrated with incore detectors).	A.1 Place affected trip unit in bypass or trip. AND A.2.1 Restore channel to OPERABLE status. OR A.2.2 Place affected trip unit in trip.	1 hour [48] hours 48 hours

(continued)

APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS

TSTF-85, Rev 1

Table 3.3.1-1 (page 1 of 2)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Variable High Power Trip	1, 2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.8 SR 3.3.1.9	≤ [10]% RTP above current THERMAL POWER but not < [30]% RTP nor > [107]% RTP
2. Power Rate of Change – High[a]	1, 2	SR 3.3.1.1 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8	≤ [2.6] dpm
3. Reactor Coolant Flow – Low[b]	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	≥ [95]%
4. Pressurizer Pressure – High	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [2400] psia
5. Containment Pressure – High	1, 2	[SR 3.3.1.1] SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [4.0] psig
6. Steam Generator Pressure – Low[c]	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	≥ [685] psia
7a. Steam Generator A Level – Low	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≥ [24.7]%
7b. Steam Generator B Level – Low	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≥ [24.7]%

(continued)

(a) Trip may be bypassed when THERMAL POWER is < [1E-4]% RTP or > [13]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP and ≤ [13]% RTP.

(b) Trips may be bypassed when THERMAL POWER is < [1E-4]%. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP. During testing pursuant to LCO 3.4.17, RCS Loops – Test Exceptions, trips may be bypassed below 5% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ 5% RTP.

(c) Trip may be bypassed when steam generator pressure is < [785] psig. Bypass shall be automatically removed when steam generator pressure is ≥ [785] psig.

APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS

TSTF-85, Rev. 1

Table 3.3.1-1 (page 2 of 2)
Reactor Protective System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
8.	Axial Power Distribution – High (b)	1 (d)	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	Figure 3.3.1-3
9a.	Thermal Margin/Low Pressure (TM/LP)(b)	1, 2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 [SR 3.3.1.8] SR 3.3.1.9	Figures 3.3.1-1 and 3.3.1-2
9b.	Steam Generator Pressure Difference(b)	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [135] psid
10.	Loss of Load (turbine stop valve control oil pressure) (b)	1 (d)	SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8	≥ [800] psig

(b) Trips may be bypassed when THERMAL POWER is < [1E-4]%. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP. During testing pursuant to LCO 3.4.17, trips may be bypassed below 5% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ 5% RTP.

(d) Trip may be bypassed when THERMAL POWER is < [15]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [15]% RTP.

is not applicable and

LCO

10. Loss of Load (continued)

and the Steam Dump System are capable of accommodating the Loss of Load without requiring the use of the above equipment.

Interlocks/Bypasses

The LCO on bypass permissive removal channels requires that the automatic bypass removal feature of all four operating bypass channels be OPERABLE for each RPS Function with an operating bypass in the MODES addressed in the specific LCO for each Function. All four bypass removal channels must be OPERABLE to ensure that none of the four RPS channels are inadvertently bypassed.

The LCO applies to the bypass removal feature only. If the bypass enable Function is failed so as to prevent entering a bypass condition, operation may continue.

The interlock Allowable Values are based on analysis requirements for the bypassed functions. These are discussed above as part of the LCO discussion for the affected Functions.

APPLICABILITY

This LCO is applicable in ~~MODES 1 and 2~~ accordance with Table 3.3.1-1. Most RPS trips are required to be OPERABLE in MODES 1 and 2 because the reactor is critical in these MODES. The trips are designed to take the reactor subcritical, maintaining the SLs during AOOs and assisting the ESFAS in providing acceptable consequences during accidents. Exceptions are addressed in footnotes to the table. Exceptions to this APPLICABILITY are:

- The APD—High Trip and Loss of Load are only applicable in MODE 1 at > 15% RTP because they may be automatically bypassed at < 15% RTP, where they are no longer needed.

- The Power Rate of Change—High trip, RPS Logic, RTCBs, and Manual Trip are also required in MODES 3, 4, and 5, with the RTCBs closed, to provide protection for boron dilution and CEA withdrawal events. The Power Rate of Change—High trip in these lower MODES is addressed in LCO 3.3.2, "Reactor Protective System

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Relocate the trip setpoints and allowable values for loss of voltage and undervoltage to the Bases

Classification: Improve Specifications

NUREGs Affected: ☑ 1430 ☑ 1431 ☑ 1432 ☑ 1433 ☑ 1434

Description:

The trip setpoints/allowable values for the loss of voltage and degraded voltage diesel generator start signals are being proposed for relocation to the Bases.

Justification:

The diesel generator loss of voltage and degraded voltage start signals are not parameters explicitly modeled in the plant safety analysis. However, the function of the loss of voltage start signal is implicitly assumed to function in response to a loss of offsite power. The degraded voltage diesel generator start signal is assumed for the protection and operability of equipment supplied by the respective ESF bus. Accordingly, the voltage limits may vary from bus to bus dependent on numerous factors including: equipment minimum voltage requirements, cable sizing, cable length, and relay accuracy. The presentation associated with specifying these values on a bus and unit specific basis would lead to an overly complex presentation which could lead to a significant number of license amendments over the life of the plant. Changes may be the result of: equipment additions or removals, motor changes, modifications, or undervoltage relay change-outs. Relay changes to more accurate instrumentation is likely in order to increase operational margins. Based on the above, it is proposed that the requirement to perform calibrations be retained as a Surveillance Requirement, while relocating the setpoint/allowable value to the Bases of the Technical Specification.

Affected Technical Specifications

SR 3.3.8.3	EDG LOPS	NUREG(s)- 1430 Only
SR 3.3.8.3 Bases	EDG LOPS	NUREG(s)- 1430 Only
SR 3.3.5.3	LOP DG Start Instrumentation	NUREG(s)- 1431 Only
SR 3.3.5.3 Bases	LOP DG Start Instrumentation	NUREG(s)- 1431 Only
SR 3.3.6.3	DG-LOVS (Analog)	NUREG(s)- 1432 Only
SR 3.3.6.3 Bases	DG-LOVS (Analog)	NUREG(s)- 1432 Only
SR 3.3.7.3	DG-LOVS (Digital)	NUREG(s)- 1432 Only
SR 3.3.7.3 Bases	DG-LOVS (Digital)	NUREG(s)- 1432 Only
SR 3.3.8.1.3	LOP Instrumentation	NUREG(s)- 1433 1434 Only
	Change Description: Changes to Table 3.3.8.1-1	
SR 3.3.8.1.3 Bases	LOP Instrumentation	NUREG(s)- 1433 1434 Only

WOG Review Information

WOG-17

Originating Plant: Date Provided to OG: 27-Nov-95 Needed By:

Owners Group History:

Owners Group Resolution: Approved Date: 27-Nov-95

5/16/97

TSTF Review Information

TSTF Received Date: 27-Nov-95 Date Distributed to OGs for Review: 27-Nov-95

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

Accepted by all

TSTF Resolution: Approved Date: 30-Apr-96 **TSTF- 91**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: C. Schulten Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
11/12/96 - TS 3.3.5 meets 10 CFR 50.36(c)(2)(ii). LCOs establish the lowest functional capability or performance levels of equipment required for safe operation of the facility. TSTF-91 is rejected because appropriate regulatory limits are not retained.
3/14/97 - C. Grimes rejects package based on above statement.
4/11/97 - Revision prepared addressing NRC's basis for rejection.

