Industry/TSTF Standard Technical Specification Change Traveler

Relocation of Steam Generator Level - High Trip to the TRM

Classification: 1) Technical Change

Priority: 3)Low

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

Description:
The RPS Steam Generator Level - High Trip is relocated to a licensee-controlled document, such as the Technical Requirements Manual (TRM).

Justification:
Background

The RPS Steam Generator (SG) Level - High trip function is provided to protect the main turbine from excessive moisture carryover that may result in damage to the turbine in the event of a feedwater transient. During a feedwater malfunction, SG level may rise to the point that significant portions of the moisture separators are covered with water. At some point, the moisture carryover, normally less than 1%, begins to rise. The moisture mist entering the steam line could cause increased vibration, blade wear, and eventual permanent damage to the main turbine. Therefore, upon the SG level exceeding the high SG level trip setpoint, a reactor trip is initiated, which, in turn, automatically trips the main turbine. However, the main turbine is not a safety-related component and its loss does not impact the safety of the reactor core.

Need for Change

The RPS high SG level trip function does not meet any of the 10 CFR 50.36 criteria for inclusion in the TS and can be relocated from the TS to a licensee-controlled document, such as the Technical Requirements Manual (TRM). On May 18, 2000, the NRC approved the relocation of the RPS high SG level trip function to the TRM for Arkansas Nuclear One, Unit 2. This change was also approved for San Onofre Units 2 and 3 in amendment 127/116 dated 2/9/1996.

Proposed Change

The RPS functions associated with Steam Generator Level - High trip are relocated to a licensee-controlled document.

Justification

The high SG level trip function does not act to protect the reactor core. This trip function is not credited in any DBA or transient analysis, nor does it correspond to any safety limit. This trip function (1) is not an instrumentation that is used to detect a significant abnormal degradation of the RCPB; (2) is not a process variable, design feature, nor operating restriction that is an initial condition of a DBA or transient analysis; (3) is not relied upon as a part of the primary success path nor functions or actuates to mitigate a DBA or transient.

As discussed in its safety evaluation on Combustion Engineering Owners Group's (CEOG) response to NRC Generic Letter 89-09 regarding the SG overfill protection, the NRC staff accepted the CEOG's contention from a PRA viewpoint that SG overfill events do not have a significant impact on the public health and safety. The NRC staff also granted the relocation of the turbine overspeed trip function from the ANO- TS to the TRM, concluding that there is low likelihood of significant risk to public health and safety because of turbine overspeed events. Similar to the turbine overspeed trip function, the high SG level trip function is not significant to public health and safety, as its main purpose is to help prevent SG overfill and protect the main turbine from excessive moisture carryover. Accordingly, the RPS high SG level trip function does not meet any of the 10 CFR 50.36 criteria for inclusion in the TS and can be removed from the TS. The licensee-requested TS changes would delete the following items related to the high SG level trip function, and relocate them to the TRM.

Determination of No Significant Hazards Considerations

A change is proposed to the Improved Technical Specifications for Combustion Engineering plants, NUREG-1432, to relocate the Steam Generator Level - High Trip to a licensee-controlled document. In accordance with the criteria set forth in 10 CFR 50.92, the Industry has evaluated these proposed Improved Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

The proposed change relocates the Steam Generator Level - High Trip to a licensee-controlled document. The Steam Generator (SG) Level - High Trip is not credited in any DBA or transient analysis and is not an initiator to any accident analysis. As a result, neither the probability nor the consequences of an accident previously evaluated are significantly increased by this change. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

The proposed change relocates the Steam Generator Level - High Trip to a licensee-controlled document. The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

The proposed change relocates the Steam Generator Level - High Trip to a licensee-controlled document. This will allow changes to the Steam Generator Level - High Trip requirements currently in the Technical Specifications without prior review and approval by the NRC unless the proposed change represents a significant hazard. As the Steam Generator Level - High Trip has been determined to not meet the definition of Technical Specifications or the criteria in 10 CFR 50.36(c)(2)(ii), lack of NRC review and approval prior to implementation for changes that are not determined to be a significant hazard will not lead to a significant reduction in the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

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Revision History

OG Revision 0 **Revision Status: Active** **Next Action: NRC**

Revision Proposed by: ANO

Revision Description:
Original Issue

Owners Group Review Information

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Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 05-Dec-00

TSTF Review Information

TSTF Received Date: 05-Dec-00 Date Distributed for Review 05-Dec-00

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

TSTF Comments:
(San Onofre and ANO 2 already adopted). Add details on SONGS approval.

