BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1 (continued)

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. 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. R6 RAI 3.3.5-07 R6

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION for channels required by LCO 3.3.5.a and LCO 3.3.5.b. RAI 3.3.5-01 R6

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 verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-07 RAI 3.3.5-01 R6

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.

SR 3.3.5.3

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). RAI 3.3.5-01 R6

(continued)

CTS

3.3 INSTRUMENTATION

3.1/4.3.2 3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

03.3.2.1 LCO 3.3.5 Three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function shall be OPERABLE for the following 4 ICO AC buses:
a. The H and J TRAIN buses; and
b. One bus on the other UNIT for each required shared component.

APPLICABILITY: MODES 1, 2, 3, and 4.
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources—Shutdown."

RAI 3.3.5-1 R6

ACTIONS

NEW

NOTE
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action 19 A. One or more Functions with one channel per bus inoperable.	A.1 NOTE The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. Place channel in trip.	72 hours
NEW B. One or more Functions with two or more channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour

(continued)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
NEW C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.5.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.5.2 Perform TADOT. for LCO 3.3.5.a and LCO 3.3.5.b functions	92 days

4.3.2.1.1 and Function 7 of Table 3.3-4.

(continued)

RAI 3.3.5-1 RG

CTS

4.3.2.1.1 and Function 7 of TABLE 3.3-4

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.5.[8] 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. ≤ 3.0	and ≤ 3225 V
Loss of voltage Trip Setpoint ≥ [2975] V with a time delay of [0.8] ± [ ] second	for LCO 3.3.5.a and LCO 3.3.5.b Functions
b. Degraded voltage Allowable Value ≥ [3663] V with a time delay of [20] ± [ ] seconds.	and ≤ 3712 V
Degraded voltage Trip Setpoint ≥ [3746] V with a time delay of [20] ± [ ] seconds.	

4.3.2.1.2

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INSERT 1

1. A time delay ≤ 9.0 seconds with a Safety Injection (SI) signal for LCO 3.3.5.a Functions; and

2. A time delay ≤ 63.0 seconds without an SI signal for LCO 3.3.5.a and LCO 3.3.5.b Functions.

RAI 3.3.5-1 R6

INSERT 2

SR 3.3.5.3	Verify ESF RESPONSE TIMES are within limit for LCO 3.3.5.a and LCO 3.3.5.b Functions.	18 months on a STAGGERED TEST BASIS

9. ISTS LCO 3.3.5 states, "[Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function shall be OPERABLE." ISTS SR 3.3.5.2 requires a TADOT to be performed and SR 3.3.5.3 states that a CHANNEL CALIBRATION shall be performed with ALLOWABLE VALUES listed. ITS LCO 3.3.5 requires three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function for the following 4160 VAC buses to be OPERABLE: a. The H and J Train buses; and b. One bus on the other unit for each required shared component. In addition, ITS SRs are modified to reflect the appropriate testing. SR 3.3.5.1 requires the TADOT for both LCO 3.3.5.a and LCO 3.3.5.b Functions. SR 3.3.5.2.a requires a CHANNEL CALIBRATION for both LCO 3.3.5.a and LCO 3.3.5.b Functions on loss of voltage. SR 3.3.5.2.b.1 requires a CHANNEL CALIBRATION for LCO 3.3.5.a degraded voltage Function with a SI signal. SR 3.3.5.2.b.2 requires a CHANNEL CALIBRATION for both LCO 3.3.5.a and LCO 3.3.5.b degraded voltage Function without a SI signal. These changes are appropriate because these requirements specify the unit's LOP EDG start instrumentation requirements from its and the other unit's instrumentation channels when the other unit is needed to support this unit's safety function. An example of the other unit LOP EDG start instrumentation being required for this unit is as follows: Four Service Water (SW) pumps are required to be OPERABLE for this unit. Two of the SW pumps are electrically powered from this unit and two from the other unit. If a SI signal on this unit occurs with a loss of all offsite electrical power to both units, the two SW pumps receive a start signal from this unit and are electrically supplied from this unit's emergency electrical buses. The required SW pumps on the other unit must be electrically powered from that unit's EDGs. The other unit's EDGs receive a start signal from its LOP EDG start instrumentation channels on a loss or degraded voltage condition on its emergency buses to support the two SW pumps needed by this unit.

RAI 3.3.5-1 R6

10. ISTS SR 3.3.5.2 requires the performance of a TADOT every [31 days]. ITS SR 3.3.5.1 states that a TADOT be performed every 92 days. The SR is modified by a Note that states, "Verification of setpoint is not required." The inclusion of the Note for the SR is acceptable because this SR is applicable to the Emergency bus loss of voltage and degraded voltage relays. The setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION; therefore setpoint verification should not be required for the 92-day TADOT and is excluded by the Note.

R6

B 3.3 INSTRUMENTATION

B 3.3.5 Loss of Power (LOP)/Diesel Generator (DG) Start Instrumentation

BASES

BACKGROUND

The DGs provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. Undervoltage protection will generate an LOP start if a loss of voltage or degraded voltage condition occurs in the switchyard. There are two required LOP start signals, one for each 4.16 kV vital bus.

Three undervoltage relays with inverse time characteristics are provided on each 4160 Class 1E instrument bus for detecting a sustained degraded voltage condition or a loss of bus voltage. The relays are combined in a two-out-of-three logic to generate an LOP signal if the voltage is below 75% for a short time or below 90% for a long time. The LOP start actuation is described in FSAR Section 8.3 (Ref. 1).

Trip Setpoints and Allowable Values

The Trip Setpoints used in the relays are based on the analytical limits presented in FSAR Chapter 15 (Ref. 2). The selection of these Trip Setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account.

The actual nominal Trip Setpoint entered into the relays is normally still more conservative than that required by the Allowable Value. If the measured setpoint does not exceed the Allowable Value, the relay is considered OPERABLE.

Setpoints adjusted in accordance with the Allowable Value ensure that the consequences of accidents will be acceptable, providing the unit is operated from within the LCOs at the onset of the accident and that the equipment functions as designed.

Allowable Values and/or Trip Setpoints are specified for each Function in the LCO. Nominal Trip Setpoints are also specified in the unit specific setpoint calculations. The nominal Trip setpoints are selected to ensure that the setpoint measured by the surveillance procedure does not exceed the

(continued)

Rev. 6

INSERT 1

Undervoltage relays are provided on each 4160 V Class 1E bus for detecting a loss of bus voltage or a sustained degraded voltage condition. The relays are combined in a two-out-of-three logic to generate a LOP signal. A loss of voltage start of the EDG is initiated when the voltage is less than 74% of rated voltage and lasts for approximately 2 seconds. A degraded voltage start of the EDG is produced when the voltage is less than 90% of rated voltage sustained for approximately 56 seconds. The time delay for the degraded voltage start signal is reduced to approximately 7.5 seconds with the presence of a Safety Injection signal for the H and J bus on this unit.

One 4160 VAC bus from the other unit is needed to support operation of each required Service Water (SW) pump, Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) fan, and Auxiliary Building central exhaust fan. SW, MCR/ESGR EVS, and Auxiliary Building central exhaust systems are shared systems.

RAI 3.3.5-1 R6

INSERT 2

The Allowable Value in conjunction with the trip setpoint and LCO establishes the threshold for Engineered Safety Features Actuation System (ESFAS) action to prevent exceeding acceptable limits such that the consequences of Design Basis Accidents (DBAs) will be acceptable. The Allowable Value is considered a limiting value such that a channel is OPERABLE if the setpoint is found not to exceed the Allowable Value during the CHANNEL CALIBRATION. Note that, although a channel is OPERABLE under these circumstances, the setpoint must be left adjusted to within the established calibration tolerance band of the setpoint in accordance with uncertainty assumptions stated in the referenced setpoint methodology, (as-left-criteria) and confirmed to be operating with the statistical allowances of the uncertainty terms assigned.

BASES

BACKGROUND

Trip Setpoints and Allowable Values and LOP EDG Start Instrumentation Setpoints (continued)

TSTF 365

Allowable Value if the relay is performing as required. If the measured setpoint does not exceed the Allowable Value, the relay is considered OPERABLE. Operation with a Trip Setpoint less conservative than the nominal Trip Setpoint, but within the Allowable Value, is acceptable provided that operation and testing is consistent with the assumptions of the unit specific setpoint calculation. Each Allowable Value and/or Trip Setpoint specified is more conservative than the analytical limit assumed in the transient and accident analyses in order to account for instrument uncertainties appropriate to the trip function. These uncertainties are defined in the "Unit Specific RTS/ESFAS Setpoint Methodology Study" (Ref. 3).

TSTF 365 (3) (Ref. 3)

TSTF 365

APPLICABLE SAFETY ANALYSES

The LOP DG start instrumentation is required for the Engineered Safety Features (ESF) Systems to function in any accident with a loss of offsite power. Its design basis is that of the ESF Actuation System (ESFAS).

(1) (2)

Accident analyses credit the loading of the DG based on the loss of offsite power during a loss of coolant accident (LOCA). The actual DG start has historically been associated with the ESFAS actuation. The DG loading has been included in the delay time associated with each safety system component requiring DG supplied power following a loss of offsite power. The analyses assume a non-mechanistic DG loading, which does not explicitly account for each individual component of loss of power detection and subsequent actions.

(E) (1)

The required channels of LOP DG start instrumentation, in conjunction with the ESF systems powered from the DGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference 2, in which a loss of offsite power is assumed.

(E) (1) (5) (1)

RAI 3.3.5-5 R6

The delay times assumed in the safety analysis for the ESF equipment include the 10 second DG start delay, and the appropriate sequencing delay, if applicable. The response times for ESFAS actuated equipment in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," include the appropriate DG loading and sequencing delay.

(E) (1) (if applicable)

(continued)

RAI 3.3.5-1 R6.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

The LOP DG start instrumentation channels satisfy Criterion 3 of the NRC Policy Statement. (10 CFR 50.36 (c)(2)(ii))

LCO

The LCO for LOP DG start instrumentation requires that three channels per bus of both the loss of voltage and degraded voltage Functions shall be OPERABLE in MODES 1, 2, 3, and 4 when the LOP DG start instrumentation supports safety systems associated with the ESFAS. In MODES 5 and 6, the three channels must be OPERABLE whenever the associated DG is required to be OPERABLE to ensure that the automatic start of the DG is available when needed. Loss of the LOP DG Start Instrumentation Function could result in the delay of safety systems initiation when required. This could lead to unacceptable consequences during accidents. During the loss of offsite power the DG powers the motor driven auxiliary feedwater pumps. Failure of these pumps to start would leave only one turbine driven pump, as well as an increased potential for a loss of decay heat removal through the secondary system.

<INSERT> RAI 3.3.5-1 R6, TSTF 365

APPLICABILITY

The LOP DG Start Instrumentation Functions are required in MODES 1, 2, 3, and 4 because ESF Functions are designed to provide protection in these MODES. Actuation in MODE 5 or 6 is required whenever the required DG must be OPERABLE so that it can perform its function on an LOP or degraded power to the vital bus.

<INSERT 2>

ACTIONS

In the event a channel's Trip Setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

TSTF 365

Because the required channels are specified on a per bus basis, the Condition may be entered separately for each bus as appropriate.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of

(continued)

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INSERT 1

This is associated with the requirement of LCO 3.3.5.a for this unit's H and J buses. LCO 3.3.5.b specifies that for a required H and/or J bus on the other unit that is needed to support a required shared component for this unit, the LOP EDG start instrumentation for the required bus must be OPERABLE.

RAI 3.3.5-1 R6

A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the trip setpoint. A trip setpoint may be set more conservative than the trip setpoint specified in the TRM (Ref. 2) as necessary in response to unit conditions.

INSERT 2

or during the movement of recently irradiated fuel assemblies, the EDGs are not assumed to start and automatically supply electrical power to the emergency buses.

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

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.

SR 3.3.5.3 >

REFERENCES

1. FSAR, Section [8.3].
2. FSAR, Chapter [15].
3. Unit Specific RTS/ESFAS Setpoint Methodology Study.
4. PLANT-SPECIFIC Risk Assessment Consistent with NCAP 14393-P-A
5. UFSAR, Chapter 15.

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INSERT 1

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at an 18 month frequency with applicable extensions.

INSERT 2

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. R6 RAI 3.3.5-7 R6

INSERT 3

The verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-1 R6

INSERT 4

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). R6

Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate TRM response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. R6

Response time may be verified by actual response time test in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these

ITS 3.3.5

A.1

03-09-00

RAI 3.3.5-1 R6

ITS 3.3 3.3.5

INSTRUMENTATION (Loss of Power (LOP) Emergency Diesel Generator (EDG))

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

A.2

LIMITING CONDITION FOR OPERATION

(See ITS 3.3.2)

LCO 3.3.5

3.3.2.1 **(Risk-Informed)** The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.

(Insert proposed ITS LCO 3.3.5) M.3

LA.2

APPLICABILITY: As shown in Table 3.3-3.

A.3

ACTION: (Insert proposed Note to proposed Actions)

A.1

Note Action A

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel (inoperable) and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

LA.1

LA.2

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

A.2

SURVEILLANCE REQUIREMENTS

SRs 3.3.5.1 3.3.5.2

4.3.2.1.1 Each ESFAS instrumentation channel, interlock, and the automatic actuation logic and relays shall be demonstrated OPERABLE by the performance of the Engineered Safety Features Actuation System instrumentation surveillance requirements specified in Table 4.3-2.

RAI 3.3.5-1 R6

M.4

LCO 3.3.5.b Function 2.d Required

A.4

3.3.5.3

4.3.2.1.2 The ENGINEERED SAFETY FEATURE RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

LA.4

A.1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	SLAVE RELAY TEST	MODES IN WHICH SURVEILLANCE REQUIRED
7. LOSS OF POWER 4.16 KV Emergency Bus					
a. Loss of Voltage	N.A.	R	Q	N.A.	1, 2, 3, 4
b. Degraded Voltage	N.A.	R	Q	N.A.	1, 2, 3, 4
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	N.A	R	R	N.A.	1, 2, 3
b. Low - Low T_{avg}, P-12	N.A.	R	R	N.A.	1, 2, 3
c. Reactor Trip, P-4	N.A.	N.A.	R	N.A.	1, 2, 3

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ITS

SRs 3.3.5.1 3.3.5.2

M.4

3.3.5.2 (R) 3.3.5.1 (Q) (R) LA.3 3.3.5.2 (R) 3.3.5.1 (Q) (R)

A.A.I 3.3.5-1 RG

see ITS 3.3.2

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NEW SR Note

INSERT proposed Note to SR 3.3.5.1

A.5 RG

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A.1

03-09-00 RAI 3.3.5-1 RC

ITS 3.3

INSTRUMENTATION Loss of Power (LOP) Emergency Diesel Generator (EDG)

3.3.5 3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION A.2

LIMITING CONDITION FOR OPERATION

See ITS 3.3.2

LCO 3.3.5

3.3.2.1 **(Risk-Informed)** The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4. INSERT proposed ITS LCO 3.3.5 M.3 LA.2

APPLICABILITY: As shown in Table 3.3-3. A.3

Note INSERT proposed Note to proposed Actions

ACTION: A.1

Action A

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable (Inoperable) and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value. LA.1 LA.2

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3. A.2

SURVEILLANCE REQUIREMENTS

SRs

3.3.5.1 4.3.2.1.1 Each ESFAS instrumentation channel, interlock, and the automatic actuation logic and relays shall be demonstrated OPERABLE by the performance of the Engineered Safety Features Actuation System instrumentation surveillance requirements specified in Table 4.3-2

3.3.5.2

RAI 3.3.5-1 RC M.4 LCO 3.3.5.6 Function Requirements

3.3.5.3 4.3.2.1.2 The ENGINEERED SAFETY FEATURE RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3. A.4 LA.4

A.1

TABLE 4.3-2 (CONTINUED)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	SLAVE RELAY TEST	MODES IN WHICH SURVEILLANCE REQUIRED
7. LOSS OF POWER 4.16 KV Emergency Bus					
a. Loss of Voltage	N.A.	R	Q (SR 3.3.5.1)	N.A.	1, 2, 3, 4
b. Degraded Voltage	N.A.	R	Q (SR 3.3.5.1)	N.A.	1, 2, 3, 4
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	N.A.	R	R	N.A.	1, 2, 3
b. Low-Low T_{avg}, P-12	N.A.	R	R	N.A.	1, 2, 3
c. Reactor Trip, P-4	N.A.	N.A.	R	N.A.	1, 2, 3

M.4 LA.3 SR 3.3.5.2 SR 3.3.5.1

RAI 3.3.5-1 R6

See ITS 3.3.2

A.5 R6

NEW SR Note > INSERT Proposed Note to SR 3.3.5.1

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ITS 3.3.5 03-09-00

This change is acceptable because the EDG start instrumentation does provide a start signal to the EDG from a degraded voltage with a safety injection signal with an approximately 7.5 second time delay. The Allowable Value change is acceptable because the new value is derived from the plant setpoint methodology. The start of the EDG is required by instrumentation design and the required testing is necessary to ensure the voltage setpoint and time delay are periodically verified. This change is more restrictive because the ITS provides additional requirements that is not required by the CTS.

M.2 CTS Table 3.3-4 ESFAS Trip Setpoints list the Allowable Values for the Loss of Power on a Loss of Voltage and Degraded Voltage condition of the 4160-Volt emergency buses. The Allowable Values are listed for the minimum voltage values of each function. ITS SR 3.3.5.2 specifies a maximum and a minimum Allowable Value for the Loss of Voltage and Degraded Voltage functions. The maximum voltage Allowable Value for the Loss of Voltage is ≤ 3225 Volts, and the Degraded Voltage Allowable Value is ≤ 3772 Volts. This changes the CTS by adding Allowable Values that are not currently specified.