Final Resolution: NRC Rejects: TSTF to Pursue Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: TSTF

Revision Description:
The NRC rejected TSTF-91. The basis for revision was, "TS 3.3.5 meets 10 CFR 50.36(c)(2)(ii)C. LCOs establish the lowest functional capability or performance levels of equipment required for safe operation of the facility. TSTF-91 is rejected because appropriate regulatory limits are not retained."

TSTF Response: This logic is incorrect. ALL LCOs in the ITS NUREGs must meet the requirements in 10 CFR 50.36(c)(2)(ii) or they would have been relocated from the Technical Specifications. The NRC has stated repeatedly that the criteria cannot be applied to Surveillances; however, the rejection of this change is based on just such an inappropriate application.

The 10 CFR 50.36 requirements for a Surveillance are: Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

In TSTF-91, the requirement to calibrate the equipment is not being changed. The calibration will continue to ensure that the facility is operated within the safety limits and that any failures of the calibration will be considered under SR 3.0.3. Only the specific values of the calibration are relocated to the Bases.

Given that the basis for rejection was flawed, the regulations are met, and there is ample precedent for these types of values being controlled outside of Technical Specifications, we request that the NRC reconsider the rejection of TSTF-91.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 14-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

INSERT 1 (B&WOG)

The loss of voltage and degraded voltage setpoint Allowable Values shall be set as follows:

Insert from Surveillance Requirement 3.3.8.3

INSERT 2 (WOG)

The loss of voltage and degraded voltage [setpoint Allowable Value] [Trip Setpoint and Allowable Value] shall be set as follows:

Insert from Surveillance Requirement 3.3.5.3

INSERT 3 (CEOG - Analog)

The loss of voltage and degraded voltage setpoint Allowable Values shall be set as follows:

Insert from Surveillance Requirement 3.3.6.3

INSERT 4 (CEOG - Digital)

The loss of voltage and degraded voltage setpoint Allowable Values shall be set as follows:

Insert from Surveillance Requirement 3.3.7.3

INSERT 5 (BWR/4)

The loss of voltage and degraded voltage setpoint Allowable Values shall be set as follows:

a. Loss of voltage Allowable Value ≥ [2800] V and ≤ [ ] V with a time delay of ≥ [ ] seconds and ≤ [6.5] seconds

b. Degraded voltage Allowable Value ≥ [3280] V and ≤ [ ] V with a time delay of ≥ [ ] seconds and ≤ [21.5] seconds

INSERT 6 (BWR/6)

The loss of voltage and degraded voltage setpoint Allowable Values shall be set as follows:

1. Division 1 and 2

   a. Loss of voltage Allowable Value ≥ [2621] V and ≤ [2912] V with a time delay of ≥ [0.4] seconds and ≤ [1.0] seconds

   b. Degraded voltage Allowable Value ≥ [3744] V and ≤ [3837.6] V with a time delay of ≥ [8.5] seconds and ≤ [9.5] seconds

2. Division 3

   a. Loss of voltage Allowable Value ≥ 2984 V and ≤ 3106 V with a time delay of ≥ [2.0] seconds and ≤ [2.5] seconds

   b. Degraded voltage Allowable Value ≥ 3558.5 V and ≤ 3763.5 V with a No LOCA time delay of ≥ [4.5] minutes and ≤ [5.5] minutes and a LOCA time delay of ≥ [3.6] seconds and ≤ 4.4 seconds

TSTF-91, Rev. 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.8.2	----------NOTE---------- When EDG LOPS instrumentation is placed in an inoperable status solely for performance of this Surveillance, entry into associated Conditions and Required Actions may be delayed as follows: (a) up to 4 hours for the degraded voltage Function, and (b) up to 4 hours for the loss of voltage Function, provided the two channels monitoring the Function for the bus are OPERABLE or tripped. ---------- Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.8.3	Perform CHANNEL CALIBRATION with setpoint ~~Allowable Value as follows:~~ a. Degraded voltage ≥ [ ] and ≤ [ ] V with a time delay of [ ] seconds ± [ ] seconds at [ ] V; and b. Loss of voltage ≥ [ ] and ≤ [ ] V with a time delay of [ ] seconds ± [ ] seconds at [ ] V.	18 months

Relocate to Bases

SURVEILLANCE REQUIREMENTS

SR 3.3.8.3 (continued)

The Frequency is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an 18 month calibration interval in the determination of equipment drift in the setpoint calculation.

Insert 1 →

REFERENCES

1. FSAR, Section [8.3].
2. FSAR, Chapter [14].
3. IEEE-279-1971, April 1972.
4. [Unit Name], "[Unit Specific Setpoint Methodology]."

TSTF-91, Rev. 1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.5.3	Perform CHANNEL CALIBRATION with [setpoint Allowable Value] [Trip Setpoint and Allowable Value] as follows:	[18] months
	a. Loss of voltage Allowable Value ≥ [2912] V with a time delay of [0.8] ± [ ] second. Loss of voltage Trip Setpoint ≥ [2975] V with a time delay of [0.8] ± [ ] second.	
	b. Degraded voltage Allowable Value ≥ [3683] V with a time delay of [20] ± [ ] seconds. Degraded voltage Trip Setpoint ≥ [3746] V with a time delay of [20] ± [ ] seconds.	

Relocate to Bases

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.2

SR 3.3.5.2 is the performance of a TADOT. This test is performed every [31 days]. The test checks trip devices that provide actuation signals directly, bypassing the analog process control equipment. For these tests, the relay Trip Setpoints are verified and adjusted as necessary. The Frequency is based on the known reliability of the relays and controls and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

SR 3.3.5.3

Insert 2 →

SR 3.3.5.3 is the performance of a CHANNEL CALIBRATION.

The setpoints, as well as the response to a loss of voltage and a degraded voltage test, shall include a single point verification that the trip occurs within the required time delay, as shown in Reference 1.

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The Frequency of [18] months is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

REFERENCES

1. FSAR, Section [8.3].

2. FSAR, Chapter [15].

3. Unit Specific RTS/ESFAS Setpoint Methodology Study.

TSTF-91, Rev. 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.6.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.6.3	Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V; and b. Loss of Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V.	[18] months

Relocate to Bases →

TSTF-91, Rev. 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.7.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.7.3	Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V; and b. Loss of Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V.	[18] months

Relocate to Bases

TSTF-91, Rev. 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.3 (continued)

ensure that the channel remains operational between successive tests. CHANNEL CALIBRATION must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [6].

The setpoints, as well as the response to a Loss of Voltage and Degraded Voltage test, shall include a single point verification that the trip occurs within the required delay time as shown in Reference 1. The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.

Insert 3

REFERENCES

1. FSAR, Section [8.3].

2. FSAR, Chapter [15].

3. "Plant Protection System Selection of Trip Setpoint Values."

4. IEEE Standard 279-1971.

5. 10 CFR 50, Appendix A, GDC 21.

6. [ ]

SURVEILLANCE REQUIREMENTS

SR 3.3.7.3 (continued)

Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive surveillances to ensure the instrument channel remains operational. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [6].