TSTF Resolution: Approved Date: 02-May-01

NRC Review Information

NRC Received Date: 24-May-01

NRC Comments:
(No Comments)

Final Resolution: NRC Action Pending Final Resolution Date:

Incorporation Into the NUREGs

File to BBS/LAN Date: TSTF Informed Date: TSTF Approved Date:

NUREG Rev Incorporated:

Affected Technical Specifications

S/A 2.1.1 Bases	Reactor Core Safety Limits (Digital)
S/A 3.3.1 Bases	RPS Instrumentation - Operating (Digital)
	Change Description: Delete Functions 10 and 11, Renumber Functions 12, 13, 14, 15, 16
LCO 3.3.1	RPS Instrumentation - Operating (Digital)
	Change Description: Delete Functions 10 and 11, Renumber Functions 12, 13, 14, 15, 16
LCO 3.3.1 Bases	RPS Instrumentation - Operating (Digital)
	Change Description: Delete Functions 10 and 11, Renumber Functions 12, 13, 14, 15, 16

TSTF-410

Table 3.3.1-1 (page 2 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Steam Generator #2 Pressure - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [711] psia
8. Steam Generator #1 Level - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [24.23]%
9. Steam Generator #2 Level - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [24.23]%
10. Steam Generator #1 Level - High	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ [90.74]%
11. Steam Generator #2 Level - High	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ [90.74]%
10 [12. Reactor Coolant Flow, Steam Generator #1 - Low[(d)]	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 [SR 3.3.1.13] SR 3.3.1.14	Ramp: ≤ [0.231] psid/sec. Floor: ≥ [12.1] psid Step: ≤ [7.231] psid]
11 [13. Reactor Coolant Flow, Steam Generator #2 - Low[(d)]	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 [SR 3.3.1.13] SR 3.3.1.14	Ramp: ≤ [0.231] psid/sec. Floor: ≥ [12.1] psid Step: ≤ [7.231] psid]

(d) Bypass may be enabled when logarithmic power is < [1E-04]% and shall be capable of automatic removal whenever logarithmic power is < [1E-4]%. Bypass shall be removed prior to raising logarithmic power to a value ≥[1E-4]%. During testing pursuant LCO 3.4.17, bypass may be enabled when THERMAL POWER is < [5]% RTP and shall be capable of automatic removal whenever THERMAL POWER is < [5]% RTP. Bypass shall be removed above 5% RTP.

TSTF-410

Table 3.3.1-1 (page 3 of 3)
Reactor Protective System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
(12) [14]	Loss of Load (turbine stop valve control oil pressure)[e]	1	SR 3.3.1.9 SR 3.3.1.10 [SR 3.3.1.13]	≥ [100] psig]
(13) 15	Local Power Density - High[d]	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 3.3.1.10 SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13 SR 3.3.1.14	≤ [21.0] kW/ft
(14) 16	Departure From Nucleate Boiling Ratio (DNBR) - Low[d]	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 3.3.1.10 SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13 SR 3.3.1.14	≥ [1.31]

(d) Bypass may be enabled when logarithmic power is < [1E-04]% and shall be capable of automatic removal whenever logarithmic power is < [1E-4]%. Bypass shall be removed prior to raising logarithmic power to a value ≥[1E-4]%. During testing pursuant LCO 3.4.17, bypass may be enabled when THERMAL POWER is < [5]% RTP and shall be capable of automatic removal whenever THERMAL POWER is < [5]% RTP. Bypass shall be removed above 5% RTP.