This change is acceptable because the instrumentation will ensure that the emergency buses will not separate from the offsite power source while the offsite electrical power distribution subsystem has sufficient voltage to adequately supply the required emergency loads. This change is more restrictive because the ITS provides additional requirements that are not specified in the CTS.

M.3 CTS LCO 3.3.2.1, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, states the trip setpoints for the features are required to be set consistent with the values listed in the Trip Setpoint column of Table 3.3-4. ITS LCO 3.3.5, "Loss of Power (LOP) Emergency Diesel Generator (EDG) Start Instrumentation," requires three channels per bus for the undervoltage and degraded voltage Functions for this unit H and J Train 4160 VAC buses to be OPERABLE. The LCO additionally requires the H and/or J Train 4160 VAC buses on the other unit that are needed to support shared components to be OPERABLE. This changes the LCO requirements by specifically requiring LOP EDG start instrumentation from the other unit to be OPERABLE when supporting shared components for this unit.

RAI 3.3.5-1 R6

The addition of the requirement for the other unit LOP EDG start instrumentation is acceptable because the shared components required by this unit must be electrically supported by the other unit's EDG. For the other unit to detect a loss of offsite power or degraded voltage condition, the LOP EDG start instrumentation is required to be OPERABLE. For this unit to rely on components electrically powered from the other unit, this unit must require the OPERABILITY of the other unit LOP EDG start instrumentation to ensure the shared component(s) may fulfill the unit's safety functions. This change is more restrictive because the ITS provides additional requirements that are not specified in the CTS.

M.4 CTS Surveillance Requirements 4.3.2.1.1 and 4.3.2.1.2 require the periodic testing of Loss of Voltage and Degraded Voltage Functions for the Loss of Power on the 4160 kV emergency bus. ITS SRs 3.3.5.1, 3.3.5.2, and 3.3.5.3 require the testing of the LOP EDG start instruments for this unit and the other unit that supplies shared electrical power to shared components. These requirements are specified as LCO 3.3.5.a and LCO 3.3.5.b Functions. This changes the CTS by requiring the other unit loss of voltage and degraded voltage Functions to be tested for this unit if they support shared components. RAI 3.3.5-1 R6

The purpose of this change is to ensure that if a shared component is electrically powered from the other unit, the LOP EDG start instrumentation of the other unit is required to be OPERABLE by this unit's Technical Specifications. This change is acceptable because shared components provide safety functions for this unit while being electrically powered from the other unit. For this unit to rely on components electrically powered from the other unit, this unit must require the OPERABILITY of the other unit LOP EDG start instrumentation to ensure the shared component(s) may fulfill the unit's safety functions. This change is more restrictive because the ITS provides additional requirements that are not specified in the CTS.

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS 3.3.2.1 Action a requires that with an ESFAS instrumentation channel trip setpoint found less conservative than the value shown in the Allowable Values column of Table 3.3-4, the channel be declared inoperable and Action a be entered. ITS 3.3.5 LCO requires three channels per function to be OPERABLE and Action A requires an inoperable channel to be placed in trip within 72 hours. This changes the CTS by moving the discussion of the relationship between the Allowable Value and OPERABILITY from the Technical Specification to the Bases. R6

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS continue to require an inoperable undervoltage and degraded voltage channel to be placed in a trip condition within 72 hours. The relationship between the Allowable Value and OPERABILITY provides detailed information that is covered in the Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is categorized as less restrictive removal of details because information has been moved from the Technical Specifications to the Bases. R6 R6

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Table 3.3-4 functional unit 7, Loss of Power, lists the Trip

North Anna ITS RAIs
ITS Section 3.3, Instrumentation

3.3.5–2 Not Used

North Anna ITS RAIs
ITS Section 3.3, Instrumentation

3.3.5–3 ITS N/A
STS N/A
CTS N/A
DOC L.1

RAI 3.3.5-3 DOC L.1

Comment: This DOC discusses four separate CTS changes. Provide additional analysis for DOC L.1 to show that the deleted CTS requirements have little or no safety benefit. Show that the ITS actions that remain will conservatively compensate for the inoperable equipment commensurate with safety importance of the inoperable equipment and facility design, and do not compromise safe operation of the plant.

Response: The Company agrees with the Comment. DOC L.1 has been revised to address the issue of adding ITS Action B. Revised DOC L.1 provides additional discussion regarding the adequacy of the remaining ITS actions. The movement of minimum channels and channels columns are now addressed by DOC LA.5.

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	19*
b. 4.16 Kv Emergency Bus Undervoltage (Grid Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	19*
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	22*
b. Low-Low T_{avg}, P-12	3	2	2	1, 2, 3	22*
c. Reactor Trip, P-4	2	1	2	1, 2, 3	21

NORTH ANNA - UNIT 1

ITS

LCO 3.3.5

LCO 3.3.5

LA.5

L.1

RAI 3.35-3 R6

INSERT PROPOSED ACTION A

A.1

see ITS 3.3.2

3/4 3-20a

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ITS 3.3.5

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

L.1

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	19*
b. 4.16 Kv Emergency Bus Under Voltage (Grid Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	19*
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	22*
b. Low-Low T_{avg}, P-12	3	2	2	1, 2, 3	22*
c. Reactor Trip, P-4	2	1	2	1, 2, 3	21

LA.5

RAI 3.3.5-3 RG

INSERT PROPOSED ACTION A

see ITS 3.3.2

ITS

LCO 3.3.5

LCO 3.3.5

NORTH ANNA - UNIT 2

3/4 3-21

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ITS 3.3.5

03-09-00

ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3." ITS SR 3.3.5.3 requires the ESFAS RESPONSE TIMES to be within limits. This changes the CTS by moving details of scheduling the test from the Specification to the ITS Bases. R6

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. All necessary requirements for the function remain in the Technical Specifications. Changes to the Bases are controlled by the Technical Specification Bases Control Program, described in Chapter 5 of the ITS. This requirement provides for control of changes to the Bases and will ensure that any changes to the Bases are properly evaluated. This change is categorized as less restrictive removal of details because information has been moved from the Technical Specifications to the Bases. R6

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for Engineered Safety Feature Actuation System (ESFAS) instrumentation has three columns stating various requirements for each function. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." ITS Table 3.3.2-1 states the channel requirement for each ESFAS function as, "REQUIRED CHANNELS." This changes the CTS by stating all of the channel requirements for each function as the required channels and moving the information of the number of channels to trip and the minimum channels needed to maintain the function OPERABLE to the UFSAR.

RAI 3.3.5-3 R6

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels and the appropriate Condition to be entered if a required channel becomes inoperable. This change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59 which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 for ESFAS instrumentation states the total number of channels as three for the loss of power (LOP) functions (loss of voltage and degraded voltage). CTS Action 19 is required to be entered for an inoperable channel, and the inoperable channel is required to be

placed in the tripped condition within 72 hours. ITS LCO 3.3.5 states the total number of required channels as three for each function. ITS Condition B states, "One or more Functions with two or more channels per bus inoperable, restore all but one channel to OPERABLE status in 1 hour." This changes the CTS to allow more than one channel for the functions to be inoperable. RAI 3.3.5-3

This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The ITS Action will allow one hour to restore all but one channel to OPERABLE status. This is a reasonable period of time because of the low probability of an event occurring that would require a LOP EDG start. A separate EDG start signal from a SI signal is required to be OPERABLE for the EDG to be considered OPERABLE. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS. RAI 3.3.5-3 R6

L.2 *(Category 4 – Relaxation of Required Action)* CTS 3.3.2, Action 19, states that with the number of OPERABLE channels one less than the total number of channels, STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in trip within 72 hours. ITS 3.3.5 Action C states, "When the Required Action and associated Completion Time not met," immediately enter applicable Condition(s) and Required Action(s) for the associated EDG made inoperable by LOP EDG start instrumentation. This changes the CTS by allowing the associated EDG to be declared inoperable instead of the declaring the LOP function inoperable, entering LCO 3.0.3, and shutting down the unit. RAI 3.3.5-4 R6

This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. With the loss of function, the emergency bus's ability to supply the emergency equipment with power is degraded. The accident analyses assume a single failure, and the loss of LOP EDG start instrumentation would have the same effect as a loss of an EDG with a station blackout. This is acceptable because the accident analyses assume design basis accidents occur with the loss of an emergency bus and associated safety equipment and the remaining equipment is sufficient to provide the required safety functions to

North Anna ITS RAIs
ITS Section 3.3, Instrumentation

3.3.5–4 ITS N/A
STS N/A
CTS N/A
DOC L.2

RAI 3.3.5-4 DOC L.2

Comment: Provide additional analysis for DOC L.2 for DOC L.1 to show that the deleted CTS requirements have little or no safety benefit. Show that the ITS actions that remain will conservatively compensate for the inoperable equipment commensurate with safety importance of the inoperable equipment, facility design and do not compromise safe operation of the plant.

Response: The Company agrees with the Comment. DOC L.2 has been revised to provide additional discussion regarding the adequacy of the remaining ITS actions.

placed in the tripped condition within 72 hours. ITS LCO 3.3.5 states the total number of required channels as three for each function. ITS Condition B states, "One or more Functions with two or more channels per bus inoperable, restore all but one channel to OPERABLE status in 1 hour." This changes the CTS to allow more than one channel for the functions to be inoperable.

RAI 3.3.5-3

This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The ITS Action will allow one hour to restore all but one channel to OPERABLE status. This is a reasonable period of time because of the low probability of an event occurring that would require a LOP EDG start. A separate EDG start signal from a SI signal is required to be OPERABLE for the EDG to be considered OPERABLE. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

RAI 3.3.5-3 R6

L.2 *(Category 4 – Relaxation of Required Action)* CTS 3.3.2, Action 19, states that with the number of OPERABLE channels one less than the total number of channels, STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in trip within 72 hours. ITS 3.3.5 Action C states, "When the Required Action and associated Completion Time not met," immediately enter applicable Condition(s) and Required Action(s) for the associated EDG made inoperable by LOP EDG start instrumentation. This changes the CTS by allowing the associated EDG to be declared inoperable instead of the declaring the LOP function inoperable, entering LCO 3.0.3, and shutting down the unit.

RAI 3.3.5-4 R6

This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. With the loss of function, the emergency bus's ability to supply the emergency equipment with power is degraded. The accident analyses assume a single failure, and the loss of LOP EDG start instrumentation would have the same effect as a loss of an EDG with a station blackout. This is acceptable because the accident analyses assume design basis accidents occur with the loss of an emergency bus and associated safety equipment and the remaining equipment is sufficient to provide the required safety functions to

mitigate the design events. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS. RAI 3.3.5-4 R6

L.3 *(Category 1 – Relaxation of LCO Requirements)* CTS Table 3.3-4 for function 7.a, Loss of Power 4160 Volt Emergency Bus Undervoltage (Loss of Voltage) states an Allowable Value of ≥ 2989 volts. SR 3.3.5.2 states that a CHANNEL CALIBRATION is performed with an Allowable Value for the Loss of Voltage set to 2935 volts. This changes the CTS by decreasing the Allowable Value for the Loss of Voltage from 2989 to 2935 volts.

The purpose of ITS 3.3.5 Allowable Value for the Loss of Voltage function change from 2989 to 2935 volts is to establish a value that is consistent with the setpoint methodology. This change is acceptable because the LCO requirements continue to ensure that the process variable is maintained consistent with the safety analyses and licensing basis. The change to 2935 volts from 2989 volts is consistent with the method used to calculate the other RTS and ESFAS Allowable Values. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

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3.3.5–5 ITS N/A
STS N/A
CTS N/A
DOC N/A

RAI 3.3.5-5 NUREG Bases Markup, page 3.3-145 ITS deletes NUREG Bases citations of FSAR Chapter 15 analyzed accidents for which LOP EDG Start instrumentation are assumed to be operable. Identifying applicable safety analyses supports selection of the appropriate 10CFR 50.36 criteria, thus it provides the bases for the technical specification required by 10 CFR 50.36(a).

Comment: Provide ITS Bases references to Applicable Safety Analyses for LCO 3.3.5.

Response: The Company agrees with the Comment. The reference to Chapter 15 analyzed events has been restored.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The required channels of LOP EDG start instrumentation, in conjunction with the ESF systems powered from the EDGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference 5, in which a loss of offsite power is assumed. RAI 3.3.5-05 R6

The delay times assumed in the safety analysis for the ESF equipment include the 10 second EDG start delay, and the appropriate sequencing delay, if applicable. The response times for ESFAS actuated equipment in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," include the appropriate EDG loading and sequencing delay if applicable. RAI 3.3.5-01 R6

The LOP EDG start instrumentation channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO for LOP EDG start instrumentation requires that three channels per bus of both the loss of voltage and degraded voltage Functions shall be OPERABLE in MODES 1, 2, 3, and 4 when the LOP EDG start instrumentation supports safety systems associated with the ESFAS. This is associated with the requirement of LCO 3.3.5.a for this unit's H and J buses. LCO 3.3.5.b specifies that for a required H and/or J bus on the other unit that is needed to support a required shared component for this unit, the LOP EDG start instrumentation for the required bus must be OPERABLE. A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the trip setpoint. A trip setpoint may be set more conservative than the trip setpoint specified in the TRM (Ref. 2) as necessary in response to unit conditions. Loss of the LOP EDG Start Instrumentation Function could result in the delay of safety systems initiation when required. This could lead to unacceptable consequences during accidents. During the loss of offsite power the EDG powers the motor driven auxiliary feedwater pumps. Failure of these pumps to start would leave only one turbine driven pump, as well as an increased potential for a loss of decay heat removal through the secondary system. RAI 3.3.5-01 R6 RAI 3.3.5-01 R6

BASES

REFERENCES (continued)

3. RTS/ESFAS Setpoint Methodology Study (Technical Report EE-0101).

4. Plant-specific risk assessment consistent with WCAP 14333-P-A.

5. UFSAR, Chapter 15.

RAI 3.3.5-06 R6

RAI 3.3.5-05 R6

BASES

BACKGROUND

Trip Setpoints and Allowable Values (continued)

Allowable Value if the relay is performing as required. If the measured setpoint does not exceed the Allowable Value, the relay is considered OPERABLE. Operation with a Trip Setpoint less conservative than the nominal Trip Setpoint, but within the Allowable Value, is acceptable provided that operation and testing is consistent with the assumptions of the unit specific setpoint calculation. Each Allowable Value and/or Trip Setpoint specified is more conservative than the analytical limit assumed in the transient and accident analyses in order to account for instrument uncertainties appropriate to the trip function. These uncertainties are defined in the "Unit Specific RTS/ESFAS Setpoint Methodology Study" (Ref. 3).

APPLICABLE SAFETY ANALYSES

The LOP DG start instrumentation is required for the Engineered Safety Features (ESF) Systems to function in any accident with a loss of offsite power. Its design basis is that of the ESF Actuation System (ESFAS).

Accident analyses credit the loading of the DG based on the loss of offsite power during a loss of coolant accident (LOCA). The actual DG start has historically been associated with the ESFAS actuation. The DG loading has been included in the delay time associated with each safety system component requiring DG supplied power following a loss of offsite power. The analyses assume a non-mechanistic DG loading, which does not explicitly account for each individual component of loss of power detection and subsequent actions.

The required channels of LOP DG start instrumentation, in conjunction with the ESF systems powered from the DGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference 2, in which a loss of offsite power is assumed.

The delay times assumed in the safety analysis for the ESF equipment include the 10 second DG start delay, and the appropriate sequencing delay, if applicable. The response times for ESFAS actuated equipment in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," include the appropriate DG loading and sequencing delay, if applicable.

(continued)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1

SR 3.3.5.1 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 3.3.5.2

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.

SR 3.3.5.3 >

REFERENCES

1. [U]FSAR, Section [8.3].
2. FSAR, Chapter [15].
3. Unit Specific RTS/ESFAS Setpoint Methodology Study.
4. PLANT-SPECIFIC Risk Assessment consistent with WCAP 14333-P-A
5. UFSAR, Chapter 15.

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North Anna ITS RAIs
ITS Section 3.3, Instrumentation

3.3.5–6 ITS N/A
STS N/A
CTS N/A
DOC N/A

RAI 3.3.5-6 ITS Bases

Comment: ITS Bases Reference 4, "WCAP's 10271-P-A and 14333-P-A" are used in the Bases discussion for ITS Action A.1. Clarify the use of Bases Reference 4 by identifying which WCAP supports which ITS Bases statements. Provide citations in WCAP-14333-P- A for the 72 hour allowance to trip an inoperable channel and the 12 hour allowance to bypass a channel for surveillance testing for LOP EDG Start instrument functions.

Response: The Company agrees with the Comment. Reference 4 has been changed to incorporate a plant-specific risk assessment evaluation that is consistent with the times of WCAP 14333P-A. The WCAP does not evaluate the increase for the Completion Time to 72 hours or the testing allowance to 12 hours for the EDG Start Instrumentation. A site specific PRA has evaluated these allowances and found them to be acceptable. The ITS Bases has been modified to reflect the site specific PRA evaluation for these times. This information has been communicated to the staff in a letter dated 5/30/01 (Serial Number 01-319).