The setpoints, as well as the response to a Loss of Voltage and Degraded Voltage test, shall include a single point verification that the trip occurs within the required delay time, as shown in Reference 1. The frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.

Insert 4

REFERENCES

1. FSAR, Section [8.3].
2. FSAR, Chapter [15].
3. "Plant Protection System Selection of Trip Setpoint Values."
4. IEEE Standard 279-1971.
5. 10 CFR 50, Appendix A, GDC 21.
6. [ ].

TSTF-91, Rev. 1

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER BUS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)			
a. Bus Undervoltage	[2]	[SR 3.3.8.1.1] SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [2800] V and ≤ [ ] V
b. Time Delay	[2]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [ ] seconds and ≤ [6.5] seconds
2. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)			
a. Bus Undervoltage	[2]	[SR 3.3.8.1.1] SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [3280] V and ≤ [ ] V
b. Time Delay	[2]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [ ] seconds and ≤ [21.5] seconds

Relocate to Bases.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.1.3

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.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

Insert 5 →

SR 3.3.8.1.4

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

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 these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. FSAR, Figure [ ].
2. FSAR, Section [5.2].
3. FSAR, Section [6.3].
4. FSAR, Chapter [15].

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1 and 2 – 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV basis	[4]	[SR 3.3.8.1.1] SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [2621] V and ≤ [2912] V
b. Loss of Voltage – Time Delay	[4]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [0.4] seconds and ≤ [1.0] seconds
c. Degraded Voltage – 4.16 kV basis	[4]	[SR 3.3.8.1.1] SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [3744] V and ≤ [3837.6] V
d. Degraded Voltage – Time Delay	[4]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [8.5] seconds and ≤ [9.5] seconds
2. Division 3 – 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV basis	[4]	[SR 3.3.8.1.1] SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2984 V and ≤ 3106 V
b. Loss of Voltage – Time Delay	[4]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [2.0] seconds and ≤ [2.5] seconds
c. Degraded Voltage – 4.16 kV basis	[4]	[SR 3.3.8.1.1] SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 3558.5 V and ≤ 3763.5 V
d. Degraded Voltage – Time Delay, No LOCA	[4]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [4.5] minutes and ≤ [5.5] minutes
e. Degraded Voltage – Time Delay, LOCA	[4]	[SR 3.3.8.1.2] SR 3.3.8.1.3 SR 3.3.8.1.4	≥ [3.6] seconds and ≤ 4.4 seconds

Relocate to Bases

TSTF-91, Rev 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.1.3

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.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

Insert 6 →

SR 3.3.8.1.4

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

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 these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. FSAR, Figure [ ].
2. FSAR, Section [5.2].
3. FSAR, Section [6.3].
4. FSAR, Chapter [15].

Industry/TSTF Standard Technical Specification Change Traveler

Change the frequency of pressurizer heater testing from 92 days to [18] months

Classification: Plant Variation

NUREGs Affected: ☐ 1430 ☑ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

Change the frequency of pressurizer heater testing, SR 3.4.9.2, from 92 days to [18] months

Justification:

The frequency for SR 3.4.9.2 has been changed to once per 18 months with a reviewers note proposed for the Bases to explain the usage. For plants with dedicated safety related pressurizer heaters, which do not normally operate, the 92 day frequency is retained. For plants that do not have dedicated safety related heaters, the heaters are normally in operation and, therefore, an 18 month frequency is adequate. This change is in accordance with Section 6.6 of NUREG-1366.

Affected Technical Specifications

SR 3.4.9.2	Pressurizer
SR 3.4.9.2 Bases	Pressurizer

WOG Review Information

WOG-19

Originating Plant: Date Provided to OG: 27-Nov-95 Needed By:

Owners Group History:

Most Westinghouse and CE plants do not have dedicated safety-related heaters and can take advantage of this change.

Owners Group Resolution: Approved Date: 27-Nov-95

TSTF Review Information

TSTF Received Date: 27-Nov-95 Date Distributed to OGs for Review: 27-Nov-95

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

CEOG - accept for CEOG
BWOG - Not Applicable, already in NUREG
BWRs - Not Applicable

TSTF Resolution: Approved Date: 30-Apr-96 **TSTF- 93**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: M. Weston Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
10/30/96 - NRC: The proposed change in the Frequency and associated Bases are acceptable, provided that the explanation in the Bases is incorporated into the following insert in the SR:
---------- Reviewer's Note ----------
The frequency for performing Pressurizer heater capacity testing shall be either 18 months or 92 days, depending on whether or not the plant has dedicated safety-related heaters. For dedicated safety-related heaters, which do not normally operate, 92 days is applied. For non-dedicated safety-related heaters, which normally operate, 18 months is applied.

This note will provide consistent application of the SR and ensure that the distinction in design differences is not overlooked during the application of the STS.

11/17/96 - Revision created and forwarded to the TSTF
1/17/97 - Revision forwarded to the NRC.
3/5/97 - NRC reviewer recommends rejection based on TSTF revision not following NRC requested changes. NRC requested that Reviewer's Note be in the SR, not the Bases.
3/18/97 - TSTF to review Revision 1 against NRC requested changes and to resubmit any necessary changes as Rev. 2.
4/11/97 - TSTF created revision moving Reviewers Note from the Bases to the SR.

Final Resolution: NRC Requests Changes: TSTF Will Revise Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 30-Oct-96 Proposed by: NRC

Revision Description:
The NRC requested changes to the Reviewer's Note. Those changes were incorporated.

Distributed to TSTF: 11/20/96 Resolution: Approved Date: 19-Dec-96 Rev to NRC: 1/17/97

TSTF Revision 2 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Moved Reviewer's Note from the Bases to the SR.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

Insert 1

---------- Reviewer's Note ----------

The frequency for performing Pressurizer heater capacity testing shall be either 18 months or 92 days, depending on whether or not the plant has dedicated safety-related heaters. For dedicated safety-related heaters, which do not normally operate, 92 days is applied. For non-dedicated safety-related heaters, which normally operate, 18 months is applied.

TSTF-93, Rev. 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ [92]%.	12 hours
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ [125] kW.	92 days [18] months
[SR 3.4.9.3]	Verify required pressurizer heaters are capable of being powered from an emergency power supply.	[18] months]

<INSERT 1>

TSTF-93, Rev. 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1 (continued)

safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance. The Frequency of ~~92 days~~ [18] months is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable. [This frequency is consistent with NUREG-1366.]

SR 3.4.9.3

This SR is not applicable if the heaters are permanently powered by Class 1E power supplies.

This Surveillance demonstrates that the heaters can be manually transferred from the normal to the emergency power supply and energized. The Frequency of 18 months is based on a typical fuel cycle and is consistent with similar verifications of emergency power supplies.

REFERENCES

1. FSAR, Section [ ].

2. NUREG-0737, November 1980.

TSTF-93, Rev. 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is < [60]%.	12 hours
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters ≥ [150] kW.	~~92 days~~ [18] months
[SR 3.4.9.3	Verify required pressurizer heaters are capable of being powered from an emergency power supply.	[18] months]

<INSERT 1>

ACTIONS

C.1 and C.2 (continued)

within [12] hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging safety systems. Similarly, the Completion Time of [12] hours is reasonable, based on operating experience, to reach MODE 4 from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This Surveillance ensures that during steady state operation, pressurizer water level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess the level for any deviation and verify that operation is within safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.