(e) Bypass may be enabled when THERMAL POWER is < [55]% RTP and shall be capable of automatic removal whenever THERMAL POWER is < [55]% RTP. Bypass shall be removed prior to raising THERMAL POWER to a value ≥[55]% RTP.

editorial note - footnote (e) will move to the previous page.

TSTF-410

BASES

APPLICABLE SAFETY ANALYSES

The fuel cladding must not sustain damage as a result of normal operation and AOOs. The reactor core SLs are established to preclude violation of the following fuel design criteria:

a. There must be at least a 95% probability at a 95% confidence level (95/95 DNB criterion) that the hot fuel rod in the core does not experience DNB and

b. The hot fuel pellet in the core must not experience centerline fuel melting.

The RPS setpoints, LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation," in combination with all the LCOs, are designed to prevent any anticipated combination of transient conditions for RCS temperature, pressure, and THERMAL POWER level that would result in a departure from nucleate boiling ratio (DNBR) of less than the DNBR limit and preclude the existence of flow instabilities.

Automatic enforcement of these reactor core SLs is provided by the following functions:

a. Pressurizer Pressure - High trip,

b. Pressurizer Pressure - Low trip,

c. Linear Power Level - High trip,

d. Steam Generator Pressure - Low trip,

e. Local Power Density - High trip,

f. DNBR - Low trip,

g. Steam Generator Level - Low trip,

h. ~~Steam Generator Level - High trip,~~

i. Reactor Coolant Flow - Low trip, and

j. Steam Generator Safety Valves.

The limitation that the average enthalpy in the hot leg be less than or equal to the enthalpy of saturated liquid also ensures that the ΔT measured by instrumentation used in the protection system design as a measure of the core power is proportional to core power.

TSTF-410

BASES

APPLICABLE SAFETY ANALYSES (continued)

Category 3: To prevent material damage to major plant components (equipment protective).

The RPS maintains the SLs during AOOs and mitigates the consequences of DBAs in all MODES in which the RTCBs are closed.

Each of the analyzed transients and accidents can be detected by one or more RPS Functions. Functions not specifically credited in the accident analysis are part of the NRC staff approved licensing basis for the plant. Noncredited Functions include the Steam Generator #1 Level - High, Steam Generator #2 Level - High, and the Loss of Load. These trips are purely equipment protective, and their use minimizes the potential for equipment damage.

The specific safety analysis applicable to each protective function are identified below:

1. Linear Power Level - High

   The Linear Power Level - High trip provides protection against core damage during the following events:

   - Uncontrolled CEA Withdrawal From Low Power (AOO),
   - Uncontrolled CEA Withdrawal at Power (AOO), and
   - CEA Ejection (Accident).

2. Logarithmic Power Level - High

   The Logarithmic Power Level - High trip protects the integrity of the fuel cladding and helps protect the RCPB in the event of an unplanned criticality from a shutdown condition.

   In MODES 2, 3, 4, and 5, with the RTCBs closed and the CEA Drive System capable of CEA withdrawal, protection is required for CEA withdrawal events originating when logarithmic power is < 1E-4%. For events originating above this power level, other trips provide adequate protection.

   MODES 3, 4, and 5, with the RTCBs closed, are addressed in LCO 3.3.2, "Reactor Protective System (RPS) Instrumentation - Shutdown."

APPLICABLE SAFETY ANALYSES (continued)

6, 7. Steam Generator Pressure - Low

The Steam Generator #1 Pressure - Low and Steam Generator #2 Pressure - Low trips provide protection against an excessive rate of heat extraction from the steam generators and resulting rapid, uncontrolled cooldown of the RCS. This trip is needed to shut down the reactor and assist the ESF System in the event of an MSLB or main feedwater line break accident. A main steam isolation signal (MSIS) is initiated simultaneously.

8, 9. Steam Generator Level - Low

The Steam Generator #1 Level - Low and Steam Generator #2 Level - Low trips ensure that a reactor trip signal is generated for the following events to help prevent exceeding the design pressure of the RCS due to the loss of the heat sink:

- Inadvertent Opening of a Steam Generator Atmospheric Dump Valve (AOO),
- Loss of Normal Feedwater Event (AOO), and
- Feedwater System Pipe Break (Accident).