BASES

REFERENCES (continued)

3. RTS/ESFAS Setpoint Methodology Study (Technical Report EE-0101).

4. Plant-specific risk assessment consistent with WCAP 14333-P-A.

5. UFSAR, Chapter 15.

RAI 3.3.5-06 R6

RAI 3.3.5-05 R6

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1

SR 3.3.5.1 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 3.3.5.2

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.

SR 3.3.5.3 >

REFERENCES

1. UFSAR, Section [8.3].
2. FSAR, Chapter [15]. Technical Requirements Manual
3. Unit Specific RTS/ESFAS Setpoint Methodology Study. (Technical Report EE-0101)
4. PLANT-SPECIFIC Risk Assessment Consistent with WCAP 14333-P-A
5. UFSAR, Chapter 15.

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1. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Editorial change made for enhanced clarity or to be consistent with the ISTS Writers Guide.

3. Information or requirements have be moved from the CTS Specifications to the ITS Bases. No change in technical intent or requirement of the CTS Specification is made with this movement.

4. The criteria of the NRC Final Policy Statement on Technical Specifications Improvements have been included in 10 CFR 50.36(c)(2)(ii). Therefore, references in the ISTS Bases to the NRC Final Policy Statement are revised in the ITS Bases to reference 10 CFR 50.36.

5. Changes are made to reflect those changes made to the ISTS. The following requirements are renumbered or revised, where applicable, to reflect the changes.

6. Reference is added to a plant-specific risk assessment that is consistent with the times of WCAP-14333. These documents provide the basis for the Completion Times for Action A and its Note.

RAI 3.3.5-6 R6

7. The brackets have been removed and the proper plant specific information/value has been provided.

North Anna ITS RAIs
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3.3.5–7 ITS N/A
STS N/A
CTS N/A
DOC N/A

RAI 3.3.5-7 ITS Bases SR 3.3.5.2

Comment: CTS Table 4.3-2, provides a Quarterly functional test of LOP EDG Start instrumentation as modified by Note (5). The quarterly test becomes a quarterly TADOT (SR 3.3.5.1) in ITS. DOC LA.3 moves Note (5) to the Bases. Justify adding CTS Note (5) to the Refueling Channel Calibration and deleting Note (5) from the Quarterly TADOT.

Response: The Company agrees with the Comment. Note 5 to the CTS quarterly test is moved to the Bases for ITS SR 3.3.5.1 (92 day TADOT) and eliminated from the ITS SR 3.3.5.2 (CHANNEL CALIBRATION).

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1 (continued)

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. 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. R6 RAI 3.3.5-07 R6

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION for channels required by LCO 3.3.5.a and LCO 3.3.5.b. RAI 3.3.5-01 R6

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 verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-07 RAI 3.3.5-01 R6

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.

SR 3.3.5.3

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). RAI 3.3.5-01 R6

(continued)

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 92 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

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. UFSAR, Section 8.3.
2. FSAR, Chapter 15.
3. Unit Specific RTS/ESFAS Setpoint Methodology Study.
4. PLANT-SPECIFIC Risk Assessment consistent with WCAP 14333-P-A
5. UFSAR, Chapter 15.

Rev 6

INSERT 1

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at an 18 month frequency with applicable extensions.

INSERT 2

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. R6 RAI 3.3.5-7 R6

INSERT 3

The verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-1 R6

INSERT 4

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). R6

Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate TRM response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. R6

Response time may be verified by actual response time test in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.1

1. The Surveillance Requirements listed in ITS Table 3.3.1-1 for Function 13, Underfrequency RCPs, are specified in Revision 8 of the ITS submittal as SR 3.3.1.6 (Unit 2 only), SR 3.3.1.10, and SR 3.3.1.16. Requiring SR 3.3.1.6 to be performed for Unit 2 only is confusing when presented in this manner. The (Unit 2 only) reference is deleted from the SR list and a footnote (g) is added to SR 3.3.1.6. The footnote states, "Required to be performed for Unit 2 only." Footnotes g and h are re-lettered to h and i.

2. Inserts for ISTS Bases pages B 3.3-48 and B 3.3-50 are corrected.

3. The Bases for ITS SR 3.3.1.7 states "The 'as-found' and 'as-left' values must also be recorded and reviewed for consistency with the assumptions of Reference 7." This is inconsistent with current and planned changes to testing requirements; therefore the paragraph is deleted.

LCO 3.3.2

4. ITS Table 3.3.2 –1 for Functions 1.f, 1.g, 4.d, and 4.e, High Steam Flow in Two Steam Lines specifies the Allowable Value by Note c. Note c states that the Allowable Value is, "less than or equal to a function defined as ΔP corresponding to 43 % full steam flow below 20% load, and ΔP increasing linearly from 43% full steam flow . . ." The 43% is changed to 42% based on a change to Technical Report EE - 0116. This changes the Specification and Bases sections.

5. ITS Table 3.3.2 –1 for Functions 8.b and 8.c, ESFAS Interlocks P–11, Pressurizer Pressure, and P–12, T_{ave} – Low Low, had a range of values initially proposed for the ITS. This change eliminates the range of values proposes a limiting value for each function. P–11 value is set to $\leq$ 2010 psig and P–12 to $\leq$ 545 °F. This changes the specification and JFD 14. This change was initiated by a change to Technical Report EE - 0116.

6. The Bases for ITS SR 3.3.2.4 states "The 'as-found' and 'as-left' values must be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis (Ref. 8) when applicable." This is inconsistent with current and planned changes to testing requirements; therefore the paragraph is deleted.

7. Bases for Containment Isolation states that process lines are listed in TRM. TRM is spelled out and is stated as Technical Requirements Manual.

8. Bases for ESFAS interlock P–4 states that the interlock resets "the steam/feed mismatch to the 43% setpoint." This is changed to read, "Reset the high steam line flow to the nominal setpoint."

9. The RTS/ESFAS Setpoint Methodology Study (Reference 6) is provided by two technical reports. EE – 0116 is added to the reference.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

10. LCO 3.3.2 CTS Discussion of Changes LA.6, LA.8, LA.9, and LA.10 classifications have been changed from Category Type 1 – Removal of Details of System Design to Category Type 3 – Removing Procedural Details. DOC LA.8 is modified reflect correct CTS reference.

11. CTS Table 3.3-3 for Functional Unit 4.d, Steam Flow Two Steam Lines – High coincident with either T_{ave} – Low Low or Steam Line Pressure Low, has an applicability of MODES 1, 2, $3^{\#\#}$. The CTS markup lists DOC A.4 as the documentation for the change to ITS applicability of MODES 1, $2^{(b)}$, and $3^{(b)}$. The DOC for this change is now listed as DOC L.2.

12. ISTS in Table 3.3.2 –1 for Function 6.e, Auxiliary Feedwater pump starts on a trip of all Main Feedwater pumps, requires a CHANNEL CALIBRATION to be performed. The function also requires the performance of a TADOT. The Main Feedwater pumps are electric motor driven pumps for North Anna units. Therefore, the performance of the TADOT is sufficient to verify the function and the CHANNEL CALIBRATION is not required. This changes the ITS Table 3.3.2 – 1 by deleting the SR 3.3.2.8 requirement for Function 6.e, modifying DOC M.2, and adding JDF 15 for the specifications.

13. Typed version of ITS 3.3.2 Required Actions C.1 and C.2, are joined with OR. The OR should not be indented. Required Action C.2.1 and C.2.2 are joined with AND. The AND should be indented. This change is to correct the typed version of ITS 3.3.2 Required Actions.

14. Typed version of ITS 3.3.2 Bases for Action J omitted the word "their" in the second sentence. The sentence is modified to read, " . . . the interlocks are in **their** proper state . . ."

LCO 3.3.3

15. CTS DOC LA.1 justified the movement of requirements for a shared system between units and hydrogen analyzer's heat tracing from the CTS Specifications to the ITS Bases. The requirement for heat tracing is not in the ITS Bases. DOC LA.1 is changed to state that the requirements for heat tracing are moved from the CTS Specification to the Technical Requirements Manual, and also addresses RAI 3.3.3-03. DOC LA.3 is added to justify the movement of the hydrogen analyzers being shared between units to the ITS Bases.

16. ISTS Functions 15, 16, 17, and 18 provide the requirements for the Core Exit Temperature (CET) for the four quadrants of the reactor's core. The ITS groups these functions into the Inadequate Core Cooling Monitor (ICCM) System. Each of these Functions provides individual indication of temperature for a core quadrant; therefore each function can be treated and identified independently. The ITS designation for each quadrant for CET is changed from 6.c for each quadrant to 6.c.1 for Quadrant 1, 6.c.2 for Quadrant 2, 6.c.3 for Quadrant 3, and 6.c.4 for Quadrant 4.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.3

17. A clarification is made to the ISTS Table 3.3.3 – 1 for Function 8 (Containment Pressure) and Function 9 (Containment Pressure Wide Range) and the CTS markup. The Containment Pressure Wide Range is the CTS required channel. The Containment Pressure (narrow range) is added to the CTS requirements. This does not result in a change to the ITS Specifications or Bases.

18. CTS pages 3 of 14 (Unit 1) and 3 of 11 (Unit 2) have inserts. The inserts list a variety of Functions including Function 14 Steam Generator (SG) Water Level (Wide Range). Function 14 specifies the Required Channels as 1 per SG. This is corrected to read 2 Required Channels for the Function.

19. ITS Bases for SR 3.3.3.3 on ISTS page B 3.3 – 137 has three inserts. Insert 2 is from approved TSTF –19. This insert, in part, states in the last part of the sentence "recently installed sensing element." The ITS Bases states "recently installed sensing elements." The "s" is dropped from the word elements.

LCO 3.3.4

20. CTS Table 3.3 – 9 is modified by DOC M.2 that adds various functions. Function 3.e, Steam Generator (SG) Power Operated Relief Valve (PORV) Controls is one of these functions. CTS markup specifies 1 per SG. ITS Bases on B 3.3 – 143a lists the required number of functions for SG PORV Control as 1. CTS markup has been corrected to read 1.

21. Bases for LCO addresses the remote shutdown system as a "division" being inoperable. The Specification LCO requires "Functions" to be OPERABLE. The Bases is modified by changing the word "division" to "function" with one other minor wording change.

22. CTS markups for Unit 1 and 2 do not show ITS SR 3.3.4.2. DOC M.2 documents the additional surveillance requirements being added to the CTS requirements. CTS pages are modified to reflect the addition of ITS SR 3.3.4.2.

LCO 3.3.5

23. LCO 3.3.5 CTS Discussion of Changes LA.1 and LA.4 classifications have been changed from Category Type 1 – Removal of Details of System Design to Category Type 3 – Removing Procedural Details. DOCs LA.3 and LA.4 are modified to clarify the specific change to the CTS requirement.

24. The Technical Requirements Manual (TRM) is addressed in Bases Background section and again in Surveillance Requirement section for SR 3.3.5.3. The second reference to the Technical Requirements Manual is abbreviated as TRM.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.5

25. The ITS Bases for SR 3.3.5.3 in the third paragraph states that the measured response times are compared to the values in the UFSAR. The response time values are contained in the TRM.

26. The ISTS SR 3.3.5.2 requires a TADOT to be performed every [31 days]. The Bases for the SR states that the setpoint for the relays are verified and adjusted if necessary as a part of the surveillance requirement. ITS SR 3.3.5.1 requires a TADOT to be performed every 92 days. The SR is modified by a Note that states "Verification of setpoint is not required." The ITS Bases state, "The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since the SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

LCO 3.3.2

27. The Applicability for Automatic Actuation Logic and Actuation Relays and Steam Generator (SG) Water Level – High High for ESFAS Functions 5.a and 5.b have an exception for MODES 2 and 3. Note (e) for these MODES specifies valves to be closed to isolate Main Feedwater (MFW) from the SGs. The MFW pump discharge valves can also accomplish this function and are credited by the safety analysis. Therefore, the MFW pump discharge valves are added to Note (e).

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.1

1. The Surveillance Requirements listed in ITS Table 3.3.1-1 for Function 13, Underfrequency RCPs, are specified in Revision 8 of the ITS submittal as SR 3.3.1.6 (Unit 2 only), SR 3.3.1.10, and SR 3.3.1.16. Requiring SR 3.3.1.6 to be performed for Unit 2 only is confusing when presented in this manner. The (Unit 2 only) reference is deleted from the SR list and a footnote (g) is added to SR 3.3.1.6. The footnote states, "Required to be performed for Unit 2 only." Footnotes g and h are re-lettered to h and i.

Table 3.3.1-1 (page 2 of 5)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
6. Overtemperature ΔT	1, 2	3	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.16	Refer to Note 1 (Page 3.3.1-16)	|RAIs MB 1433 MB 1427 R8 3.3.1-39 R5
7. Overpower ΔT	1, 2	3	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.12	Refer to Note 2 (Page 3.3.1-17)	
8. Pressurizer Pressure						
a. Low	1[(f)]	3	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 1860 psig	
b. High	1, 2	3	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 2370 psig	|R5
9. Pressurizer Water Level–High	1[(f)]	3	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 93%	
10. Reactor Coolant Flow–Low	1[(f)]	3 per loop	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89%	
11. Reactor Coolant Pump (RCP) Breaker Position	1[(f)]	1 per RCP	M	SR 3.3.1.14	NA	
12. Undervoltage RCPs	1[(f)]	1 per bus	L	SR 3.3.1.6 SR 3.3.1.10 SR 3.3.1.16	≥ 2870 V	|RAIs MB 1433 MB 1427 R8 3.3.1-39 |R5 R6
13. Underfrequency RCPs	1[(f)]	1 per bus	L	SR 3.3.1.6[(g)] SR 3.3.1.10 SR 3.3.1.16	≥ 56 Hz	
14. Steam Generator (SG) Water Level–Low Low	1, 2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 17%	

(f) Above the P-7 (Low Power Reactor Trips Block) interlock.

(g) Required to be performed for Unit 2 only. |R6

Table 3.3.1-1 (page 3 of 5)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
15. SG Water Level–Low	1, 2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 24%	
Coincident with Steam Flow/Feedwater Flow Mismatch	1, 2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 42.5% full steam flow at RTP	
16. Turbine Trip						
a. Low Auto Stop Oil Pressure	1(h)	3	N	SR 3.3.1.10 SR 3.3.1.15	≥ 40 psig	R6
b. Turbine Stop Valve Closure	1(h)	4	N	SR 3.3.1.10 SR 3.3.1.15	≥ 0% open	R6
17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1, 2	2 trains	O	SR 3.3.1.14	NA	
18. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2(d)	2	Q	SR 3.3.1.11 SR 3.3.1.13	≥ 3E-11 amp	
b. Low Power Reactor Trips Block, P-7	1	1 per train	R	SR 3.3.1.5	NA	
c. Power Range Neutron Flux, P-8	1	4	R	SR 3.3.1.11 SR 3.3.1.13	≤ 31% RTP	
d. Power Range Neutron Flux, P-10	1, 2	4	Q	SR 3.3.1.11 SR 3.3.1.13	≥ 7% RTP ≤ 11% RTP	
e. Turbine Impulse Pressure, P-13	1	2	R	SR 3.3.1.10 SR 3.3.1.13	≤ 11% turbine power	
19. Reactor Trip Breakers(i)	1, 2	2 trains	P	SR 3.3.1.4	NA	R6
	3(a), 4(a), 5(a)	2 trains	C	SR 3.3.1.4	NA	
20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1, 2	1 each per RTB	S	SR 3.3.1.4	NA	
	3(a), 4(a), 5(a)	1 each per RTB	C	SR 3.3.1.4	NA	
21. Automatic Trip Logic	1, 2	2 trains	O	SR 3.3.1.5	NA	
	3(a), 4(a), 5(a)	2 trains	C	SR 3.3.1.5	NA	

(a) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(h) Above the P-8 (Power Range Neutron Flux) interlock. R6

(i) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

CTS TABLE 3.3-1

Proposed TSTF RAI MB 1433 MB 1427 R8 RAI 3.3.1-6 Rev 5

Table 3.3.1-1 (page 4 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
20	11. Reactor Coolant Pump (RCP) Breaker Position	1(e)	1 per RCP	M	SR 3.3.1.14	NA	
	a. Single Loop	1(h)	1 per RCP	O	SR 3.3.1.14	NA	NA
	b. Two Loops	1(i)	1 per RCP	M	SR 3.3.1.14	NA	NA
16	12. Undervoltage RCPs	1(g)(f)	1 per bus	L (M)	SR 3.3.1.9 (6) SR 3.3.1.10 SR 3.3.1.16	≥ 2870 [4760] V	≥ [4830] V
17	13. Underfrequency RCPs	1(g)(f)	1 per bus	L (M)	SR 3.3.1.8 (6)(9) SR 3.3.1.10 SR 3.3.1.16	≥ 56 [57.1] Hz	≥ [57.5] Hz
14	14. Steam Generator (SG) Water Level – Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 17 [30.4]%	≥ [32.3]%
15	15. SG Water Level – Low	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 24 [30.4]%	≥ [32.3]%
	Coincident with Steam Flow/ Feedwater Flow Mismatch	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 42.5% full steam flow at RTP	≤ [40]% full steam flow at RTP

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

(f)(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

(h) Above the P-8 (Power Range Neutron Flux) interlock.