SR 3.4.9.2

The Surveillance is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. (This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance.) The Frequency of [18] months ~~92 days~~ is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable. [This frequency is consistent with NUREG-1366.]

SR 3.4.9.3

This SR is not applicable if the heaters are permanently powered by 1E power supplies.

This Surveillance demonstrates that the heaters can be manually transferred to and energized by emergency power supplies. The Frequency of [18] months is based on a

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Remove number of required pressurizer heater groups from Pressurizer LCO

Classification: Plant Variation

NUREGs Affected: ☐ 1430 ☑ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

Bracket the phrase "Two groups of" in the LCO portion addressing pressurizer heaters.

Justification:

Reference to groups of pressurizer heaters has been bracketed to address the licensing basis of older plants which only required minimum capacity and no minimum number of groups.

Affected Technical Specifications

LCO 3.4.9	Pressurizer	
LCO 3.4.9 Bases	Pressurizer	
Action 3.4.9.B	Pressurizer	
Action 3.4.9.B Bases	Pressurizer	
Bkgnd 3.4.9 Bases	Pressurizer	NUREG(s)- 1432 Only
Action 3.4.9.C Bases	Pressurizer	NUREG(s)- 1432 Only

WOG Review Information

WOG-20

Originating Plant: Date Provided to OG: 27-Nov-95 Needed By:

Owners Group History:

Owners Group Resolution: Approved Date: 27-Nov-95

TSTF Review Information

TSTF Received Date: 27-Nov-95 Date Distributed to OGs for Review: 27-Nov-95

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

CEOG - Accept for CEOG.
NA BWOG
NA BWRs

TSTF Resolution: Approved Date: 30-Apr-96 **TSTF- 94**

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: M. Weston Reviewer Phone #:

Reviewer Comments:

9/18/96 - Review pending.
10/30/96 - NRC: The proposed changes are acceptable, provided that the bracketed provision for "and capable of being powered from an emergency power supply" is retained in the STS. This requirement is a reflection of a TMI action plan requirement that can not be adequately controlled by 10 CFR 50.59. This requirements is included in the licensing basis where it is important to maintain reactor coolant in a subcooled condition with natural circulation for an extended time period after a loss of offsite power.
3/18/97 - TSTF to prepare revision.
4/11/97 - Revision prepared.

Final Resolution: NRC Requests Changes: TSTF Will Revise Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Revised Traveler to retain the LCO bracketed requirement "And being capable of being powered from an emergency power supply."

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

TSTF-94, Rev 1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ [92]%; and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ [125] kW [and capable of being powered from an emergency power supply].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit.	A.1	Be in MODE 3 with reactor trip breakers open.	6 hours
	AND		
	A.2	Be in MODE 4.	12 hours
B. One [required] group of pressurizer heaters inoperable.	B.1	Restore [required] group of pressurizer heaters to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 4.	12 hours

- - - - Reviewer's Note - - -
Plants licensed prior to the issuance of NUREG-0737 may not have a requirement on the number of pressurizer groups.

BASES

BACKGROUND (continued)

a loss of single phase natural circulation and decreased capability to remove core decay heat.

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. Safety analyses performed for lower MODES are not limiting. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensible gases normally present.

Safety analyses presented in the FSAR (Ref. 1) do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

The maximum pressurizer water level limit satisfies Criterion 2 of the NRC Policy Statement. Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 2), is the reason for providing an LCO.

LCO

The LCO requirement for the pressurizer to be OPERABLE with a water volume ≤ [1240] cubic feet, which is equivalent to [92]%, ensures that a steam bubble exists. Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires [two groups] of OPERABLE pressurizer heaters, each [with a capacity ≥ [125] kW, capable of being powered from either the offsite power source or the emergency power supply]. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating

(continued)

ACTIONS

A.1 and A.2 (continued)

and restores the unit to operation within the bounds of the safety analyses.

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.

B.1

If one [required] group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering the anticipation that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

C.1 and C.2

If one group of pressurizer heaters are inoperable and cannot be restored in the allowed Completion Time of Required Action B.1, 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 MODE 3 within 6 hours and to MODE 4 within 12 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Frequency of 12 hours corresponds to verifying the parameter each shift. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within

(continued)

TSTF-94, Rev 2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level < [60]%; and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ [150] kW [and capable of being powered from an emergency power supply].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit.	A.1	Be in MODE 3 with reactor trip breakers open.	6 hours
	AND		
	A.2	Be in MODE 4.	[12] hours
B. One required group of pressurizer heaters inoperable.	B.1	Restore required group of pressurizer heaters to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 4.	[12] hours

BACKGROUND (continued)

(PORVs or pressurizer safety valves) can control pressure by steam relief rather than water relief. If the level limits were exceeded prior to a transient that creates a large pressurizer insurge volume leading to water relief, the maximum RCS pressure might exceed the Safety Limit of 2750 psig.

The requirement to have two groups of pressurizer heaters ensures that RCS pressure can be maintained. The pressurizer heaters maintain RCS pressure to keep the reactor coolant subcooled. Inability to control RCS pressure during natural circulation flow could result in loss of single phase flow and decreased capability to remove core decay heat.

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. No safety analyses are performed in lower MODES. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensable gases normally present.

Safety analyses presented in the FSAR do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 1), is the reason for their inclusion. The requirement for emergency power supplies is based on NUREG-0737 (Ref. 1). The intent is to keep the reactor coolant in a subcooled condition with natural circulation at hot, high pressure conditions for an undefined, but extended, time period after a loss of offsite power. While loss of offsite power is a coincident occurrence assumed in the accident analyses, maintaining hot, high pressure conditions over an extended time period is not evaluated in the accident analyses.

(continued)

---- Reviewer's Note ----
Plants licensed prior to the issuance of NUREG-0737 may not have a requirement on the number of pressurizer groups

APPLICABLE SAFETY ANALYSES (continued)

The pressurizer satisfies Criterion 2 and Criterion 3 of the NRC Policy Statement.

LCO

The LCO requirement for the pressurizer to be OPERABLE with water level < [60]% ensures that a steam bubble exists. Limiting the maximum operating water level preserves the steam space for pressure control. The LCO has been established to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity ≥ [150] kW [and capable of being powered from an emergency power supply]. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide subcooling margin to saturation can be obtained in the loops. The exact design value of [150] kW is derived from the use of 12 heaters rated at 12.5 kW each. The amount needed to maintain pressure is dependent on the ambient heat losses.

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, Applicability has been designated for MODES 1 and 2. The Applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup. The LCO does not apply to MODE 5 (Loops Filled) because LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," applies. The LCO does not apply to MODES 5 and 6 with partial loop operation.

In MODES 1, 2, and 3, there is the need to maintain the availability of pressurizer heaters capable of being powered from an emergency power supply. In the event of a loss of offsite power, the initial conditions of these MODES gives

(continued)

APPLICABILITY (continued)

the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Shutdown Cooling System is in service and therefore the LCO is not applicable.

ACTIONS

A.1 and A.2

With pressurizer water level not within the limit, action must be taken to restore the plant to operation within the bounds of the safety analyses. To achieve this status, the unit must be brought to MODE 3, with the reactor trip breakers open, within 6 hours and to MODE 4 within [12] hours. This takes the plant out of the applicable MODES and restores the plant to operation within the bounds of the safety analyses.