10, 11. Steam Generator Level - High

The Steam Generator #1 Level - High and Steam Generator #2 Level - High trips are provided to protect the turbine from excessive moisture carryover in case of a steam generator overfill event.

10, 11 → 12, 13 Reactor Coolant Flow - Low

The Reactor Coolant Flow, Steam Generator #1 - Low and Reactor Coolant Flow, Steam Generator #2 - Low trips provides protection against an RCP Sheared Shaft Event. The DNBR limit may be exceeded during this event; however, the trip ensures the consequences are acceptable.

12 14 Loss of Load

The Loss of Load (turbine stop valve control oil pressure) is anticipatory for the loss of heat removal capabilities for the secondary system following a turbine trip. The Loss of Load trip

TSTF-410

BASES

APPLICABLE SAFETY ANALYSES (continued)

prevents lifting the pressurizer safety valves and the main steam line safety valves in the event of a turbine generator trip. Thus, the trip minimizes the pressure or temperature transient on the reactor by initiating a trip well before the Pressurizer Pressure - High and safety valve setpoints are reached.

The RPS Loss of Load reactor trip channels receive their input from sensors mounted on high pressure turbine stop valve (TSV) actuators. Since there are four TSVs, one actuator per TSV and one sensor per actuator, each sensor sends its signal to a different RPS channel. When the control oil pressure drops to the appropriate setpoint, a reactor trip signal is generated.

13 → ~~15~~

Local Power Density - High

The CPCs perform the calculations required to derive the DNBR and LPD parameters and their associated RPS trips. The DNBR - Low and LPD - High trips provide plant protection during the following AOOs and assist the ESF systems in the mitigation of the following accidents.

The LPD - High trip provides protection against fuel centerline melting due to the occurrence of excessive local power density peaks during the following AOOs:

- Decrease in Feedwater Temperature,
- Increase in Feedwater Flow,
- Increased Main Steam Flow (not due to the steam line rupture) Without Turbine Trip,
- Uncontrolled CEA Withdrawal From Low Power,
- Uncontrolled CEA Withdrawal at Power, and
- CEA Misoperation; Single Part Length CEA Drop.

For the events listed above (except CEA Misoperation; Single Part Length CEA Drop), DNBR - Low will trip the reactor first, since DNB would occur before fuel centerline melting would occur.

BASES

APPLICABLE SAFETY ANALYSES (continued)

14 ~~16~~ Departure from Nucleate Boiling Ratio (DNBR) - Low

The CPCs perform the calculations required to derive the DNBR and LPD parameters and their associated RPS trips. The DNBR - Low and LPD - High trips provide plant protection during the following AOOs and assist the ESF systems in the mitigation of the following accidents.

The DNBR - Low trip provides protection against core damage due to the occurrence of locally saturated conditions in the limiting (hot) channel during the following events and is the primary reactor trip (trips the reactor first) for these events:

- Decrease in Feedwater Temperature,
- Increase in Feedwater Flow,
- Increased Main Steam Flow (not due to steam line rupture) Without Turbine Trip,
- Increased Main Steam Flow (not due to steam line rupture) With a Concurrent Single Failure of an Active Component,
- Steam Line Break With Concurrent Loss of Offsite AC Power,
- Loss of Normal AC Power,
- Partial Loss of Forced Reactor Coolant Flow,
- Total Loss of Forced Reactor Coolant Flow,
- Single Reactor Coolant Pump (RCP) Shaft Seizure,
- Uncontrolled CEA Withdrawal From Low Power,
- Uncontrolled CEA Withdrawal at Power,
- CEA Misoperation; Full Length CEA Drop,
- CEA Misoperation; Part Length CEA Subgroup Drop,
- Primary Sample or Instrument Line Break, and

TSTF-410

BASES

LCO (continued)

increases automatically as steam generator pressure increases until the specified trip setpoint is reached.