(i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

(9) Required to be performed for UNIT 2 only

TSTF 135

TSTF 169

R6

Rev 8

R6

CTS TABLE 3.3-1

Table 3.3.1-1 (page 5 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
18	16. Turbine Trip (AUTOSTOP)						
18.a	a. Low (Fluid) Oil Pressure (12)	1 (b) | 6	3	D N	SR 3.3.1.10 SR 3.3.1.15	≥ [800] psig	≥ [800] psig
18.b	b. Turbine Stop Valve Closure	1 (h) | 6	4	F N	SR 3.3.1.10 SR 3.3.1.15	≥ [1]% open	≥ [1]% open
19	17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	P O	SR 3.3.1.14	NA	NA
23	18. Reactor Trip System Interlocks			TSTF 169 135			
23a P-6	a. Intermediate Range Neutron Flux, P-6	2 (d) | 6	2	E Q	SR 3.3.1.11 SR 3.3.1.13	≥ [1E-11] amp	≥ [1E-10] amp
23b P-7	b. Low Power Reactor Trips Block, P-7	1	1 per train	K R	SR 3.3.1.11 SR 3.3.1.13 3.3.1.5	NA	NA
23c P-8	c. Power Range Neutron Flux, P-8	1	4	I R	SR 3.3.1.11 SR 3.3.1.13	≤ [52.2]% RTP	≤ [48]% RTP
	d. Power Range Neutron Flux, P-9	1	4	T	SR 3.3.1.11 SR 3.3.1.13	≤ [62.2]% RTP	≤ [50]% RTP
23d P-10	Power Range Neutron Flux, P-10 (d) (e) (m)	1,2	4	K Q	SR 3.3.1.11 SR 3.3.1.13	≥ [7.8]% RTP and ≤ [12.2]% RTP (11)	≥ [10]% RTP
23e P-13	Turbine Impulse Pressure, P-13 (e) (f)	1	2	TSTF 169 135 J R	(SR 3.3.1.11) SR 3.3.1.10 SR 3.3.1.13	≤ [12.2]% turbine power	≤ [10]% turbine power

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

(d) (e) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(h) (f) Above the P-8 (Power Range Neutron Flux) interlock.

RAI 3.3.1-5 Rev 5

R6

Table 3.3.1-1 (page 6 of 8)
Reactor Trip System Instrumentation

R6

CTS TABLE 3.3-1

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
21.a 19.	Reactor Trip Breakers (M) (L) 6	1,2	2 trains	(K) (P)	SR 3.3.1.4	NA	NA
		3 (M), 4 (M), 5 (M)	2 trains	C	SR 3.3.1.4	NA	NA
NEW 20.	Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per RTB	(K) (S)	SR 3.3.1.4	NA	NA
		3 (M), 4 (M), 5 (M) 6	1 each per RTB	C	SR 3.3.1.4	NA	NA
22 21.	Automatic Trip Logic	1,2	2 trains	(K) (O)	SR 3.3.1.5	NA	NA
		3 (M), 4 (M), 5 (M)	2 trains	C	SR 3.3.1.5	NA	NA

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(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit. 6

(a) (M) With RTBs closed and Rod Control System capable of rod withdrawal or one or more rods not fully inserted TSTF 6 135

(L) (M) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB. 6

R6

Rev 6

6. ISTS Table 3.3.1-1 contains a reviewer's Note [a]. This Note is not applicable to the NAPS ITS and is eliminated. The subsequent notes are re-lettered. The methodology used for the Allowable Values generally provides for a Trip Setpoint at a constant value below the Allowable Value. Therefore, the Trip Setpoint is a constant offset and not required to be listed in the Technical Specification and the column is eliminated. The values for all Trip Setpoints will be retained in a licensee-controlled Technical Requirement Manual (TRM), which is subject to the controls of the 10 CFR 50.59 process for changes. This change incorporates the intent of approved traveler TSTF–355.

7. The brackets are removed and the proper plant specific information/value is provided.

8. ITS SR 3.3.1.6 for underfrequency TADOT of the RCP buses is required for Unit 2 only. ITS SR 3.3.1.6 in Table 3.3.1 –1 is modified by footnote [j] and current footnotes [j] and [h] are re-lettered to footnotes [h] and [i]. This requirement is not added to the Unit 1 requirements because physical modifications would be required. Operating experience for performing this SR on Unit 2 has shown that these functions normally satisfy this surveillance requirement. Therefore, the SR is not added to Unit 1.

RAIs MB1933 MB14427 R8

R6

9. The Note to ISTS 3.3.1.12 is not applicable for the North Anna design and deleted for the ITS. This change is acceptable because the North Anna RCS temperature detection does not utilize RTDs on the bypass loops but uses RTDs directly in the RCS flow path.

10. TSTF-135 deletes the requirement for Function 5, Source Range Neutron Flux requirements, to be OPERABLE in MODES 3, 4, and 5 when the Rod Control System is incapable of moving the shutdown or control rods. Function 5 requires one Source Range channel to be OPERABLE. Condition L requires when the required channel becomes inoperable that operations involving positive reactivity addition be immediately suspended and the SDM verified within 1 hour and every 12 hours thereafter. The justification given in TSTF-135 for deleting these requirements is that they are moved to ISTS LCO 3.3.9, Boron Dilution Protection System (BDPS). North Anna does not utilize a BDPS for protection against a boron dilution accident. North Anna in ITS LCO requirements 3.1.8 and 3.9.2 require the manual isolation of the boron dilution valves to prevent possible boron dilution events. The current requirements for maintaining one OPERABLE Source Range channel with an associated ITS Action K requiring the verification of SDM within an hour and every 12 hours is translated into ITS 3.3.1 requirements.

11. ITS SR 3.3.1.16 requirement to perform RESPONSE TIME testing on the Overpower ΔT and Steam Generator Level Low coincident with Steam Flow Feedwater Flow Mismatch functions are deleted from the ITS. This is acceptable because neither function is credited by the safety analyses. Pressurizer Water Level – High, ITS function 9, is credited by the safety analyses. This change is acceptable because RESPONSE TIME testing ensures safety analysis assumptions are met.

12. Not used

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.1

2. Inserts for ISTS Bases pages B 3.3-48 and B 3.3-50 are corrected.

INSERT 1

results in Action C entry while RTB(s) are inoperable

INSERT 2

Note 1 applies to RTB testing that is performed independently from the corresponding logic train testing. For simultaneous testing of the logic and RTBs, the 4 hour test time limit of Condition O applies.

R5

INSERT 3

Note 3 applies to RTB testing that is performed concurrently with the corresponding logic train testing. For concurrent testing of the logic and RTB, the 4 hour test time limit of Condition O applies. The 4 hour time limit is justified in Reference 7.

INSERT 1

Action C would apply to any inoperable RTB trip mechanism

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.1

3. The Bases for ITS SR 3.3.1.7 states "The 'as-found' and 'as-left' values must also be recorded and reviewed for consistency with the assumptions of Reference 7." This is inconsistent with current and planned changes to testing requirements; therefore the paragraph is deleted.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.6 (continued)

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT every 92 days.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The nominal trip setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology. R6

SR 3.3.1.7 is modified by a Note that provides a 4 hour delay in the requirement to perform this Surveillance for source range instrumentation when entering MODE 3 from MODE 2. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the RTBs are open and SR 3.3.1.7 is no longer required to be performed. If the unit is to be in MODE 3 with the RTBs closed for > 4 hours this Surveillance must be performed prior to 4 hours after entry into MODE 3.

The Frequency of 92 days is justified in Reference 7.

RAI 3.3.1-39 R5
RAI MB 1433 MB 1427 R8

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.6 (continued)

A Note modifies SR 3.3.1.6. The Note states that this Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first surveillance after reaching 50% RTP. <INSERT 2> Proposed TSTF

The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift. <INSERT 3> Proposed TSTF

move to SR 3.3.1.9

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT every 92 days. (1)

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. <INSERT 4> TSTF 205

The nominal trip setpoints must be within the Allowable Values specified in Table 3.3.1-1. (9)

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 7. (19) R6

SR 3.3.1.7 is modified by a Note that provides a 4 hour delay in the requirement to perform this Surveillance for source range instrumentation when entering MODE 3 from MODE 2. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the RTBs are open and SR 3.3.1.7 is no longer required to be performed. If the unit is to be in MODE 3 with the RTBs closed for > 4 hours this Surveillance must be performed prior to 4 hours after entry into MODE 3.

The Frequency of 92 days is justified in Reference 7. (1)

(continued)

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17. TSTF – 135 provides an insert for the Source Range Neutron Flux function in the Applicable Safety Analyses, LCO, and Applicability section of the Bases. This insert states, "are addressed in LCO 3.3.9, 'Boron Dilution Protection System (BDPS),'for MODES 3, 4, or 5 and LCO 3.9.3, 'Nuclear Instrumentation,' for MODE 6." The plant does not utilize BDPS instrumentation channels for boron dilution event protection, but relies on the isolation of unborated water sources that could dilute the RCS inventory. Therefore, the reference to LCO 3.3.9 is not appropriate and is deleted.

18. The proposed TSTF modifies the Bases for ISTS SR 3.3.1.11. The intermediate range CHANNEL CALIBRATION states that the "The CHANNEL CALIBRATION for the intermediate rang neutron detector outputs includes normalization of the high flux bistable based on power calorimetric." This is changed to read, "The CHANNEL CALIBRATION for the intermediate rang neutron detector outputs includes normalization of the high flux bistable based on power calorimetric and control rod position." Control rod position is also considered for North Anna's setting of the bistable because "rod shadowing" can affect the setting of the intermediate range trip setpoint after a refueling outage.

RAIs MB1433 MB1427 R8

19. The ISTS Bases for SR 3.3.1.7 includes a paragraph that describes the recording and reviewing of the "as-found" and "as-left" values of SR to ensure consistency with Reference 7. The reference cites WCAP-10271. ITS SR 3.3.1.7 does not include this Bases paragraph. This is acceptable based on CTS Amendment 228 (Unit 1) and 202 (Unit 2) which adopted WCAP-10271. In the license amendment request for this CTS change, the following condition for adopting WCAP-10271 was listed: A review of the 'as found' and 'as left' data over a twelve-month period should provide sufficient information to address the adequacy of the existing setpoints and allowable values." The response to the requirement stated, "The licensee evaluated the 'as found' and 'as left' plant data. In every case the drift with 95 percent confidence level was well below one percent per quarter. Permissive drifts were less than one percent over any 18 month period and the drifts of the control parameters were within acceptable limits of the plant control systems." There was no commitment to perform an on-going evaluation of "as-found" and "as-left" data because the instrumentation is stable. From this response provided by the licensee, the NRC concluded that the CTS change was acceptable. Therefore, the Bases paragraph requiring the recording and reviewing of 'as found' and 'as left' data is not required and is deleted. If the SR is not met, the ITS Actions will be followed.

R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

4. ITS Table 3.3.2 –1 for Functions 1.f, 1.g, 4.d, and 4.e, High Steam Flow in Two Steam Lines specifies the Allowable Value by Note c. Note c states that the Allowable Value is, "less than or equal to a function defined as ΔP corresponding to 43 % full steam flow below 20% load, and ΔP increasing linearly from 43% full steam flow . . ." The 43% is changed to 42% based on a change to Technical Report EE - 0116. This changes the Specification and Bases sections.

Table 3.3.2-1 (page 1 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Safety Injection					
a. Manual Initiation	1, 2, 3, 4	2	B	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
c. Containment Pressure–High	1, 2, 3	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 17.7 psia
d. Pressurizer Pressure–Low–Low	1, 2, 3[(a)]	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 1770 psig
e. High Differential Pressure Between Steam Lines	1, 2, 3	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 112 psid
f. High Steam Flow in Two Steam Lines	1, 2, 3[(b)]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with T_{avg}–Low Low	1, 2, 3[(b)]	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 542°F
g. High Steam Flow in Two Steam Lines	1, 2, 3[(b)]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with Steam Line Pressure–Low	1, 2, 3[(b)]	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 585 psig

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Above the P-12 (T_{avg}–Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load. R6

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Steam Line Isolation					
a. Manual Initiation	1, 2[d], 3[d]	2 per steam line	F	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2[d], 3[d]	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
c. Containment Pressure–Intermediate High High	1, 2[d], 3[d]	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 18.5 psia
d. High Steam Flow in Two Steam Lines	1, 2[d], 3[d]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with T_{avg}–Low Low	1, 2[d], 3[b][d]	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 542°F
e. High Steam Flow in Two Steam Lines	1, 2[d], 3[d]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with Steam Line Pressure–Low	1, 2,[d] 3[d]	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 585 psig
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1, 2[e], 3[e]	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. SG Water Level–High High (P-14)	1, 2[e], 3[e]	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 76%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

(b) Above the P-12 (T_{avg}–Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load. R6

(d) Except when all MSTVs are closed and de-activated.

(e) Except when all Main Feedwater Pump Discharge Valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. R6

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

1. Safety Injection (continued)

f. g. Safety Injection–High Steam Flow in Two Steam Lines Coincident With T_{avg}–Low Low or Coincident With Steam Line Pressure–Low (continued)

channel is not sufficient to cause initiation. High steam flow in two steam lines is acceptable in the case of a single steam line fault due to the fact that the remaining intact steam lines will pick up the full turbine load. The increased steam flow in the remaining intact lines will actuate the required second high steam flow trip. Additional protection is provided by Function 1.e, High Differential Pressure Between Steam Lines.

One channel of T_{avg} per loop and one channel of low steam line pressure per steam line are required OPERABLE. For each parameter, the channels for all loops or steam lines are combined in a logic such that two channels tripped will cause a trip for the parameter. The low steam line pressure channels are combined in two-out-of-three logic. Thus, the Function trips on one-out-of-two high flow in any two-out-of-three steam lines if there is one-out-of-one low low T_{avg} trip in any two-out-of-three RCS loops, or if there is a one-out-of-one low pressure trip in any two-out-of-three steam lines. Since the accidents that this event protects against cause both low steam line pressure and low low T_{avg}, provision of one channel per loop or steam line ensures no single random failure can disable both of these Functions. The steam line pressure channels provide no control inputs. The T_{avg} channels provide control inputs, but the control function cannot initiate events that the Function acts to mitigate.

The Allowable Value for high steam flow is a linear function that varies with power level. The function is a ΔP corresponding to 42% of full steam flow between 0% and 20% load to 111% of full steam flow at 100% load. The nominal trip setpoint is similarly calculated. |R6

(continued)

Table 3.3.2-1 (page 1 of 8)
Engineered Safety Feature Actuation System Instrumentation

CTS

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT[a]
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.[7]	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.[3] SR 3.3.2.[5]	NA	NA
c. Containment Pressure – High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.[4] SR 3.3.2.[8] SR 3.3.2.[9]	≤ [3.68] psig	≤ [3.6] psig
d. Pressurizer Pressure – Low	1,2,3[(b)]	3	D	SR 3.3.2.1 SR 3.3.2.[4] SR 3.3.2.[8] SR 3.3.2.[9]	≥ [1839] psig	≥ [1850] psig
e. Steam Line Pressure						
(1) Low	1,2,3[(b)]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [635][(c)] psig	≥ [675][(c)] psig
(2) High Differential Pressure Between Steam Lines	1,2,3	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.[4] SR 3.3.2.[8] SR 3.3.2.[9]	≤ [108] psig	≤ [97] psig
f. High Steam Flow in Two Steam Lines	1,2,3[(d)]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.[4] SR 3.3.2.[8] SR 3.3.2.[9]	[(e)]	(f)
Coincident with T_{avg} – Low Low	1,2,3[(d)]	1 per loop	D	SR 3.3.2.1 SR 3.3.2.[4] SR 3.3.2.[8] SR 3.3.2.[9]	≥ [550.6] °F	≥ [553] °F

(continued)

TABLE Notation 3.3-3 ## Table 3.3-4 Allowable Value

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

(b) Above the P-11 (Pressurizer Pressure) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.

(d) Above the P-12 (T_{avg} – Low Low) interlock.

(e) Less than or equal to a function defined as ΔP corresponding to [42]% full steam flow below [20]% load, and ΔP increasing linearly from [42]% full steam flow at [20]% load to [124]% full steam flow at [100]% load, and ΔP corresponding to [124]% full steam flow above 100% load.

(f) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

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Table 3.3.2-1 (page 2 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
1. Safety Injection (continued)						
g. High Steam Flow in Two Steam Lines	1,2,3[(a)][(b)]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.10	[(c)]	(f)
Coincident with Steam Line Pressure – Low	1,2,3[(a)][(b)]	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.10	≥ [585] psig	≥ [675] psig
2. Containment Spray						
a. Manual Initiation	1,2,3,4	2 per train, 2 trains	B	SR 3.3.2.7	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
c. Containment Pressure						
High – 3 (High High)	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.10	≤ [12.31] psig[(a)]	≤ [12.05] psig
High – 3 (Two Loop Plants)	1,2,3	[3] sets of [2]	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [12.31] psig	≤ [12.05] psig

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

(c) Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.

(b) Above the P-12 (T_{avg} – Low Low) interlock.

(e) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, and ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.

(f) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

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Table 3.3.2-1 (page 4 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
4. Steam Line Isolation (continued)						
c. Containment Pressure – High (Intermediate)	1,2(d), 3(d)	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.10	≤ 18.5 psig	≤ [6.35] psig
d. Steam Line Pressure						
(1) Low	1,2(i), 3(b)(i)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [635](c) psig	≥ [675](c) psig
(2) Negative Rate – High	3(g)(i)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [121.6](h) psi/sec	≤ [110](h) psi/sec
High Steam Flow in Two Steam Lines	1,2(d), 3(d)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.10	(e)	(f)
Coincident with T_{avg} – Low Low	1,2(d), 3(d)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.10	≥ 542 (550.6) °F	≥ [553] °F

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
(b) Above the P-11 (Pressurizer Pressure) interlock.
(c) Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.
(d) Above the P-12 (T_{avg} – Low Low) interlock.
(e) Less than or equal to a function defined as ΔP corresponding to [42]% full steam flow below [20]% load, ΔP increasing linearly from [42]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.
(f) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.
(g) Below the P-11 (Pressurizer Pressure) interlock.
(h) Time constant utilized in the rate/lag controller is ≤ [50] seconds.
(i) Except when all MSIVs are closed and de-activated.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

f, g. Safety Injection—High Steam Flow in Two Steam Lines Coincident With T_{avg}—Low Low or Coincident With Steam Line Pressure—Low (continued)

The Allowable Value for high steam flow is a linear function that varies with power level. The function is a ΔP corresponding to 44% of full steam flow between 0% and 20% load to 114% of full steam flow at 100% load. The nominal trip setpoint is similarly calculated.