Six hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. Further pressure and temperature reduction to MODE 4 brings the plant to a MODE where the LCO is not applicable. The 12 hour time to reach the nonapplicable MODE is reasonable based on operating experience for that evolution.

B.1

If one [required] group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

C.1 and C.2

If one [required] group of pressurizer heaters is inoperable and cannot be restored within the allowed Completion Time of Required Action B.1, 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 MODE 3 within 6 hours and to MODE 4

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Revise "Control Rod" assemblies in Design Features to Match Definitions

Classification: Correct Specifications

NUREGs Affected: ☑ 1430 ☐ 1431 ☐ 1432 ☐ 1433 ☐ 1434

Description:

Revise Specification 4.2.2 to read as follow:
4.2.2 Control Assemblies
The reactor core shall contain [60] safety and regulating CONTROL ROD assemblies and [8] APSR assemblies. The material shall be [silver indium cadmium, boron carbide, or hafnium metal] as approved by the NRC.

Justification:

The use of CONTROL RODS is not consistent with the definitions provided in Section 1.1. As defined, CONTROL RODS includes only the safety and regulating rods. The AXIAL POWER SHAPING RODS (APSRs) are separately defined and not included as CONTROL RODS since they do not meet the definition (i.e., they are not safety or regulating rods and they are not used for power maneuvering operations). Since the Specification is for both CONTROL RODS and APSRs, the title is revised to a more generic "Control Assemblies," and the first sentence is revised to identify the CONTROL ROD assemblies separately from the APSR assemblies.

Affected Technical Specifications

4.2.2 Design Features - Reactor Core

BWOG Review Information

BWOG-14

Originating Plant: ANO-1 Date Provided to OG: 15-Dec-95 Needed By: 15-Feb-97

Owners Group History:

1/15/96 - Approved by TE

Owners Group Resolution: Approved Date: 01-Feb-96

TSTF Review Information

TSTF Received Date: 01-Jul-96 Date Distributed to OGs for Review: 31-Jul-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

CEOG - Not applicable
WOG - NA
BWROG - NA

TSTF Resolution: Approved Date: 10-Oct-96 **TSTF- 123**

NRC Review Information

NRC Received Date: 22-Jan-97 NRC Reviewer: Chu, A. Reviewer Phone #:

Reviewer Comments:

2/20/97 - In BWOG STS, only CONTROL ROD is listed as definition. Therefore, the word ASSEMBLIES should be in lower case.
3/3/97 - Sent to C. Grimes for disposition.
3/18/97 - The TSTF agreed to review the Traveler against the NRCs comments and modify if necessary.
4/11/97 - Revision 1 prepared with hand markup consistent in case with the typed version in the Traveler cover page.

Final Resolution: NRC Requests Changes: TSTF Will Revise Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 11-Apr-97 Proposed by: NRC

Revision Description:
Revision 1 prepared with hand markup consistent in case with the typed version in the Traveler cover page.

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

TSTF-123, Rev. 1

4.0 DESIGN FEATURES

4.1 Site Location [Text description of site location.]

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain [177] fuel assemblies. Each assembly shall consist of a matrix of [Zircalloy or ZIRLO] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 CONTROL RODS

CONTROL ROD assemblies

APSR assemblies

The reactor core shall contain [60] safety and regulating and [8] ~~axial power shaping CONTROL RODS~~. The ~~control~~ material shall be [silver indium cadmium, boron carbide, or hafnium metal] as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR];

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Add Note to Exclude Neutron Detectors from Channel Calibration

Classification: Correct Specifications

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

Add a Note to SR 3.3.11.2 to exclude Neutron Detectors from the Channel Calibration.

Justification:

The Neutron Detectors are used for various instrumentation specifications. Specifications 3.3.1, 3.3.2, 3.3.12, and 3.3.13 already include a Note excluding the Neutron Detectors from channel calibrations. The equivalent PAM surveillance in the CE analog specifications also includes this Note. Justification is provided in the Bases for these specifications which state that Neutron Detectors have minimal drift and changes in detector sensitivity can be compensated for with calorimetric calibration.

Affected Technical Specifications

SR 3.3.11.2	PAM Instrumentation (Digital)
SR 3.3.11.2 Bases	PAM Instrumentation (Digital)

CEOG Review Information

CEOG-48

Originating Plant: Palo Verde Date Provided to OG: 29-May-96 Needed By: 01-Sep-96

Owners Group History:

Owners Group Resolution: Approved Date: 04-Jun-96

TSTF Review Information

TSTF Received Date: 01-Jul-96 Date Distributed to OGs for Review: 31-Jul-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

BWOG - Not applicable, BWOG accepts
WOG - Not applicable, WOG accepts
BWROG - Not applicable, BWROG accepts

TSTF Resolution: Approved Date: 10-Oct-96 **TSTF- 130**

NRC Review Information

NRC Received Date: 22-Jan-97 NRC Reviewer: Schulten, C. Reviewer Phone #:

Reviewer Comments:

3/10/97 - Reviewer recommends editorial changes to the proposed Bases text to make it conform to the Bases text for the same Note in the CE analog specifications.
3/17/97 - To C. Grimes for disposition.
4/16/97 - NRC requests revision to SR 3.3.11.2 Bases to state, "A Note allows exclusion of the neutron ...." instead of "A Note excludes the neutron ....".
4/16/97 - Revision prepared.

Final Resolution: Reviewer Recommends Changes Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 16-Apr-97 Proposed by: NRC

Revision Description:
Implements NRC requested revision to SR 3.3.11.2 Bases to state, "A Note allows exclusion of the neutron ...." instead of "A Note excludes the neutron ....".

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

TSTF-130, Rev 1

SURVEILLANCE REQUIREMENTS

---NOTE---
These SRs apply to each PAM instrumentation Function in Table 3.3.11-1.

SURVEILLANCE		FREQUENCY
SR 3.3.11.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.11.2	Perform CHANNEL CALIBRATION.	[18] months

NOTE
Neutron detectors are excluded from the CHANNEL CALIBRATION

TSTF-130, Rev 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.11.1 (continued)

which demonstrates that failure of more than one channel of a given Function in any 31 day interval is a rare event. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel during normal operational use of the displays associated with this LCO's required channels.

SR 3.3.11.2

A CHANNEL CALIBRATION is performed every [18] months or approximately every refueling. CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies the channel responds to the measured parameter within the necessary range and accuracy.

[At this unit, CHANNEL CALIBRATION shall find measurement errors are within the following acceptance criteria:]

For the Containment Area Radiation instrumentation, a CHANNEL CALIBRATION may consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr, and a one point calibration check of the detector below 10 R/hr with a gamma source.

The Frequency is based upon operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift.

REFERENCES

1. [Plant specific document (e.g., FSAR, NRC Regulatory Guide 1.97, SER letter).]
2. Regulatory Guide 1.97.
3. NUREG-0737, Supplement 1.
4. NRC Safety Evaluation Report (SER).

A Note allows exclusion of the neutron detectors from the CHANNEL CALIBRATION.