8, 9. Steam Generator Level - Low

This LCO requires four channels of Steam Generator #1 Level - Low and Steam Generator #2 Level - Low for each 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 same bistable providing the reactor trip also initiates emergency feedwater to the affected generator via the Emergency Feedwater Actuation Signals (EFAS). The minimum setpoint is governed by EFAS requirements. The reactor trip will remove the heat source (except decay heat), thereby conserving the reactor heat sink.

This trip and the Steam Generator (#1 and #2) Level - High trip may be manually bypassed simultaneously when cold leg temperature is below the specified limit to allow for CEA withdrawal during testing. The bypass is automatically removed when cold leg temperature reaches 200°F.

10, 11. Steam Generator Level - High

This LCO requires four channels of Steam Generator #1 Level - High and Steam Generator #2 Level - High to be OPERABLE in MODES 1 and 2.

The Allowable Value is high enough to allow for normal plant operation and transients without causing a reactor trip. It is set low enough to ensure a reactor trip occurs before the level reaches the steam dryers. Having steam generator water level at the trip value is indicative of the plant not being operated in a controlled manner.

This trip and the Steam Generator Level - Low trip may be manually bypassed simultaneously when cold leg temperature is below the specified limit to allow for CEA withdrawal during testing with the steam generators in wet layup. The bypass is automatically removed when cold leg temperature reaches 200°F. Below 200°F the plant is in shutdown cooling; therefore, the steam generators are not required for heat removal.

LCO (continued)

10, 11 → ~~12, 13~~

Reactor Coolant Flow - Low

This LCO requires four channels of Reactor Coolant Flow, Steam Generator #1 - Low and Reactor Coolant Flow, Steam Generator #2 - Low to be OPERABLE in MODES 1 and 2. The Allowable Value is set low enough to allow for slight variations in reactor coolant flow during normal plant operations while providing the required protection. Tripping the reactor ensures that the resultant power to flow ratio provides adequate core cooling to maintain DNBR under the expected pressure conditions for this event.

The Reactor Coolant Flow - Low trip may be manually bypassed when logarithmic power is less than 1E-4%. This allows for de-energization of one or more RCPs (e.g., for plant cooldown), while maintaining the ability to keep the shutdown CEA banks withdrawn from the core if desired.

LCO 3.4.5, "RCS Loops - MODE 3," LCO 3.4.6, "RCS Loops - MODE 4," and LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," ensure adequate RCS flow rate is maintained. The bypass is automatically removed when logarithmic power increases above 1E-4%, as sensed by the wide range (logarithmic) nuclear instrumentation. When below the power range, the Reactor Coolant Flow - Low is not required for plant protection.

12 → ~~14~~

Loss of Load

This LCO requires four channels of Loss of Load trip to be OPERABLE in MODES 1 and 2.

The Steam Bypass Control System is capable of passing 45% of the full power main steam flow (45% RTP bypass capability) directly to the condenser without causing the MSSVs to lift. The Nuclear Steam Supply System is capable of absorbing a 10% step change in power when a primary to secondary system energy mismatch occurs, without causing the pressurizer safety valves to lift. This means that the plant can sustain a turbine trip without causing the pressurizer safety valves or the MSSV to lift, provided power is $\leq$ 55% RTP. Therefore, the Loss of Load trip may be bypassed when reactor power is $\leq$ 55% RTP, as sensed by the power range nuclear instrumentation. Both the bypass and bypass removal, when above 55% power, are automatically performed.

TSTF-410

BASES

LCO (continued)

Loss of Load trip is equipment protective and not credited in the accident analysis. As such, the 55% bypass power permissive is a nominal value and does not include any instrument uncertainties.

(13) ~~(15)~~ Local Power Density - High

This LCO requires four channels of LPD - High to be OPERABLE.

The LCO on the CPCs ensures that the SLs are maintained during all AOOs and the consequences of accidents are acceptable.

A CPC is not considered inoperable if CEAC inputs to the CPC are inoperable. The Required Actions required in the event of CEAC channel failures ensure the CPCs are capable of performing their safety Function.