With the transmitters typically located inside the containment (T_{avg}) or inside the steam tunnels (High Steam Flow), it is possible for them to experience adverse steady state environmental conditions during an SLB event. Therefore, the trip setpoint reflects both steady state and adverse environmental instrument uncertainties. The Steam Line Pressure—Low signal was discussed previously under Function 1.e.(1).

This Function must be OPERABLE in MODES 1, 2, and 3 (above P-12) when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). This signal may be manually blocked by the operator when below the P-12 setpoint. Above P-12, this Function is automatically unblocked. This Function is not required OPERABLE below P-12 because the reactor is not critical, so feed line break is not a concern. SLB may be addressed by Containment Pressure High (inside containment) or by High Steam Flow in Two Steam Lines coincident with Steam Line Pressure—Low, for Steam Line Isolation, followed by High Differential Pressure Between Two Steam Lines, for SI. This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to cause an accident.

(continued)

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A.1

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS

	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1	1. SAFETY INJECTION, ~~TURBINE TRIP AND~~ FEEDWATER ISOLATION (A.1)		
1a	a. Manual Initiation	Not Applicable	Not Applicable
1b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
1c	c. Containment Pressure--High	≤ 17 psia	≤ ~~18.5~~ psia (17.7)
1d	d. Pressurizer Pressure -- Low-Low	≥ 1765 psig	≥ ~~1765~~ psig (1770)
1e	e. Differential Pressure Between Steam Lines--High	≤ 100 psi	≤ 112 psi (d)
1f	f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	≤ A function defined as follows: a Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load T_{avg} ≥ 543°F ≥ 600 psig steam line pressure	≤ A function defined as follows: a Δp corresponding to ~~40~~% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to ~~110~~ 111.5% of full steam flow at full load T_{avg} ≥ 542°F ≥ 585 psig steam line pressure

LA.8

R6

113 (M.7) (M.7)

(A.1)

(42) (M.7) <see Note c>

(11) (M.7)

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ITS 3.3.2

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A.1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
4	4. STEAM LINE ISOLATION			R6
4.a	a. Manual	Not Applicable	Not Applicable	
4.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
4.c	c. Containment Pressure--Intermediate High-High	≤ 17.8 psia	≤ (19.3) psia (18.5)	13 M.7
4.d	d. Steam Flow in Two Steam lines--High Coincident with T_{avg} --Low-Low Or Steam Line Pressure--Low	< A function defined as follows: a Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load.	< A function defined as follows: a Δp corresponding to (44%) of full steam flow (42) between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to (111.5%) of full steam flow (111) at full load.	M.7 See Note C M.7
		T_{avg} ≥ 543°F	T_{avg} ≥ 542°F	13
		≥ 600 psig steam line pressure	≥ 585 psig steam line pressure	
5	5. TURBINE TRIP AND FEEDWATER ISOLATION			
5.b	a. Steam Generator Water level--High-High	< 75% of narrow range Instrument span each steam generator	< 76% of narrow range Instrument span each steam generator	LA.7
		LA.8		

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(A.1)

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
1	1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION (A.1)			R6
1a	a. Manual Initiation	Not Applicable	Not Applicable	
1b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
1c	c. Containment Pressure--High	≤ 17 psia	≤ 18.5 psia (17.7)	(M.7)
1d	d. Pressurizer Pressure--Low-Low	≥ 1765 psig	≥ 1755 psig (1770)	(M.7)
1e	e. Differential Pressure Between Steam Lines--High	≤ 100 psi	≤ 112 psi (d)	(A.1)
1f	f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	≤ A function defined as follows: a Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load	≤ A function defined as follows: a Δp corresponding to 40% (42) of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% (111) of full steam flow at full load	(M.7) (M.7) <see Note c>
		T_{avg} ≥ 543°F ≥ 600 psig steam line pressure	T_{avg} ≥ 542°F ≥ 585 psig steam line pressure	

(LA.8)

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ITS 3.3.2

A.1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
4	4. STEAM LINE ISOLATION		
4.a	a. Manual	Not Applicable	Not Applicable
4.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
4.c	c. Containment Pressure--Intermediate High-High	≤ 17.8 psia	≤ ~~19.3~~ 18.5 psia (M.7)
4.d	d. Steam Flow in Two Steam lines--High Coincident with T_{avg} --Low-Low Or Steam Line Pressure--Low	≥ A function defined as follows: a Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load.	≥ A function defined as follows: a Δp corresponding to ~~44%~~ 42 of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to ~~111.5%~~ 111 of full steam flow at full load. (M.7) (M.7) <see Note c>
		T_{avg} ≥ 543°F	T_{avg} ≥ 542°F
		≥ 600 psig steam line pressure	≥ 585 psig steam line pressure
5	5. TURBINE TRIP AND FEEDWATER ISOLATION		
5.b	a. Steam Generator Water level--High-High	< 75% of narrow range instrument span each steam generator (LA.8)	< 76% of narrow range instrument span each steam generator (LA.7)

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ITS 3.3.2

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at any frequency. The ITS 3.3.2 Function for the start of the AFW pump on Loss of Offsite Power (6.d) requires the performance of SRs 3.3.2.8 (CHANNEL CALIBRATION) and 3.3.2.9 (ESFAS RESPONSE TIMES) every 18 months, and 3.3.2.6 (TADOT) every 92 days. The TADOT is modified by a Note that states, "Verification of relay setpoints not required." This changes the CTS by requiring the TADOT to be performed every 92 days.

This change is acceptable because the verification that the signal from the Loss of Offsite Power will start the AFW pumps should be periodically tested to ensure OPERABILITY. A testing frequency of 92 days is adequate based on industry operating experience, considering the instrument reliability and operating history. This change is designated as more restrictive because the testing requirements have been increased from the CTS requirements.

M.7 CTS requirements in Table 3.3-3 list the Allowable Values for ESFAS Functions and Interlocks. The Allowable Values for the following function are stated as: Safety Injection (SI) on Containment Pressure High ≤ 18.5 psia, SI on Pressurizer Pressure Low-Low ≥ 1755 psig, SI on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low ≤ a ΔP corresponding to 44% of full steam flow increasing to 111.5% at full load, Containment Spray on Containment Pressure High-High ≤ 29.25 psia, Steam Line Isolation on Containment Pressure Intermediate High-High ≤ 19.3 psia, and Steam Line Isolation on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low ≤ a ΔP corresponding to 44% of full steam flow increasing to 111.5% at full load. ITS requirements in Table 3.3.2-1 lists the Allowable Values for the ESFAS Functions and Interlock as the following: SI on Containment Pressure High ≤ 17.7 psia, SI on Pressurizer Pressure Low-Low ≥ 1770 psig, SI on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low ≤ a ΔP corresponding to 44% of full steam flow increasing to 111% at full load, Containment Spray on Containment Pressure High-High ≤ 28.45 psia, Steam Line Isolation on Containment Pressure Intermediate High-High ≤ 18.5 psia, and Steam Line Isolation on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low ≤ a ΔP corresponding to 42 % of full steam flow increasing to 111% at full load. This changes the CTS Allowable Values for these functions to more restrictive values in the ITS Allowable Values. IR6 IR6 IR6

The purpose of these changes for the listed functions are to align the ITS Allowable Values by using a consistent setpoint methodology. These changes are acceptable because the ITS Allowable Values are consistent with the methodology used for all ESFAS Functions. These changes are designated as more restrictive because the ITS Allowable Values are more restrictive than the CTS Allowable Values.

M.8 CTS Table 4.3 – 2 for Functional Unit 8.c, Engineered Safety Feature Actuation System Interlock Reactor Trip (P – 4), requires the performance of a CHANNEL RAI 3.3.2-6 R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

5. ITS Table 3.3.2 –1 for Functions 8.b and 8.c, ESFAS Interlocks P–11, Pressurizer Pressure, and P–12, T_{ave} – Low Low, had a range of values initially proposed for the ITS. This change eliminates the range of values proposes a limiting value for each function. P–11 value is set to ≤ 2010 psig and P–12 to ≤ 545 °F. This changes the specification and JFD 14. This change was initiated by a change to Technical Report EE - 0116.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	
b. SG Water Level–Low Low	1, 2, 3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 17%	
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power	1, 2, 3	1 per bus, 2 buses	F	SR 3.3.2.6 SR 3.3.2.8 SR 3.3.2.9	≥ 2184 V	RAI 3.3.2-02 R6
e. Trip of all Main Feedwater Pumps	1, 2	2 per pump	H	SR 3.3.2.7 SR 3.3.2.9	NA	R6
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	
b. Refueling Water Storage Tank (RWST) Level–Low Low	1, 2, 3, 4	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 18.4% and ≤ 20.4%	
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.10	NA	
b. Pressurizer Pressure, P-11	1, 2, 3	3	J	SR 3.3.2.1 SR 3.3.2.8	≤ 2010 psig	R6
c. T_{avg}–Low Low, P-12	1, 2, 3	1 per loop	J	SR 3.3.2.1 SR 3.3.2.8	≤ 545°F	R6

Table 3.3.2-1 (page 8 of 8)
Engineered Safety Feature Actuation System Instrumentation

CTS

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a) (6)
7. Automatic Switchover to Containment Sump (continued)						
c. RWST Level – Low Low	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [15]%	≥ [18]%
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
and						
Coincident with Containment Sump Level – High	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [30] in. above el. [703] ft (7)	≥ [ ] in. above el. [ ] ft
8. ESFAS Interlocks						
8c a. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	F	SR 3.3.2.~~8~~ (10)	NA	NA
8a b. Pressurizer Pressure, P-11	1,2,3	3	J (4) (6)	SR 3.3.2.1 ~~SR 3.3.2.5~~ (12) SR 3.3.2.~~8~~ (8) (11)	≤ 2010 (1) (1996) psig	≤ [ ] psig
8b c. T_{avg} – Low Low, P-12	1,2,3	~~[1]~~ per loop (1)	J (4) ~~(6)~~ (12)	SR 3.3.2.1 ~~SR 3.3.2.5~~ SR 3.3.2.~~8~~ (8) (11)	≥ [550.6] °F ≤ 545 (14)	≥ [553] °F

R6

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit. (6)

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requirements of the COT and is performed every 18 months, it is not necessary to require the COT. Therefore, ISTS SR 3.3.2.5 is deleted.

13. ISTS Function 3.b for Containment Isolation Manual Initiation (1) and Containment Pressure High High (3) for Phase B isolation specify requirements that are not applicable to North Anna. The Containment Isolation Phase B manual function is accomplished by the manual switches for Containment Spray manual initiation. The Containment Pressure High High is initiated from the Containment Spray Containment Pressure High High signal. Therefore, the requirements for the Phase B manual initiation are replaced with "Refer to Function 2.b (Containment Spray – Manual Initiation) for all functions and requirements" and the Phase B Containment Pressure High High is replaced with, "Refer to Function 2.c (Containment Spray – Containment Pressure High High) for all functions and requirements." This is acceptable because the Containment Isolation Phase B functions are initiated by the Containment Spray signals.

14. ISTS LCO 3.3.2 in Table 3.3.2-1 Function 8.c (P-12) lists the Allowable Value as ≥ [558.6] °F. ITS LCO 3.3.2 for Function 8.c in Table 3.3.2-1 lists the Allowable Value for P-12 as ≤ 545 °F. This change is acceptable because less than the 545 °F value, the P-12 function prevents the manual block of a SI signal on high steam line flow. The safety analysis credits this portion of the P-12 interlock and does not credit the portion of the interlock that allows the block of a SI signal on high steam flow. The value of ≤ 545 °F represents the requirement in the CTS and the setpoint methodology for calculating the Allowable Values. R6

15. ISTS LCO 3.3.2 in Table 3.3.2 –1 Function 6.e (AFW pumps start on a trip of all Main Feedwater pumps) requires the performance of SRs 3.3.2.8, 3.3.2.9, and 3.3.2.10. ITS LCO 3.3.2 in Table 3.3.2 – 1 for Function 6.e requires the performance of SRs 3.3.2.7 and 3.3.2.9. This changes the ISTS by deleting the requirement for performing a CHANNEL CALIBRATION for the function. The Main Feedwater pumps are electric motor driven pumps controlled by electric circuit breakers. This type of controller for the Main Feedwater pumps requires only a TADOT to be performed to verify proper operation and does not require a CHANNEL CALIBRATION. R6

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE INTERLOCKS

ITS DESIGNATION	CONDITION	SETPOINT	ALLOWABLE VALUES	FUNCTION
8b P-11	With 2 of 3 pressurizer pressure channels above setpoint	2000 psig	≤ 2010 psig	P-11 prevents manual block of safety injection actuation on low-low pressurizer pressure.
	With 2 of 3 pressurizer pressure channels below setpoint	1980 psig	≤ 1990 psig (L.5)	P-11 allows manual block of safety injection actuation on low-low pressurizer pressure. 10
8c P-12	With 2 of 3 T_{avg} channels above setpoint	543°F (Nominal)	≤ 545°F	P-12 prevents manual block of safety injection actuation on high steam line flow.
	With 2 of 3 T_{avg} channels below setpoint	543°F (Nominal)	≥ 541°F (L.5)	P-12 allows manual block of safety injection actuation on high steam line flow.
	LA.4	LA.8	R6	LA.4

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE INTERLOCKS

DESIGNATION	CONDITION	SETPOINT	ALLOWABLE VALUES	FUNCTION
P-11	With 2 of 3 pressurizer pressure channels above setpoint	2000 psig	≤ 2010 psig	P-11 prevents manual block of safety injection actuation on low-low pressurizer pressure.
	With 2 of 3 pressurizer pressure channels below setpoint	1980 psig	≤ 1990 psig (L.5)	P-11 allows manual block of safety injection actuation on low-low pressurizer pressure.
P-12	With 2 of 3 T_{avg} channels above setpoint	543°F (Nominal)	≤ 545°F	P-12 prevents manual block of safety injection actuation on high steam line flow.
	With 2 of 3 T_{avg} channels below setpoint (LA.4)	543°F (Nominal) (LA.8)	≥ 541°F (L.5)	P-12 allows manual block of safety injection actuation on high steam line flow. (LA.4)

R6

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RTT to be within specific limits. A Note is added to the requirement that provides an exception for the turbine driven AFW pump. The allowance delays the required verification by 24 hours after Main Steam pressure reaches 1005 psig. This changes the CTS by allowing the RTT verification to be delayed for 24 hours after the unit reaches a stable condition for testing.

The purpose of the CTS Surveillance Requirement is to ensure that the AFW system can provide water to the steam generator within the time frames assumed in the safety analyses. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria continues to verify that the equipment used to meet the LCO can perform its required functions. This change provides an allowance for entry into MODE 3 before testing of the steam driven AFW pump to ensure that there is sufficient steam pressure to accurately test the pump. This change will provide consistent test conditions for verification of response time for the steam driven AFW pump. This is part of the required testing to ensure continued OPERABILITY. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

RAI 3.3.2-15 R6

L.4 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS Table 4.3-2 notation (1) is associated with the manual initiation switches for Safety Injection, Containment Spray, Containment Isolation (Phase A and B), Steam Line Isolation, and the start of the AFW pumps. The notation requires that each manual actuation switch be tested to actuate the required function at least once per 18 months during shutdown. In ITS Table 3.3.2-1, for each of the listed functions, SR 3.3.2.7 states that a TADOT must be performed at a frequency of eighteen months. This changes the CTS by deleting the "during shutdown" requirement and requires the test be performed every 18 months.

RAI 3.3.2-9 R6

This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The Frequency for testing of the manual switches for the various functions has been changed from 18 months "during shutdown" to 18 months. The performance of the testing will continue to be performed in a condition that would not create a transient on the unit. Therefore, the testing will generally will be conducted in MODES 5 and 6 (i.e., during unit shutdown). This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.5 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.3.2.1 requirements listed in Table 3.3-3 for P-11 and P-12 specifies two limits for the Allowable Values for each function. The P–11 function lists allowable values for: ≤ 2010 psig prevents manual block of Safety Injection (SI) on Low Low Pressurizer Pressure; and ≤ 1990 psig allows the manual block of SI on Low Low Pressurizer Pressure. The P–12 function lists allowable values for: ≤ 545 °F prevents manual block of SI actuation of high steam line flow; and ≥ 541 °F allows the manual block of SI on high steam line flow.

R6

ITS 3.3.1 requirements in Table 3.3.1-1 for the Reactor Trip System interlocks P–11 and P–12 list the allowable values that prevents manual block of the functions. P–11 allowable value ≤ 2010 psig and P–12 allowable value ≤ 545 °F. This changes the CTS by not requiring these interlocks to state Allowable Values for allowing manual functions blocks.