Industry/TSTF Standard Technical Specification Change Traveler

Add a Criteria Discussion to TSP LCO

Classification: Consistency/Standardization

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

Specification 3.5.5, TSP, does not have an applicable criteria discussion. This change adds such a discussion.

Justification:

The "Applicable Safety Analysis" Section of the Specification 3.5.5 Bases does not identify the criteria which the TSP LCO satisfies. TSP satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). It is part of the primary success path which functions to mitigate a design basis accident or transient.

While the TSP LCO does provide an operating restriction (TSP Volume), this restriction is not monitored or controlled during power operation. The TSP volume is verified on a refueling basis. Thus the LCO does not satisfy Criterion 2.

Affected Technical Specifications

S/A 3.5.5 Bases TSP

CEOG Review Information

CEOG-55

Originating Plant: Millstone 2 Date Provided to OG: 29-May-96 Needed By: 30-Jul-97

Owners Group History:

Owners Group Resolution: Approved Date: 04-Jun-96

TSTF Review Information

TSTF Received Date: 01-Jul-96 Date Distributed to OGs for Review: 31-Jul-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ C. .. ☑ BWROG

TSTF History:

BWOG - Not applicable, BWOG accepts
WOG - Not applicable, WOG accepts
BWROG - Not Applicable, BWROG accepts

TSTF Resolution: Approved Date: 10-Oct-96 **TSTF- 133**

NRC Review Information

NRC Received Date: 22-Jan-97 NRC Reviewer: Weston, M. Reviewer Phone #:

Reviewer Comments:

3/6/97 - Reviewer recommends approval.
3/17/97 - To C. Grimes for disposition.
4/16/97 - Addition of Criterion 3 is acceptable, but the addition of 10 CFR 50.36(c)(2)(ii) must be resolved consistently.
4/16/97 - TSTF prepared revision eliminating the reference to 10 CFR 50.36(c)(2)(ii).

Final Resolution: Reviewer Recommends Approval Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 16-Apr-97 Proposed by: NRC

Revision Description:
Revision eliminates the reference to 10 CFR 50.36(c)(2)(ii).

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

BACKGROUND (continued)

solution pH above 7.0 also reduces the occurrence of SCC of austenitic stainless steel components in containment. Reducing SCC reduces the probability of failure of components.

Granular TSP dodecahydrate is employed as a passive form of pH control for post LOCA containment spray and core cooling water. Baskets of TSP are placed on the floor or in the sump of the containment building to dissolve from released reactor coolant water and containment sprays after a LOCA. Recirculation of the water for core cooling and containment sprays then provides mixing to achieve a uniform solution pH. The dodecahydrate form of TSP is used because of the high humidity in the containment building during normal operation. Since the TSP is hydrated, it is less likely to absorb large amounts of water from the humid atmosphere and will undergo less physical and chemical change than the anhydrous form of TSP.

APPLICABLE SAFETY ANALYSES

The LOCA radiological consequences analysis takes credit for iodine retention in the sump solution based on the recirculation water pH being ≥ 7.0. The radionuclide releases from the containment atmosphere and the consequences of a LOCA would be increased if the pH of the recirculation water were not adjusted to 7.0 or above. TSP satisfies Criterion 3 of the NRC Policy Statement.

LCO

The TSP is required to adjust the pH of the recirculation water to > 7.0 after a LOCA. A pH > 7.0 is necessary to prevent significant amounts of iodine released from fuel failures and dissolved in the recirculation water from converting to a volatile form and evolving into the containment atmosphere. Higher levels of airborne iodine in containment may increase the release of radionuclides and the consequences of the accident. A pH > 7.0 is also necessary to prevent SCC of austenitic stainless steel components in containment. SCC increases the probability of failure of components.

The required amount of TSP is based upon the extreme cases of water volume and pH possible in the containment sump after a large break LOCA. The minimum required volume is the volume of TSP that will achieve a sump solution pH of

(continued)

Industry/TSTF Standard Technical Specification Change Traveler

Revise Criteria Discussions of Special Test Exceptions

Classification: Consistency/Standardization

NUREGs Affected: ☑ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

The criteria discussions in the Special Test Exceptions are revised to be consistent with the excepted LCOs.

Justification:

The existing criteria discussions in the Special Test Exception (STE) Bases are inconsistent with the excepted LCOs. The revised wording refers to the excepted LCOs for the applicable criteria. This wording is consistent with NUREG-1433 and 1434.

Affected Technical Specifications

S/A 3.1.8 Bases	Physics Tests Exceptions - MODE 1	NUREG(s)- 1430 Only
S/A 3.1.9 Bases	Physics Tests Exceptions - MODE 2	NUREG(s)- 1430 Only
S/A 3.1.8 Bases	Special Test Exception - SDM (Analog)	NUREG(s)- 1432 Only
S/A 3.1.9 Bases	Special Test Exception - MODES 1 and 2 (Analog)	NUREG(s)- 1432 Only
S/A 3.1.9 Bases	Special Test Exception - SDM (Digital)	NUREG(s)- 1432 Only
S/A 3.1.10 Bases	Special Test Exception - MODES 1 and 2 (Digital)	NUREG(s)- 1432 Only
S/A 3.4.17 Bases	Special Test Exception - RCS Loops	NUREG(s)- 1432 Only

CEOG Review Information

CEOG-53

Originating Plant: Millstone 2 Date Provided to OG: 29-May-96 Needed By: 31-Jul-97

Owners Group History:

Owners Group Resolution: Approved Date: 04-Jun-96

TSTF Review Information

TSTF Received Date: 01-Jul-96 Date Distributed to OGs for Review: 31-Jul-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF History:

BWOG - Applicable, BWOG accepts
WOG - Not applicable, WOG accepts
BWROG - Not applicable, BWROG accepts

TSTF Resolution: Approved Date: 10-Oct-96 **TSTF- 154**

NRC Review Information

NRC Received Date: 23-Jan-97 NRC Reviewer: Tjader, Westo Reviewer Phone #:

Reviewer Comments:

2/28/97 - Reviewers recommended modification to Section 3.4, accept Section 3.1. Recommend modification to include same level of discussion of Safety Analyses as in NUREG-1433 and 1434.
3/18/97 - TSTF to consider comments and propose revision is appropriate.
4/16/97 - NRC commented that changing references from the NRC Policy Statement to 10 CFR 50.36(c)(2)(ii) should be done consistently throughout the specifications.
4/16/97 - TSTF prepared a revision eliminating the references to 10 CFR 50.36(c)(2)(ii).

Final Resolution: Reviewer Recommends Changes Final Resolution Date:

Revision History

TSTF Revision 1 Revision Date: 16-Apr-97 Proposed by: NRC

Revision Description:
Revision eliminates the reference to 10 CFR 50.36(c)(2)(ii).

Distributed to TSTF: 4/17/97 Resolution: Approved Date: 13-May-97 Rev to NRC: 5/16/97

Incorporation Into the NUREGs

File to BBS/LAN Date:

File to TSTF Date:

File Rev Incoporated:

File Rev Incorporated Date

INSERT

As described in LCO 3.0.7, compliance with Special Test Exception LCOs is optional, and therefore no criteria of the NRC Policy Statement apply. Special Test Exception LCOs provide flexibility to perform certain operations by appropriately modifying requirements of other LCOs. A discussion of the criteria satisfied for the other LCOs is provided in their respective Bases.