The CPC channels may be manually bypassed below 1E-4%, as sensed by the logarithmic nuclear instrumentation. This bypass is enabled manually in all four CPC channels when plant conditions do not warrant the trip protection. The bypass effectively removes the DNBR - Low and LPD - High trips from the RPS Logic circuitry. The operating bypass is automatically removed when enabling bypass conditions are no longer satisfied.

This operating bypass is required to perform a plant startup, since both CPC generated trips will be in effect whenever shutdown CEAs are inserted. It also allows system tests at low power with Pressurizer Pressure - Low or RCPs off.

During special testing pursuant to LCO 3.4.17, the CPC channels may be manually bypassed when THERMAL POWER is below 5% RTP to allow special testing without generating a reactor trip. The Linear Power Level - High trip setpoint is reduced, so as to provide protection during testing.

(14) ~~(16)~~ Departure from Nucleate Boiling Ratio (DNBR) - Low

This LCO requires four channels of DNBR - Low to be OPERABLE.

The LCO on the CPCs ensures that the SLs are maintained during all AOOs and the consequences of accidents are acceptable.

TSTF-410

BASES

BACKGROUND (continued)

The RPS is segmented into four interconnected modules. These modules are:

- Measurement channels,
- Bistable trip units,
- RPS Logic, and
- Reactor trip circuit breakers (RTCBs).

This LCO applies only to the Logarithmic Power Level - High trip in MODES 3, 4, and 5 with the RTCBs closed. In MODES 1 and 2, this trip Function is addressed in LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation - Operating." LCO 3.3.13, "[Logarithmic] Power Monitoring Channels," applies when the RTCBs are open. In the case of LCO 3.3.13, the logarithmic channels are required for monitoring neutron flux, although the trip Function is not required.

Measurement Channels and Bistable Trip Units

The measurement channels providing input to the Logarithmic Power Level - High trip consist of the four logarithmic nuclear instrumentation channels detecting neutron flux leakage from the reactor vessel. Other aspects of the Logarithmic Power Level - High trip are similar to the other measurement channels and bistables. These are addressed in the Background section of LCO 3.3.1.

Functional testing of the entire RPS, from bistable input through the opening of individual sets of RTCBs, can be performed either at power or shutdown and is normally performed on a quarterly basis. Nuclear instrumentation can be similarly tested. FSAR, Section [7.2] (Ref. 3), provides more detail on RPS testing.

APPLICABLE SAFETY ANALYSES

The RPS functions to maintain the SLs during AOOs and mitigates the consequence of DBAs in all MODES in which the RTCBs are closed.

Each of the analyzed transients and accidents can be detected by one or more RPS Functions. Functions not specifically credited in the accident analysis were qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the plant. Noncredited Functions include the Steam Generator Water Level - High and the Loss of Load. The Steam Generator Water Level - High and the Loss of Load trips are

TSTF-410

BASES

APPLICABLE SAFETY ANALYSES (continued)

purely equipment protective, and its use minimizes the potential for equipment damage.

The Logarithmic Power Level - High trip protects the integrity of the fuel cladding and helps protect the RCPB in the event of an unplanned criticality from a shutdown condition.

In MODES 2, 3, 4, and 5, with the RTCBs closed, and the Control Element Assembly (CEA) Drive System capable of CEA withdrawal, protection is required for CEA withdrawal events originating when logarithmic power is < 1E-4%. For events originating above this power level, other trips provide adequate protection.

MODES 3, 4, and 5, with the RTCBs closed, are addressed in this LCO. MODE 2 is addressed in LCO 3.3.1.

In MODES 3, 4, or 5, with the RTCBs open or the CEAs not capable of withdrawal, the Logarithmic Power Level - High trip does not have to be OPERABLE. However, the indication and alarm portion of two logarithmic channels must be OPERABLE to ensure proper indication of neutron population and to indicate a boron dilution event. The indication and alarm functions are addressed in LCO 3.3.13.

The RPS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires the Logarithmic Power Level - High RPS Function to be OPERABLE. Failure of any required portion of the instrument channel renders the affected channel(s) inoperable and reduces the reliability of the affected Function.

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).

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.