This change is acceptable because the LCO requirements continue to ensure that the process variables are maintained consistent with the safety analyses and licensing basis. The LCO requirements continue to ensure that the process variables are maintained consistent with the safety analyses and licensing basis. The safety function for P – 11 and P – 12 is to prevent the manual blocking of the SI on low low pressurizer pressure and the SI on high steam line flow. These functions are assumed to provide the required interlocks by the safety analyses in the directions indicated above. For both functions allowing the manual block is not a safety function; therefore the Allowable Values for manual block portions of the interlocks are not required and are deleted. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS. R6

L.6 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 for Functional Units 5.a and 5.b, Turbine Trip and Feedwater Isolation on Steam Generator (SG) Water Level – High-High and Automatic Actuation Logic and Actuation Relays, requires for each an applicability of MODES 1, 2, and 3[###]. Notation [###] states, "Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve." ITS Table 3.3.2 – 1 for Function 5, Turbine Trip and Feedwater Isolation, requires that Functions 5.a and 5.b, Automatic Actuation Logic and Actuation Relays and SG Water Level – High High, be OPERABLE in MODES 1, 2[(e)], and 3[(e)]. Note [(e)] states, "Except when all Main Feedwater pump discharge valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve." This changes the CTS by modifying the MODES 2 and 3 applicability with the addition of the Main Feedwater (MFW) pump discharge valves to the list. R6

The purpose of ITS Note e is to ensure MFW is isolated from the SGs. This change is acceptable because the requirements continue to ensure that the ability to isolate MFW from the SGs is maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The addition of the MFW pump discharge valves is acceptable because the valves can provide completion isolation of the MFW system from the SGs. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

6. The Bases for ITS SR 3.3.2.4 states "The 'as-found' and 'as-left' values must be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis (Ref. 8) when applicable." This is inconsistent with current and planned changes to testing requirements; therefore the paragraph is deleted.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.3

SR 3.3.2.3 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. This test is performed every 31 days on a STAGGERED TEST BASIS. The time allowed for the surveillance interval is justified in Reference 8.

SR 3.3.2.4

SR 3.3.2.4 is the performance of a COT.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.2-1. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least one per refueling interval with applicable extensions.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The COT for the Containment Pressure Channel includes exercising the transmitter by applying either a vacuum or pressure to the appropriate side of the transmitter. R6

The Frequency of 92 days is justified in Reference 8.

SR 3.3.2.5

SR 3.3.2.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.3 (continued)

tester is not used and the continuity check does not have to be performed, as explained in the Note. This SR is applied to the balance of plant actuation logic and relays that do not have the SSPS test circuits installed to utilize the semiautomatic tester or perform the continuity check. This test is also performed every 31 days on a STAGGERED TEST BASIS. The Frequency is adequate based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.~~4~~ 3

SR 3.3.2.~~4~~ is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. This test is performed every 31 days on a STAGGERED TEST BASIS. The time allowed for the ~~testing~~ (4 hours) and the surveillance interval are justified in Reference 8.

SR 3.3.2.~~5~~ 4

SR 3.3.2.~~5~~ is the performance of a COT.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.~~2~~-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

~~The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of the~~

<INSERT 1>
TSTF 205

<INSERT 2>

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.5 (continued)

surveillance interval extension analysis (Ref. 8) when applicable.

The Frequency of 92 days is justified in Reference 8.

SR 3.3.2.6

SR 3.3.2.6 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function, or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. This test is performed every 92 days. The Frequency is adequate, based on industry operating experience, considering instrument reliability and operating history data.

INSERT 1

SR 3.3.2.7

SR 3.3.2.7 is the performance of a TADOT every 92 days. This test is a check of the Loss of Offsite Power, Undervoltage RCP, and AFW Pump Suction Transfer on Suction Pressure—Low Functions. Each Function is tested up to, and including, the master transfer relay coils. The test also includes trip devices that provide actuation signals directly to the SSPS. The SR is modified by a Note that excludes verification of setpoints for relays. Relay setpoints require elaborate bench calibration and are verified during CHANNEL CALIBRATION. The Frequency is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

INSERT 2
TSTF 205

(continued)

11. The ISTS Bases for SR 3.3.2.5 includes a paragraph that describes the recording and reviewing of the "as-found" and "as-left" values of SR to ensure consistency with Reference 8. The reference cites WCAP-10271. ITS SR 3.3.2.4 does not include this Bases paragraph. This is acceptable based on CTS Amendment 228 (Unit 1) and 202 (Unit 2) which adopted WCAP-10271. In the license amendment request for this CTS change, the following condition for adopting WCAP-10271 was listed: A review of the 'as found' and 'as left' data over a twelve-month period should provide sufficient information to address the adequacy of the existing setpoints and allowable values." The response to the requirement stated, "The licensee evaluated the 'as found' and 'as left' plant data. In every case the drift with 95 percent confidence level was well below one percent per quarter. Permissive drifts were less than one percent over any 18 month period and the drifts of the control parameters were within acceptable limits of the plant control systems." There was no commitment to perform an on-going evaluation of "as-found" and "as-left" data because the instrumentation is stable. From this response provided by the licensee, the NRC concluded that the CTS change was acceptable. Therefore, the Bases paragraph requiring the recording and reviewing of 'as found' and 'as left' data is not required and is deleted. If the SR is not met, the ITS Actions will be followed. R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

7. Bases for Containment Isolation states that process lines are listed in TRM. TRM is spelled out and is stated as Technical Requirements Manual.

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

2. Containment Spray (continued)

c. Containment Spray–Containment Pressure (continued)

actuate containment spray, since the consequences of an inadvertent actuation of containment spray could be serious. Note that this Function also has the inoperable channel placed in bypass rather than trip to decrease the probability of an inadvertent actuation.

North Anna uses four channels in a two-out-of-four logic configuration and the Containment Pressure–High High Setpoint Actuates Containment Spray Systems. Since containment pressure is not used for control, this arrangement exceeds the minimum redundancy requirements. Additional redundancy is warranted because this Function is energize to trip. Containment Pressure–High High must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the primary and secondary sides to pressurize the containment following a pipe break. In MODES 4, 5, and 6, there is insufficient energy in the primary and secondary sides to pressurize the containment and reach the Containment Pressure–High High setpoints.

3. Containment Isolation

Containment Isolation provides isolation of the containment atmosphere, and all process systems that penetrate containment, from the environment. This Function is necessary to prevent or limit the release of radioactivity to the environment in the event of a large break LOCA.

There are two separate Containment Isolation signals, Phase A and Phase B. Phase A isolation isolates all automatically isolable process lines, except component cooling water (CC) and instrument air (IA), at a relatively low containment pressure indicative of primary or secondary system leaks. A list of the process lines is provided in the Technical Requirements Manual (Ref. 9). For these types of events, forced circulation cooling using the reactor coolant pumps (RCPs) and SGs is the preferred (but not required) method of decay heat removal. Since CC is required to support RCP operation, not isolating CC on the low pressure Phase A signal

|R6

(continued)

INSERT

A list of the process lines is provided in the Technical Requirements Manual (Ref. 9). | R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

8. Bases for ESFAS interlock P–4 states that the interlock resets "the steam/feed mismatch to the 43% setpoint." This is changed to read, "Reset the high steam line flow to the nominal setpoint."

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

interlock Functions back up manual actions to ensure bypassable functions are in operation under the conditions assumed in the safety analyses.

a. Engineered Safety Feature Actuation System Interlocks–Reactor Trip, P-4

The P-4 interlock is enabled when a reactor trip breaker (RTB) and its associated bypass breaker are open. Once the P-4 interlock is enabled, automatic SI reinitiation is blocked after a 60 second time delay. This Function allows operators to take manual control of SI systems after the initial phase of injection is complete. Once SI is blocked, automatic actuation of SI cannot occur until the RTBs have been manually closed, resetting the P-4 interlock. The functions of the P-4 interlock are:

- Trip the main turbine;
- Isolate MFW Regulating Valves with coincident low T_{avg};
- Prevent automatic reactuation of SI after a manual reset of SI;
- Prevent opening of the MFW regulating valves if they were closed on SI or SG Water Level–High High; and
- Reset the high steam line flow to the nominal setpoint. |R6

Each of the above Functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. An excessive cooldown of the RCS following a reactor trip could cause an insertion of positive reactivity with a subsequent increase in generated power. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

a. Engineered Safety Feature Actuation System Interlocks—Reactor Trip, P-4 (continued)

- Trip the main turbine; (Regulating Valves)
- Isolate MFW with coincident low T_{avg}; (1)
- Prevent (AUTOMATIC) reactuation of SI after a manual reset of SI; (1)
- Transfer the steam dump from the load rejection controller to the unit trip controller; and (3)
- Prevent opening of the MFW (regulating) isolation valves if they were closed on SI or SG Water Level—High High (and) (1)
- Reset the Steam/Feed mismatch to the nominal setpoint. (1) R6

Each of the above Functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. An excessive cooldown of the RCS following a reactor trip could cause an insertion of positive reactivity with a subsequent increase in generated power. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system.

None of the noted Functions serves a mitigation function in the unit licensing basis safety analyses. Only the turbine trip Function is explicitly assumed since it is an immediate consequence of the reactor trip Function. Neither turbine trip, nor any of the other (four) Functions associated with the reactor trip signal, is required to show that the unit licensing basis safety analysis acceptance criteria are not exceeded. (1)

The RTB position switches that provide input to the P-4 interlock only function to energize or de-energize or open or close contacts. Therefore, this Function has no adjustable trip setpoint with which to associate a (Trip Setpoint) (and) Allowable Value. (10) (an)

(continued)

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CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

9. The RTS/ESFAS Setpoint Methodology Study (Reference 6) is provided by two technical reports. EE – 0116 is added to the reference.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.10

SR 3.3.2.10 is the performance of a TADOT as described in SR 3.3.2.7, except that it is performed for the P-4 Reactor Trip Interlock, and the Frequency is once per RTB train cycle (RTB and associated bypass breaker must be opened at the same time). A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least one per refueling interval with applicable extensions.

This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 7.

3. UFSAR, Chapter 15.

4. IEEE-279-1971.

5. 10 CFR 50.49.

6. RTS/ESFAS Setpoint Methodology Study (Technical Reports EE-0101 and EE-0116). [R6]

7. NUREG-1218, April 1988.

8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990 and WCAP-14333-P-A, Rev. 1, October 1998.

9. Technical Requirements Manual.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.11 (continued)

Trip Interlock, and the Frequency is once per RTB cycle. This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

REFERENCES

1. UFSAR, Chapter 6.
2. UFSAR, Chapter 7.
3. UFSAR, Chapter 15.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. RTS/ESFAS Setpoint Methodology Study.
7. NUREG-1218, April 1988.
8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.
9. Technical Requirements Manual, Section 15, "Response Times."

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CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

10. LCO 3.3.2 CTS Discussion of Changes LA.6, LA.8, LA.9, and LA.10 classifications have been changed from Category Type 1 – Removal of Details of System Design to Category Type 3 – Removing Procedural Details. DOC LA.8 is modified reflect correct CTS reference.

included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance Requirements to ensure the function remains OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.3.2.1 in Table 3.3-4 for the ESFAS instrumentation trip setpoints contains information describing the bus that is monitored to detect a station blackout. ITS Table 3.3.2-1 does not contain this information. This changes the CTS by moving the information from the Specification to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.6 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* Note 3 of CTS 3.3.2.1 Table 4.3-2 for the ESFAS containment pressure instrumentation surveillance requirement states that the CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either a vacuum or pressure to the appropriate side of the transmitter. ITS Table 3.3.2-1 for the testing of Containment pressure requires SR 3.3.2.4 to be performed. This changes the CTS by moving the information from the Specification to the ITS Bases. RL

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change RG

because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.7 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.3.2.1 in Table 3.3-4 item 5.a for the Allowable Value requirement contains information relating to the Steam Generator (SG) Water Level – High High trip. This states that the Allowable Values are associated with the narrow range instrumentation span for each SG. ITS Table 3.3.2-1 (item 5.a) lists the requirements for the SG Water Level – High High Allowable Values but does not contain the information about the narrow range instrumentation span. This changes the CTS by moving the information from the Specification to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.8 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS requirement listed in Table 3.3 – 3, for each ESFAS interlock function, an Allowable Value and a Setpoint column. ITS Table 3.3.2-1 includes only an Allowable Value column. This changes the CTS by moving the Setpoint information from the Specification to the Technical Requirements Manual (TRM).

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Actions, Surveillance requirements, and Allowable Values to ensure the functions remain OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. Changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

RL

LA.9 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Surveillance Requirement 4.3.2.1.2 requires the ENGINEERED SAFETY FEATURES RESPONSE TIME test on each ESFAS

RL

function at least once per 18 months. The requirement additionally states, "one channel per function (will be tested) such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3." This changes the CTS by moving the information from the Specification to the ITS Bases.

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. All necessary requirements for the function remain in the Technical Specifications. Changes to the Bases are controlled by the Technical Specification Bases Control Program, described in Chapter 5 of the ITS. This requirement provides for control of changes to the Bases and will ensure that any changes to the Bases are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications. | R6 | R6

LA.10 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Action 22 for Table 3.3-3 requires for applicable instrumentation channels that, "With less than the Minimum Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition." ITS 3.3.2 in Table 3.3.2-1 for Action J requires, "One or more channels inoperable, verify interlock is in required state for existing unit condition within one hour." The allowance provided by "determine by observation of the associated permissive annunciator window(s)" is not included in the ITS. This changes the CTS by moving the information from the Specification to the ITS Bases. | R6

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. All necessary requirements for the function remain in the Technical Specifications. Changes to the Bases are controlled by the Technical Specification Bases Control Program, described in Chapter 5 of the ITS. This requirement provides for control of changes to the Bases and will ensure that any changes to the Bases are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications. | RL | R6

LA.11 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS requirements in Table 3.3-3 for function 2.a, Containment Spray Manual, lists the total number of channels as 2 sets 2 switches/set. ITS 3.3.2 Table

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

11. CTS Table 3.3-3 for Functional Unit 4.d, Steam Flow Two Steam Lines – High coincident with either T_{ave} – Low Low or Steam Line Pressure Low, has an applicability of MODES 1, 2, 3[##]. The CTS markup lists DOC A.4 as the documentation for the change to ITS applicability of MODES 1, 2[(b)], and 3[(b)]. The DOC for this change is now listed as DOC L.2.

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	Required TOTAL NO OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES or other specified condition	Condition ACTION	A.5
4	4. STEAM LINE ISOLATION						
4a	a. Manual	2/steam line	1/steam line	2/steam line	L.2 proposed noted 1, 2, 3	21 F	A.1
4b	b. Automatic Actuation Logic	2	1	2	L.2 proposed note 4 1, 2, 3	20 G	A.1
4c	c. Containment Pressure – Intermediate High-High	3	2	2	L.2 proposed noted 1, 2, 3	19 D	M.4
4d/e	d. Steam Flow in Two Steam Lines – High	2/steam line	1/steam line any 2 steam lines	1/steam line	proposed noted 1, 2, 3 L.2	19 D	M.4
						A.7	
	COINCIDENT WITH EITHER						
4d	T_{avg} – Low-Low	1 T_{avg}/loop	1 T_{avg} any 2 loops	1 T_{avg} any 2 loops	proposed noted 1, 2, 3 L.2	19 D	M.4
	OR, COINCIDENT WITH						
4e	Steam Line Pressure – Low	1 pressure/ line	1 pressure any 2 lines	1 pressure any 2 lines	proposed noted 1, 2, 3 L.2	19 D	M.4

LA.12

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RAI 3.3.2-8 R6

ITS 3.3.2

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TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

RAI 3.3.2-8 R6

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	CONDITION ACTION	
ITS							A.5
4	4. STEAM LINE ISOLATION						
4a	a. Manual	2/steam line	1/steam line	2/steam line	L.2 Proposed Noted 1, 2, 3	21 F	A.1
4b	b. Automatic Actuation Logic	2	1	2	L.2 Proposed Noted 1, 2, 3	20 G	A.1
4c	c. Containment Pressure – Intermediate High-High	3	2	2	L.2 Proposed Noted 1, 2, 3	19 D	M.4
4d/e	d. Steam Flow in Two Steam Lines – High	2/steam line	1/steam line any 2 steam lines	1/steam line	Proposed Noted 1, 2, 3 L.12	19 D	M.4
						A.7	
	COINCIDENT WITH EITHER						
4d	T_{avg} – Low-Low	1 T_{avg}/loop	1 T_{avg} any 2 loops	1 T_{avg} any 2 loops	Proposed noted 1, 2, 3 L.2	19 D	M.4
	OR, COINCIDENT WITH						
4e	Steam Line Pressure – Low	1 pressure/ line	1 pressures any 2 lines	1 pressure any 2 lines	Proposed Noted 1, 2, 3 L.2	19 D	M.4

LA.12

R6

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VARIOUS LCOs

LCO 3.3.2

12. ISTS in Table 3.3.2 –1 for Function 6.e, Auxiliary Feedwater pump starts on a trip of all Main Feedwater pumps, requires a CHANNEL CALIBRATION to be performed. The function also requires the performance of a TADOT. The Main Feedwater pumps are electric motor driven pumps for North Anna units. Therefore, the performance of the TADOT is sufficient to verify the function and the CHANNEL CALIBRATION is not required. This changes the ITS Table 3.3.2 – 1 by deleting the SR 3.3.2.8 requirement for Function 6.e, modifying DOC M.2, and adding JDF 15 for the specifications.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	
b. SG Water Level–Low Low	1, 2, 3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 17%	
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power	1, 2, 3	1 per bus, 2 buses	F	SR 3.3.2.6 SR 3.3.2.8 SR 3.3.2.9	≥ 2184 V	RAI 3.3.2-02 R6
e. Trip of all Main Feedwater Pumps	1, 2	2 per pump	H	SR 3.3.2.7 SR 3.3.2.9	NA	R6
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	
b. Refueling Water Storage Tank (RWST) Level–Low Low	1, 2, 3, 4	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 18.4% and ≤ 20.4%	
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.10	NA	
b. Pressurizer Pressure, P-11	1, 2, 3	3	J	SR 3.3.2.1 SR 3.3.2.8	≤ 2010 psig	R6
c. T_{avg}–Low Low, P-12	1, 2, 3	1 per loop	J	SR 3.3.2.1 SR 3.3.2.8	≤ 545°F	R6

Table 3.3.2-1 (page 7 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
6. Auxiliary Feedwater (continued)						
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power	1,2,3	1 per bus / 2 buses	F	SR 3.3.2.6 SR 3.3.2.8 SR 3.3.2.9	≥ [2912] V with ≤ 0.8 sec time delay	≥ [2975] V with ≤ 0.8 sec time delay
f. Undervoltage Reactor Coolant Pump	1,2	[3] per bus	I	SR 3.3.2.7 SR 3.3.2.9 SR 3.3.2.10	≥ [69]% bus voltage	≥ [70]% bus voltage
e. Trip of all Main Feedwater Pumps	1,2	[2] per pump	J	SR 3.3.2.7 SR 3.3.2.9	N/A	N/A
h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure – Low	1,2,3	[2]	F	SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9	≥ [20.53] [psia]	≥ [ ] [psia]
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b. Refueling Water Storage Tank (RWST) Level – Low Low	1,2,3,4	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ [15]% and ≤ [21]%	≥ [ ] and ≤ [ ]
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

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requirements of the COT and is performed every 18 months, it is not necessary to require the COT. Therefore, ISTS SR 3.3.2.5 is deleted.