INSERT 2

As described in LCO 3.0.7, compliance with PHYSICS TESTS Exceptions LCOs is optional, and therefore no criteria of the NRC Policy Statement apply. PHYSICS TESTS Exceptions LCOs provide flexibility to perform certain operations by appropriately modifying requirements of other LCOs. A discussion of the criteria satisfied for the other LCOs is provided in their respective Bases.

TSTF-154, Rev. 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

surveillance of the $F_Q(Z)$, the $F^N_{\Delta H}$, and SDM is required to verify that their limits are not exceeded. The limits for the nuclear hot channel factors are specified in the COLR. Refer to the Bases for LCO 3.2.5 for a complete discussion of $F_Q(Z)$ and $F^N_{\Delta H}$. During PHYSICS TESTS, one or more of the LCOs that normally preserve the $F_Q(Z)$ and $F^N_{\Delta H}$ limits may be suspended. However, the results of the safety analysis are not adversely impacted if verification that $F_Q(Z)$ and $F^N_{\Delta H}$ are within their limits is obtained, while one or more of the LCOs is suspended. Therefore, SRs are placed on $F_Q(Z)$ and $F^N_{\Delta H}$ during MODE 1 PHYSICS TESTS to verify that these factors remain within their limits. Periodic verification of these factors allows PHYSICS TESTS to be conducted while continuing to maintain the design criteria.

PHYSICS TESTS include measurement of core nuclear parameters or exercise of control components that affect process variables. Among the process variables involved are AXIAL POWER IMBALANCE and QPT, which represent initial condition input (power peaking) for the accident analysis. Also involved are the movable control components, i.e., the regulating rods and the APSRs, which affect power peaking and are required for shutdown of the reactor. The limits for these variables are specified for each fuel cycle in the COLR.

Insert 2 → PHYSICS TESTS satisfy Criteria 1, 2, and 3 of the NRC Policy Statement.

LCO

This LCO permits individual CONTROL RODS to be positioned outside of their specified group alignment and withdrawal limits and to be assigned to other than specified CONTROL ROD groups, and permits AXIAL POWER IMBALANCE and QPT limits to be exceeded during the performance of PHYSICS TESTS. In addition, this LCO permits verification of the fundamental core characteristics and nuclear instrumentation operation.

The requirements of LCO 3.1.4, LCO 3.1.5, LCO 3.1.6, LCO 3.2.1 (for the restricted operation region only), LCO 3.2.3, and LCO 3.2.4 may be suspended during the performance of PHYSICS TESTS provided:

a. THERMAL POWER is maintained ≤ 85% RTP;

(continued)

APPLICABLE SAFETY ANALYSES (continued)

temperature to decrease to 520°F during MODE 2 PHYSICS TESTS, based on the low probability of an accident occurring and on prior operating experience.

PHYSICS TESTS include measurement of core nuclear parameters or exercise of control components that affect process variables.

Insert 2 → PHYSICS TESTS satisfy Criteria 1, 2, and 3 of the NRC Policy Statement.

LCO

This LCO permits individual CONTROL RODS to be positioned outside of their specified group alignment and withdrawal limits and to be assigned to other than specified CONTROL ROD groups during the performance of PHYSICS TESTS. In addition, this LCO permits verification of the fundamental core characteristics.

This LCO also allows suspension of LCO 3.1.3, LCO 3.1.4, LCO 3.1.5, LCO 3.1.6, LCO 3.2.1, and LCO 3.4.2, provided:

a. THERMAL POWER is ≤ 5% RTP;

b. Nuclear overpower trip setpoints on the OPERABLE nuclear power range channels are set to ≤ 25% RTP;

c. Nuclear instrumentation source range and intermediate range high startup rate CONTROL ROD withdrawal inhibit are OPERABLE; and

d. SDM is maintained ≥ [1.0]% $\Delta k/k$.

The limits of LCO 3.2.3 and LCO 3.2.4 do not apply in MODE 2. Inhibiting CONTROL ROD withdrawal, based on startup rate, also limits local linear heat rate (LHR), departure from nucleate boiling ratio (DNBR), and peak RCS pressure during accidents initiated from low power.

APPLICABILITY

This LCO is applicable in MODE 2 when the reactor is either not critical or when THERMAL POWER is ≤ 5% RTP. This LCO is applicable for initial criticality or low power testing, as defined by Regulatory Guide 1.68 (Ref. 3). In MODE 1,

(continued)

APPLICABLE SAFETY ANALYSES (continued)

peaking factor, T_q and ASI, which represent initial condition input (power peaking) to the accident analysis. Also involved are the shutdown and regulating CEAs, which affect power peaking and are required for shutdown of the reactor. The limits for these variables are specified for each fuel cycle in the COLR.

Insert

~~PHYSICS TESTS meet the criteria for inclusion in the Technical Specifications, since the components and process variable LCOs suspended during PHYSICS TESTS meet Criteria 1, 2, and 3 of the NRC Policy Statement.~~

LCO

This LCO provides that a minimum amount of CEA worth is immediately available for reactivity control when CEA worth measurement tests are performed. The STE is required to permit the periodic verification of the actual versus predicted core reactivity condition occurring as a result of fuel burnup or fuel cycling operations. The SDM requirements of LCO 3.1.1 and the regulating CEA insertion limits of LCO 3.1.7 may be suspended.

APPLICABILITY

This LCO is applicable in MODES 2 and 3. Although CEA worth testing is conducted in MODE 2, sufficient negative reactivity is inserted during the performance of these tests to result in temporary entry into MODE 3. Because the intent is to immediately return to MODE 2 to continue CEA worth measurements, the STE allows limited operation to 6 consecutive hours in MODE 3, as indicated by the Note, without having to borate to meet the SDM requirements of LCO 3.1.1.

ACTIONS

A.1

With any CEA not fully inserted and less than the minimum required reactivity equivalent available for insertion, or with all CEAs inserted and the reactor subcritical by less than the reactivity equivalent of the highest worth CEA, restoration of the minimum SDM requirements must be accomplished by increasing the RCS boron concentration. The required Completion Time of 15 minutes for initiating

(continued)

APPLICABLE SAFETY ANALYSES (continued)

The safety analysis (Ref. 6) places limits on allowable THERMAL POWER during PHYSICS TESTS and requires the LHR and the departure from nucleate boiling (DNB) parameter to be maintained within limits. The power plateau of < 85% RTP and the associated trip setpoints are required to ensure [explain]. SDM shall be maintained ≥ [4.5]% Δk/k.

The individual LCOs governing CEA group height, insertion and alignment, ASI, F^T_{xy}, F^T_r, and T_q preserve the LHR limits. Additionally, the LCOs governing Reactor Coolant System (RCS) flow, reactor inlet temperature (T_c), and pressurizer pressure contribute to maintaining DNB parameter limits. The initial condition criteria for accidents sensitive to core power distribution are preserved by the LHR and DNB parameter limits. The criteria for the loss of coolant accident (LOCA) are specified in 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors" (Ref. 7). The criteria for the loss of forced reactor coolant flow accident are specified in Reference 7. Operation within the LHR limit preserves the LOCA criteria; operation within the DNB parameter limits preserves the loss of flow criteria.

During PHYSICS TESTS, one or more of the LCOs that normally preserve the LHR and DNB parameter limits may be suspended. The results of the accident analysis are not adversely impacted, however, if LHR and DNB parameters are verified to be within their limits while the LCOs are suspended. Therefore, SRs are placed as necessary to ensure that LHR and DNB parameters remain within limits during PHYSICS TESTS. Performance of these Surveillances allows PHYSICS TESTS to be conducted without decreasing the margin of safety.

PHYSICS TESTS include measurement of core parameters or exercise of control components that affect process variables. Among the process variables involved are F^T_{xy}, F^T_r, T_q, and ASI, which represent initial condition input (power peaking) to the accident analysis. Also involved are the shutdown and regulating CEAs, which affect power peaking and are required for shutdown of the reactor. The limits for these variables are specified for each fuel cycle in the COLR.

~~PHYSICS TESTS meet the criteria for inclusion in the Technical Specifications, since the components and process~~

INSERT

(continued)

TSTF-154, Rev. 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~variable LCOs suspended during PHYSICS TESTS meet Criteria 1, 2, and 3 of the NRC Policy Statement.~~

LCO

This LCO permits individual CEAs to be positioned outside of their normal group heights and insertion limits during the performance of PHYSICS TESTS such as those required to:

a. Measure CEA worth;

b. Determine the reactor stability index and damping factor under xenon oscillation conditions;

c. Determine power distributions for nonnormal CEA configurations;

d. Measure rod shadowing factors; and

e. Measure temperature and power coefficients.

Additionally, it permits the center CEA to be misaligned during PHYSICS TESTS required to determine the isothermal temperature coefficient (ITC), MTC, and power coefficient.

The requirements of LCO 3.1.4, LCO 3.1.5, LCO 3.1.6, LCO 3.1.7, LCO 3.2.2, LCO 3.2.3, and LCO 3.2.4 may be suspended during the performance of PHYSICS TESTS, provided:

a. THERMAL POWER is restricted to test power plateau, which shall not exceed 85% RTP;

b. SDM shall be $\geq$ [4.5]% $\Delta k/k$.

APPLICABILITY

This LCO is applicable in MODES 1 and 2 because the reactor must be critical at various THERMAL POWER levels to perform the PHYSICS TESTS described in the LCO section. Limiting the test power plateau to < 85% RTP ensures that LHRs are maintained within acceptable limits.

(continued)

APPLICABLE SAFETY ANALYSES (continued)

peaking factor, T_q, and ASI, which represent initial condition input (power peaking) to the accident analysis. Also involved are the shutdown and regulating CEAs, which affect power peaking and are required for shutdown of the reactor. The limits for these variables are specified for each fuel cycle in the COLR.

~~PHYSICS TESTS meet the criteria for inclusion in the Technical Specifications since the components and process variable LCOs suspended during PHYSICS TESTS meet Criteria 1, 2, and 3 of the NRC Policy Statement.~~

INSERT

LCO

This LCO provides that a minimum amount of CEA worth is immediately available for reactivity control when CEA worth measurement tests are performed. This STE is required to permit the periodic verification of the actual versus predicted core reactivity condition occurring as a result of fuel burnup or fuel cycling operations. The SDM requirements of LCO 3.1.1 and the regulating CEA insertion limits of LCO 3.1.7 may be suspended.

APPLICABILITY

This LCO is applicable in MODES 2 and 3. Although CEA worth testing is conducted in MODE 2, sufficient negative reactivity is inserted during the performance of these tests to result in temporary entry into MODE 3. Because the intent is to immediately return to MODE 2 to continue CEA worth measurements, the STE allows limited operation to 6 consecutive hours in MODE 3 as indicated by the Note, without having to borate to meet the SDM requirements of LCO 3.1.1.

ACTIONS

A.1

With any CEA not fully inserted and less than the minimum required reactivity equivalent available for insertion, or with all CEAs inserted and the reactor subcritical by less than the reactivity equivalent of the highest worth withdrawn CEA, restoration of the minimum SDM requirements must be accomplished by increasing the RCS boron concentration. The required Completion Time of 15 minutes

(continued)

TSTF-154
Rev. 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~PHYSICS TESTS meet the criteria for inclusion in the Technical Specifications, since the component and process variable LCOs suspended during PHYSICS TESTS meet Criteria 1, 2, and 3 of the NRC Policy Statement.~~

INSERT

LCO

This LCO permits individual CEAs to be positioned outside of their normal group heights and insertion limits during the performance of PHYSICS TESTS, such as those required to:

a. Measure CEA worth;

b. Determine the reactor stability index and damping factor under xenon oscillation conditions;

c. Determine power distributions for nonnormal CEA configurations;

d. Measure rod shadowing factors; and

e. Measure temperature and power coefficients.

Additionally, it permits the center CEA to be misaligned during PHYSICS TESTS required to determine the isothermal temperature coefficient (ITC), MTC, and power coefficient.

The requirements of LCO 3.1.4, LCO 3.1.5, LCO 3.1.6, LCO 3.1.7, LCO 3.1.8, LCO 3.2.2, and LCO 3.2.3 may be suspended during the performance of PHYSICS TESTS provided:

a. THERMAL POWER is restricted to test power plateau, which shall not exceed 85% RTP; and

b. SDM shall be $\geq$ [5.0]% $\Delta k/k$.

APPLICABILITY

This LCO is applicable in MODES 1 and 2 because the reactor must be critical at various THERMAL POWER levels to perform the PHYSICS TESTS described in the LCO section. Limiting the test power plateau to < 85% RTP ensures that LHRs are maintained within acceptable limits.

(continued)

TSTF-154
Rev. 1

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.17 Special Test Exception (STE) RCS Loops

BASES

BACKGROUND

This special test exception to LCO 3.4.4, "RCS Loops — MODES 1 and 2," and LCO 3.3.1, "RPS Instrumentation," permits reactor criticality under no flow conditions during PHYSICS TESTS (natural circulation demonstration, station blackout, and loss of offsite power) while at low THERMAL POWER levels. Section XI of 10 CFR Part 50, Appendix B (Ref. 1), requires that a test program be established to ensure that structures, systems, and components will perform satisfactorily in service. All functions necessary to ensure that the specified design conditions are not exceeded during normal operation and anticipated operational occurrences must be tested. This testing is an integral part of the design, construction, and operation of the power plant as specified in 10 CFR 50, Appendix A, GDC 1 (Ref. 2).

The key objectives of a test program are to provide assurance that the facility has been adequately designed to validate the analytical models used in the design and analysis, to verify the assumptions used to predict plant response, to provide assurance that installation of equipment at the facility has been accomplished in accordance with the design, and to verify that the operating and emergency procedures are adequate. Testing is performed prior to initial criticality, during startup, and following low power operations.

The tests will include verifying the ability to establish and maintain natural circulation following a plant trip between 10% and 20% RTP, performing natural circulation cooldown on emergency power, and during the cooldown, showing that adequate boron mixing occurs and that pressure can be controlled using auxiliary spray and pressurizer heaters powered from the emergency power sources.

APPLICABLE SAFETY ANALYSES

~~Special Test Exception (STE) - RCS loops does not satisfy any Criterion in the NRC Policy Statement, but is included as they support other LCOs that meet a Criterion for inclusion.~~

INSERT

(continued)