13. ISTS Function 3.b for Containment Isolation Manual Initiation (1) and Containment Pressure High High (3) for Phase B isolation specify requirements that are not applicable to North Anna. The Containment Isolation Phase B manual function is accomplished by the manual switches for Containment Spray manual initiation. The Containment Pressure High High is initiated from the Containment Spray Containment Pressure High High signal. Therefore, the requirements for the Phase B manual initiation are replaced with "Refer to Function 2.b (Containment Spray – Manual Initiation) for all functions and requirements" and the Phase B Containment Pressure High High is replaced with, "Refer to Function 2.c (Containment Spray – Containment Pressure High High) for all functions and requirements." This is acceptable because the Containment Isolation Phase B functions are initiated by the Containment Spray signals.

14. ISTS LCO 3.3.2 in Table 3.3.2-1 Function 8.c (P-12) lists the Allowable Value as ≥ [558.6] °F. ITS LCO 3.3.2 for Function 8.c in Table 3.3.2-1 lists the Allowable Value for P-12 as ≤ 545 °F. This change is acceptable because less than the 545 °F value, the P-12 function prevents the manual block of a SI signal on high steam line flow. The safety analysis credits this portion of the P-12 interlock and does not credit the portion of the interlock that allows the block of a SI signal on high steam flow. The value of ≤ 545 °F represents the requirement in the CTS and the setpoint methodology for calculating the Allowable Values. R6

15. ISTS LCO 3.3.2 in Table 3.3.2 –1 Function 6.e (AFW pumps start on a trip of all Main Feedwater pumps) requires the performance of SRs 3.3.2.8, 3.3.2.9, and 3.3.2.10. ITS LCO 3.3.2 in Table 3.3.2 – 1 for Function 6.e requires the performance of SRs 3.3.2.7 and 3.3.2.9. This changes the ISTS by deleting the requirement for performing a CHANNEL CALIBRATION for the function. The Main Feedwater pumps are electric motor driven pumps controlled by electric circuit breakers. This type of controller for the Main Feedwater pumps requires only a TADOT to be performed to verify proper operation and does not require a CHANNEL CALIBRATION. R6

A.1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIRED

ITS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST (COT TADOT MRT ALT) A.3	SLAVE RELAY TEST	MODES IN WHICH SURVEILLANCE REQUIRED	Response Time Test A.1
5 5. TURBINE TRIP AND FEEDWATER ISOLATION						A.8
5b a. Steam Generator Water Level – High-High	3.3.2.1 R A.1	3.3.2.8 R A.1	3.3.2.4 R A.3	N.A.	1, 2, 3#	3.3.2.9
5a b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	3.3.2.2 3.3.2.3 M LA.2	3.3.2.5 R A.1	1, 2, 3#	NA A.16
5c c. Safety Injection (SI)			See 1 above (all SI Surveillance Requirements)			
6 6. AUXILIARY FEEDWATER PUMPS						
a. Manual	N.A.	N.A.	R(1)	N.A. L.1	1, 2, 3	
6a b. Automatic Actuation Logic	N.A.	N.A.	3.3.2.2 3.3.2.3 M LA.2	3.3.2.5 R A.1	1, 2, 3	NA A.16
6b c. Steam Generator Water Level – Low-Low	3.3.2.1 R A.1	3.3.2.8 R A.1	3.3.2.4 R A.3	N.A.	1, 2, 3	3.3.2.9
6c d. Safety Injection (SI)			See 1 above (all SI Surveillance Requirements)			L.3
6d e. Station Blackout	N.A.	3.3.2.8 R A.1	3.3.2.6 NA M.6	N.A.	1, 2, 3	3.3.2.9
6e f. Main Feedwater Pump Trip	N.A.	N.A.	3.3.2.7 R A.1	N.A.	1, 2	3.3.2.9

R6 M.2

ITS 3.3.2

SR 3.3.2.8 > Insert proposed Note to SR

A.1

TABLE 4.3-2 (CONTINUED)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST (A.3; COT TADOT MLT ALT)	SLAVE RELAY TEST	MODES IN WHICH SURVEILLANCE REQUIRED	Response Time Test (A.11)
5. TURBINE TRIP AND FEEDWATER ISOLATION						A.8
a. Steam Generator Water Level – High-High	3.3.2.1 (A.1)	3.3.2.8 (A.1)	3.3.2.4 (A.3)	N.A.	1, 2, 3#	3.3.2.9
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	3.3.2.2, 3.3.2.3 (LA.2)	3.3.2.5 (A.1)	1, 2, 3#	NA (A.16)
c. Safety Injection (SI)	See 1 above (All SI Surveillance Requirements)					
6. AUXILIARY FEEDWATER PUMPS						
a. Manual	N.A.	N.A.	R(1)	N.A. (L.1)	1, 2, 3	NA (A.16)
b. Automatic Actuation Logic	N.A.	N.A.	3.3.2.2, 3.3.2.3 (M.2) (LA.2)	(A.1) 3.3.2.5	1, 2, 3	
c. Steam Generator Water Level – Low-Low	3.3.2.1 (A.1)	3.3.2.8 (A.1)	3.3.2.4 (A.3)	N.A. (A.1)	1, 2, 3	3.3.2.9 (L.3)
d. Safety Injection (SI)	See 1 above (all SI Surveillance Requirements)					
e. Station Blackout	N.A.	3.3.2.8 (A.1)	3.3.2.6 (M.6)	N.A.	1, 2, 3	3.3.2.9
f. Main Feedwater Pump Trip	N.A.	N.A.	3.3.2.7 (A.1)	N.A.	1, 2	3.3.2.9

R6
M.2

ITS 3.3.2
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SR 3.3.2.8 Rev. 0

INSERT proposed Note to SR

M.2 CTS Surveillance listed in Table 4.3-2 provide CHANNEL CALIBRATION requirements for a variety of functions to be performed at a R (refueling) frequency. ITS Surveillance Requirement 3.3.2.8 specifies a CHANNEL CALIBRATION be performed every 18 months. A Note modifies the SR that states "This Surveillance shall include verification that the time constants are adjusted to the prescribed values." This changes the CTS by adding the requirement to perform a verification of time constants adjusted to prescribed values with a CHANNEL CALIBRATION of the various safety functions. R6

This change is acceptable because a complete check of the instrument loop, including any associated time constants set to prescribed values, should be periodically performed to ensure the measured parameter is maintained within the necessary range and accuracy. The addition of the requirement is acceptable because any required time constants set to prescribed values are necessary to ensure the required function responds is required by the safety analysis to mitigate a design basis accident. This change is designated as more restrictive because the testing requirements have been specifically stated in the ITS that were not required in the CTS.

M.3 CTS for ESF instrumentation do not require the ESFAS function for the automatic swap over of Low Head Safety Injection (LHSI) pumps suction to the containment sump from the Refueling Water Storage Tank (RWST) on a Low-Low level. ITS ESFAS Instrumentation Function 7 is labeled as the "Automatic Switchover to Containment Sump." This requires that two trains of automatic actuation logic and actuation relays to be OPERABLE in MODES 1, 2, 3, and 4. This requires Action C to be entered if a train becomes inoperable, and SRs 3.3.2.2, 3.3.2.3, and 3.3.2.5 to be performed at specific frequencies. The function requires four channels of RWST level to be OPERABLE in MODES 1, 2, 3, and 4. When two of the four channels reach the RWST Low-Low level setpoint, coincident with a SI signal, the LHSI pump suctions swap from the RWST to the containment sump. ITS Action I is required to be entered for an inoperable channel, and SRs 3.3.2.1, 3.3.2.4, 3.3.2.8, and 3.3.2.9 are required to be performed to verify OPERABILITY. ITS Action I requires an inoperable channel to be placed in bypass within 72 hours or the unit must be placed in MODE 3 within the next 6 hours and MODE 5 within the next 30 hours. A Note that allows an additional channel to be bypassed for up to 12 hours for surveillance testing modifies the Required Action. The Allowable Value for the RWST Level Low-Low is $\geq$ 18.4 % and $\leq$ 20.4% for LHSI pump swapover to the containment sump from the RWST. This changes the CTS by adding additional requirements to the CTS.

This change is acceptable because requiring the automatic switchover instrumentation to be OPERABLE is essential to ensure the LHSI pumps will perform the required safety function. Emergency procedures require the operator to manually swap the LHSI pumps from the RWST to the containment sump prior to a RWST low-low level during design basis events. The switching of the pumps is an automatic action credited by the emergency procedures. The swapover is credited in the UFSAR to

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

13. Typed version of ITS 3.3.2 Required Actions C.1 and C.2, are joined with OR. The OR should not be indented. Required Action C.2.1 and C.2.2 are joined with AND. The AND should be indented. This change is to correct the typed version of ITS 3.3.2 Required Actions.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	C.1 --------NOTE-------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ---------- Restore train to OPERABLE status.	24 hours
	OR	
	C.2.1 Be in MODE 3.	30 hours
	AND	
	C.2.2 Be in MODE 5.	60 hours
D. One channel inoperable.	D.1 --------NOTE-------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---------- Place channel in trip.	72 hours
	OR	
	D.2.1 Be in MODE 3.	78 hours
	AND	
	D.2.2 Be in MODE 4.	84 hours

R6

R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

14. Typed version of ITS 3.3.2 Bases for Action J omitted the word "their" in the second sentence. The sentence is modified to read, " . . . the interlocks are in **their** proper state . . ."

BASES

ACTIONS

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

reach MODE 3 and 12 hours for a second channel to be bypassed is acceptable based on the results of a plant-specific risk assessment, consistent with Reference 8. RAI 3.3.2-12 R6

J.1, J.2.1, and J.2.2

Condition J applies to the P-11 and P-12 interlocks.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. The verification that the interlocks are in their proper state may be performed via the Control Room permissive status lights. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. If the interlock is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of these interlocks. R6

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing channel I, train A and train B must be examined. Similarly, train A and train B must be examined when testing channel II, channel III, and channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.3

15. CTS DOC LA.1 justified the movement of requirements for a shared system between units and hydrogen analyzer's heat tracing from the CTS Specifications to the ITS Bases. The requirement for heat tracing is not in the ITS Bases. DOC LA.1 is changed to state that the requirements for heat tracing are moved from the CTS Specification to the Technical Requirements Manual, and also addresses RAI 3.3.3-03. DOC LA.3 is added to justify the movement of the hydrogen analyzers being shared between units and is moved to the ITS Bases.

ITS 3.3 3.3.3

INSTRUMENTATION

POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

A.1

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 TABLE 3.3.3-1 Item 12

3.6.4.1 Two independent containment hydrogen analyzers (shared with Unit 2) shall be OPERABLE.

LA.3 | R6

APPLICABILITY: MODES 1 and 2 3

M.2

ACTION:

R2

Insert proposed note

Action A

a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours

A.2

L.1

INSERT Proposed Action B

Action C

Action D

b. With both hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours AND Be in MODE 4 WITHIN 12 hours

M.2

NOTE: OPERABILITY of the hydrogen analyzers includes OPERABILITY of the respective Heat Tracing System

LA.1

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gas containing:

L.3

RAI 3.3.3-5 RL

LA.2

a. One volume percent (±.25%) hydrogen, balance nitrogen, and

b. Four volume percent (±.25%) hydrogen, balance nitrogen.

NOTE: The Channel Calibration Test shall include startup and operation of the Heat Tracing System.

LA.1

ITS 3.3 3.3.3

INSTRUMENTATION
POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

A.1

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 Table 3.3.3-1 Item 12

3.6.4.1 Two independent containment hydrogen analyzers (shared with Unit 1) shall be OPERABLE.

LA.3 | R6

APPLICABILITY: MODES 1 and 2 3

M.2

ACTION:

INSERT PROPOSED NOTE

R2

Action A

a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours

A.2

L.1

Action B
Action C
Action D

INSERT proposed Action B

b. With both hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and be in Mode 4 within 12 hours

M.2

NOTE: OPERABILITY of the hydrogen analyzers includes OPERABILITY of the respective Heat Tracing System.

LA.1

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gas containing:

L.3 | RAI 3.3.3-5 R6

a. One volume percent (± .25%) hydrogen, balance nitrogen, and

b. Four volume percent (± .25%) hydrogen, balance nitrogen.

LA.2

NOTE: The Channel Calibration Test shall include startup and operation of the Heat Tracing System.

LA.1

and safety. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

RAI 3.3.3-4 R6

LA.3 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.6.4.1 states two independent containment hydrogen analyzers (shared with the other unit) shall be OPERABLE. ITS 3.3.3 PAM Instrumentation requires two channels of hydrogen analyzers to be OPERABLE. This change moves CTS information regarding the hydrogen analyzer being shared between units from the Specifications to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the Hydrogen Analyzers to be OPERABLE in the required MODES. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

R6

LA.4 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-6 Radiation Monitoring Instrumentation list the alarm/trip setpoint and measurement range for the High Range Area Monitors. ITS 3.3.3 PAM Instrumentation requires two channels of High Range Area monitors but does not state the measuring range or alarm/trip setpoint. This change moves the measurement range and alarm/trip setpoint from the Specifications to the Technical Requirements Manual (TRM).

RAI 3.3.3-6 R6

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for 2 channels of the High Range Containment High Range Area monitor to be OPERABLE in MODES 1, 2, and 3. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.3

16. ISTS Functions 15, 16, 17, and 18 provide the requirements for the Core Exit Temperature (CET) for the four quadrants of the reactor's core. The ITS groups these functions into the Inadequate Core Cooling Monitor (ICCM) System. Each of these Functions provides individual indication of temperature for a core quadrant; therefore each function can be treated and identified independently. The ITS designation for each quadrant for CET is changed from 6.c for each quadrant to 6.c.1 for Quadrant 1, 6.c.2 for Quadrant 2, 6.c.3 for Quadrant 3, and 6.c.4 for Quadrant 4.

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS
1. Power Range Neutron Flux	2
2. Source Range Neutron Flux	2
3. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2
4. RCS Cold Leg Temperature (Wide Range)	2
5. RCS Pressure (Wide Range)	2
6. Inadequate Core Cooling Monitoring (ICCM) System	
6.a. Reactor Vessel Level Instrumentation System (RVLIS)	2
6.b. RCS Subcooling Margin Monitor	2
6.c.1 Core Exit Temperature–Quadrant 1	2[c]
6.c.2 Core Exit Temperature–Quadrant 2	2[c]
6.c.3 Core Exit Temperature–Quadrant 3	2[c]
6.c.4 Core Exit Temperature–Quadrant 4	2[c]
7. Containment Sump Water Level (Wide Range)	2
8. Containment Pressure	2
9. Containment Pressure (Wide Range)	2
10. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path[a][b]
11. Containment Area Radiation (High Range)	2
12. Containment Hydrogen Analyzers	2
13. Pressurizer Level	2
14. Steam Generator (SG) Water Level (Wide Range)	2
15. SG Water Level (Narrow Range)	2 per SG
16. Emergency Condensate Storage Tank Level	2
17. SG Pressure	2 per SG
18. High Head Safety Injection Flow	2

R6

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of two core exit thermocouples (CETs).

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

CTS

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION E.1
New	1. Power Range Neutron Flux	2	F
New	2. Source Range Neutron Flux	2	F
2	3. Reactor Coolant System (RCS) Hot Leg Temperature (WIDE RANGE)	2 per loop	F
3	4. RCS Cold Leg Temperature (WIDE RANGE)	2 per loop	F
4	5. RCS Pressure (Wide Range)	2	F
New	6. Inadequate Core Cooling Monitoring (ICCM) System	2	G
15	6.a Reactor Vessel Water Level (Instrumentation System (RVLIS))	2	
11	6.b RCS Subcooling Margin Monitor	2	F
17	7. Containment Sump Water Level (Wide Range)	2	F
1, New	8. Containment Pressure (Wide Range) and Containment Pressure	2	F
(10) (8)	Containment Isolation Valve Position Penetration Flow Path	2 per penetration flow path(a)(b)	F
New	(11) (10). Containment Area Radiation (High Range)	2	G
3.6.4.1	(12) (11). Containment Hydrogen Monitors Analyzers	2	F
5	(13) (12). Pressurizer Level	2	F
New	(14) (13). Steam Generator Water Level (Wide Range) (SG)	2 per steam generator	F
New	(16) (14). Emergency Condensate Storage Tank Level	2	F
New	6.c.1 15. Core Exit Temperature – Quadrant (A) (B)	2(c)	F
	6.c.2 16. Core Exit Temperature – Quadrant (B) (C)	2(c)	F
	6.c.3 17. Core Exit Temperature – Quadrant (C) (D)	2(c)	F
	6.c.4 18. Core Exit Temperature – Quadrant (D) (A)	2(c)	F
	19. Auxiliary Feedwater Flow	2	F

New (a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

New (b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

New (c) A channel consists of two core exit thermocouples (CETs).

Reviewer's Note: Table 3.3.3-1 shall be amended for each unit as necessary to list:

(1) All Regulatory Guide 1.97, Type A instruments, and

(2) All Regulatory Guide 1.97, Category I, non-Type A instruments in accordance with the unit's Regulatory Guide 1.97, Safety Evaluation Report.

7	15	SG Water Level (Narrow Range)	2 per SG
6	17	SG Pressure	2 per SG
New	18	High Head Safety Injection Flow	2

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.3

17. A clarification is made to the ISTS Table 3.3.3 – 1 for Function 8 (Containment Pressure) and Function 9 (Containment Pressure Wide Range) and the CTS markup. The Containment Pressure Wide Range is the CTS required channel. The Containment Pressure (narrow range) is added to the CTS requirements. This does not result in a change to the ITS Specifications or Bases.

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

CTS

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION E.1
New	1. Power Range Neutron Flux	2	F
New	2. Source Range Neutron Flux	2	F
2	3. Reactor Coolant System (RCS) Hot Leg Temperature (WIDE RANGE)	2 per loop	F
3	4. RCS Cold Leg Temperature (WIDE RANGE)	2 per loop	F
4	5. RCS Pressure (Wide Range)	2	F
New	6.a Inadequate Core Cooling Monitoring (ICCM) System	2	F
15	6.b Reactor Vessel Water Level (Instrumentation System (RVLIS)	2	G
11	6.b RCS Subcooling Margin Monitor	2	F
17	7. Containment Sump Water Level (Wide Range)	2	F
New, 1	8. Containment Pressure (Wide Range) and Containment Pressure	2	F
	9. Containment Isolation Valve Position Penetration Flow Path	2 per penetration flow path(a)(b)	F
New	10. Containment Area Radiation (High Range)	2	G
3.6.4.1	11. Containment Hydrogen Monitors Analyzers	2	F
5	12. Pressurizer Level	2	F
New	13. Steam Generator Water Level (Wide Range) (SG)	2 per steam generator	F
New	14. Condensate Storage Tank Level Emergency	2	F
New	15. Core Exit Temperature – Quadrant #1	2(c)	F
6.c.1	16. Core Exit Temperature – Quadrant #2	2(c)	F
6.c.2	17. Core Exit Temperature – Quadrant #3	2(c)	F
6.c.3	18. Core Exit Temperature – Quadrant #4	2(c)	F
6.c.4	19. Auxiliary Feedwater Flow	2	F

New (a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

New (b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

New (c) A channel consists of two core exit thermocouples (CETs).

Reviewer's Note: Table 3.3.3-1 shall be amended for each unit as necessary to list:

(1) All Regulatory Guide 1.97, Type A instruments, and

(2) All Regulatory Guide 1.97, Category I, non-Type A instruments in accordance with the unit's Regulatory Guide 1.97, Safety Evaluation Report.

7	15	SG Water Level (Narrow Range)	2 per SG
6	17	SG Pressure	2 per SG
New	18	High Head Safety Injection Flow	2

A.1

TABLE 3.3-10

ACCIDENT MONITORING INSTRUMENTATION

ITS

		Required TOTAL NO. OF CHANNELS	MINIMUM CHANNELS OPERABLE
a 1.	Containment Pressure (WIDE RANGE)	2	1
8	Containment PRESSURE	2	1
3 2.	Reactor Coolant Inlet Temperature-T_{hot} (wide range)	2	1
4 3.	Reactor Coolant Inlet Temperature-T_{cold} (wide range)	2	1
5 4.	Reactor Coolant Pressure-Wide Range	(2)(1)	1
13 5.	Pressurizer ~~Water~~ Level	(2)(1)	1
17 6.	Steam (Generator) Line Pressure	2/steam generator	1/steam generator
15 7.	Steam Generator Water Level-Narrow Range	2/steam generator	1/steam generator
8.	Refueling Water Storage Tank Water Level	1	1
9.	Boric Acid Tank Solution Level	1	1
10.	Auxiliary Feedwater Flow Rate	1/steam generator	1/steam generator
6b 11.	Reactor Coolant System Subcooling Margin Monitor	2	1
12.	PORV Position Indicator	2/valve	1/valve
13.	PORV Block Valve Position Indicator	1/valve	1/valve
14.	Safety Valve Position Indicator	1/valve	1/valve
6	Inadequate Core Cooling MONITORING (ICCM) SYSTEM		
6a 15.	Reactor Vessel ~~Coolant~~ Level ~~Monitor~~ INSTRUMENTATION SYSTEM (RVLIS)	2	1
16.	Containment Water Level (narrow range)	2	1
7 17.	Containment (Sump) Water Level (wide range)	2	1
6c 18.	In Core Thermocouples	(2)(4)/core quadrant (c)	2/core quadrant

(Insert 7

INSert Notes (a)(b)(c)

A.4
M.4 | R6
M.3
M.3
A.1
L.5
L.5
A.5
L.5
M.5
M.4

6-20-88
ITS 3.3.3

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Rev. 6

A.1

TABLE 3.3-10

POST ACCIDENT MONITORING INSTRUMENTATION

ITS

		TOTAL NO. OF CHANNELS (required)	MINIMUM CHANNELS OPERABLE	
8	1. Containment Pressure (WIDE RANGE)	2	1	A.4
9	Containment PRESSURE	2		M.4
3	2. Reactor Coolant Outlet Temperature-T_{hot} (wide range)	2	1	
4	3. Reactor Coolant Inlet Temperature-T_{cold} (wide range)	2	1	
5	4. Reactor Coolant Pressure-Wide Range	2	1	M.3
13	5. Pressurizer ~~Water~~ Level	2	1	
17	6. Steam (Generator) Line Pressure	2/steam generator	1/steam generator	A.1
15	7. Steam Generator Water Level-Narrow Range	2/steam generator	1/steam generator	
	8. Refueling Water Storage Tank Water Level	1	1	
	9. Boric Acid Tank Solution Level	1	1	
	10. Auxiliary Feedwater Flow Rate	1/steam generator	1/steam generator	L.5
65	11. Reactor Coolant System Subcooling Margin Monitor	2	1	
	12. PORV Position Indicator	2/valve	1/valve	
	13. PORV Block Valve Position Indicator	1/valve	1/valve	L.5
16	14. Safety Valve Position Indicator (Inadequate Core Cooling monitoring SYSTEM)	1/valve	1/valve	
6a	15. Reactor Vessel (Coolant) Level Monitor (INSTRUMENTATION SYSTEM (REVISED))	2	1	A.5
	16. Containment Water Level (narrow range)	2	1	L.5
7	17. Containment Water Level (wide range)	2	1	
6c	18. In Core Thermocouples	(2) (c1) /core quadrant	2/core quadrant	M.5
				M.4

<Insert>

INSERT Notes (A)(B)(C)

M.4

M.5

R6

6-30-95

ITS 3.3.3

page 3 of 11

Rev 6

analyzers are inoperable for greater than seven days, the unit to be placed in MODE 3 within six hours and MODE 4 within twelve hours. This changes the CTS requirements for the hydrogen analyzers from MODES 1 and 2 to MODES 1, 2, and 3 and the Required Actions from being in MODE 3 to being in MODE 4.

This change is acceptable because the potential for hydrogen generation in the Reactor Coolant System in MODE 3 can be the same as MODES 1 and 2. The only effect on hydrogen concentration as assumed in the accident analyses that changes for MODE 3 is the potential amount of hydrogen generated from fuel clad damage. Therefore, the expansion of the Applicability to MODE 3 and the requirement to place the unit into MODE 4 if the analyzers are inoperable is appropriate. The change is designated as more restrictive because the hydrogen analyzers are required to be OPERABLE in more condition that required in the CTS.

M.3 CTS 3.3.6, Table 3.3-10, Functions 4 and 5, require one channel for the reactor coolant pressure-wide range and pressurizer water level functions. ITS 3.3.3, Table 3.3.3-1, Functions 5 and 12 require two channels for RCS Pressure (Wide Range) and Pressurizer Level. This changes the CTS requirements for the parameters from one to two required channels.

This change is acceptable because the ITS reflects the requirements for diversity and redundancy stated in Regulatory Guide 1.97 and Generic Letters 82-33 and 83-37. Additionally, the unit specific evaluation requires that a minimum of two channels be available for these parameters. This provides the operator an unambiguous source of information for decisions needed following design basis events. The change is designated as a more restrictive because the number of required channels for the indicated parameters is increased from one to two.

M.4 CTS 3.3.6 Table 3.3-10 does not require OPERABLE indication channels for the parameters of nuclear instrumentation, containment pressure (narrow range), containment isolation valve position, containment area radiation levels, wide range steam generator level, the inventory of water to supply AFW pumps, and high pressure Safety Injection flow. These are added to the CTS and shown in ITS 3.3.3, Table 3.3.3-1, Functions 1, 2, 8, 10, 14, 16, and 18. The Gammametric Power and Source range channels (Functions 1 and 2) provide nuclear instrumentation indication, with two channels of each range. Two channels provide narrow range containment pressure (Function 8). Containment isolation valve position indication (Function 10) is required for each of two valves per penetration flow path. This requirement is modified by a note that requires only one position indication channel per penetration flow path with one installed channel located in the Control Room. Steam generator level is additionally monitored by wide range indication (Function 14). The last two requirements are added for two channels of Emergency Condensate Storage Tank level (Function 16) and two indications for the High Head Safety Injection flow (Function 18). In addition, SRs are added for each function. Two Notes modify the requirements for Function 9, Containment Isolation Valve Position. | R6 | R6 | R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.3

18. CTS pages 3 of 14 (Unit 1) and 3 of 11 (Unit 2) have inserts. The inserts list a variety of Functions including Function 14 Steam Generator (SG) Water Level (Wide Range). Function 14 specifies the Required Channels as 1 per SG. This is corrected to read 2 Required Channels for the Function.

INSERT

ITS	Instrument	REQUIRED CHANNELS
1	Power Range Neutron Flux	2
2	Source Range Neutron Flux	2
10	Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path [(a)(b)]
11	Containment Area Radiation (High Range)	2
12	Containment Hydrogen Analyzers	2
14	Steam Generator (SG) Water Level (Wide Range)	2
16	Emergency Condensate Storage Tank Level	2
18	High Head Safety Injection Flow	1 per train

R6

INSERT

ITS	Instrument	REQUIRED CHANNELS
1	Power Range Neutron Flux	2
2	Source Range Neutron Flux	2
10	Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path [(a)(b)]
11	Containment Area Radiation (High Range)	2
12	Containment Hydrogen Analyzers	2
14	Steam Generator (SG) Water Level (Wide Range)	2
16	Emergency Condensate Storage Tank Level	2
18	High Head Safety Injection Flow	1 per train

1 R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.3

19. ITS Bases for SR 3.3.3.3 on ISTS page B 3.3 – 137 has three inserts. Insert 2 is from approved TSTF –19. This insert, in part, states in the last part of the sentence "recently installed sensing element." The ITS Bases states "recently installed sensing elements." The "s" is dropped from the word elements.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.3

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 measured parameter with the necessary range and accuracy. This SR is modified by a Note that excludes neutron detectors. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the CET sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element. The Frequency is based on operating experience and consistency with the typical industry refueling cycle. |R6

SR 3.3.3.4

SR 3.3.3.4 is the performance of a TADOT of containment isolation valve position indication. This TADOT is performed every 18 months. The test shall independently verify the OPERABILITY of containment isolation valve position indication against the actual position of the valves.

The Frequency is based on the known reliability of the Functions, and has been shown to be acceptable through operating experience.

REFERENCES

1. Technical Report PE-0013.

2. Regulatory Guide 1.97, May 1983.

3. NUREG-0737, Supplement 1, "TMI Action Items."

INSERT 1

SR 3.3.3.2

A CHANNEL CALIBRATION is performed on the containment hydrogen analyzers every 92 days and uses a gas solution containing a one volume percent (± 0.25%) of hydrogen and a sample of four volume percent (± 0.25%) of hydrogen with the balance of each gas sample being nitrogen. The containment hydrogen analyzer heat trace system is verified OPERABLE as a part of this Surveillance.

RAI 3.3.3-5 R6

INSERT 2

Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the CET sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

R6

INSERT 3

SR 3.3.3.4

SR 3.3.3.4 is the performance of a TADOT of containment isolation valve position indication. This TADOT is performed every 18 months. The test shall independently verify the OPERABILITY of containment isolation valve position indication against the actual valve position of the valves.

The Frequency is based on the known reliability of the Function and has been shown to be acceptable through operating experience.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.4

20. CTS Table 3.3 – 9 is modified by DOC M.2 that adds various functions. Function 3.e, Steam Generator (SG) Power Operated Relief Valve (PORV) Controls is one of these functions. CTS markup specifies 1 per SG. ITS Bases on B 3.3 – 143a lists the required number of functions for SG PORV Control as 1. CTS markup has been corrected to read 1.

A.1

8-2-89

TABLE 3.3-9

AUXILIARY SHUTDOWN PANEL MONITORING INSTRUMENTATION

ITS

	INSTRUMENT	MEASUREMENT RANGE	MINIMUM CHANNELS OPERABLE
3a	1. Reactor Coolant Temperature - Average	530 - 630°F	1
2a	2. Pressurizer Pressure	1700 - 2500 psig	1
4a	3. Pressurizer Level	0 - 100%	1
3f	4. Auxiliary Feed Pump Discharge Header Pressure	500 - 1500 psig	1
3g	5. Emergency Condensate Storage Tank Level	0 - 100%	1
4b	6. Charging Flow	0 - 180 gpm	1
3c	7. S/G Main Steam Line Pressure	0 - 1400 psig	1
3d	8. Steam Generator Level	0 - 100%	1
	9. Relay Room Positive Ventilation	0 - 0.50 inches H_2O	1
1a	Boric Acid Pump Controls		1
2b	Pressurizer Heater Controls		1
3b	AFW Pump and Valve Controls		1
3c	SG PORV Controls		1
4b	Charging Pump Controls		1

*Located at Elevation 254' in the Emergency Switchgear and Relay Room.

LA.2

LA.1

L.1

M.2

R6

LA.1

ITS 3.3.4

A.1

8-2-89

TABLE 3.3-9

AUXILIARY SHUTDOWN PANEL MONITORING INSTRUMENTATION

ITS

	INSTRUMENT	MEASUREMENT RANGE	MINIMUM CHANNELS OPERABLE
3a	1. Reactor Coolant Temperature - Average	530 - 630°F	1
2a	2. Pressurizer Pressure	1700 - 2500 psig	1
4a	3. Pressurizer Level	0 - 100%	1
3f	4. Auxiliary Feed Pump Discharge Header Pressure	500 - 1500 psig	1
3g	5. Emergency Condensate Storage Tank Level	0 - 100%	1
4b	6. Charging Flow	0 - 180 gpm	1
3c	7. Main Steam Line Pressure (5/6)	0 - 1400 psig	1
3d	8. Steam Generator Level	0 - 100%	1
	9. Relay Room Positive Ventilation	0 - 0.50 inches H_2O	1
1a	Boric Acid Pump Controls		1
2b	Pressurizer Heaters Controls		1
3b	AFW Pump and Valve Controls		1
3c	SG PORVs Controls		1
4b	Charging Pump Controls		1

*Located at Elevation 254' in the Emergency Switchgear and Relay Room.

LA.2

LA.1

L.1

M.2

RG

LA.1

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.4

21. Bases for LCO addresses the remote shutdown system as a "division" being inoperable. The Specification LCO requires "Functions" to be OPERABLE. The Bases is modified by changing the word "division" to "function" with one other minor wording change.

BASES

ACTIONS

A Remote Shutdown System function is inoperable when the function is not accomplished by at least one designed Remote Shutdown System channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases. |R6

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function. |R2

A.1

Condition A addresses the situation where one or more required Functions of the Remote Shutdown System are inoperable. This includes the control and transfer switches for any required function.

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least 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 unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1

Performance of the CHANNEL CHECK once every 31 days ensures that a 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 of

(continued)

INSERT

A Remote Shutdown System function is inoperable when the function is not accomplished by at least one designed Remote Shutdown System channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases. | R6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.4

22. CTS markups for Unit 1 and 2 do not show ITS SR 3.3.4.2. DOC M.2 documents the additional surveillance requirements being added to the CTS requirements. CTS pages are modified to reflect the addition of ITS SR 3.3.4.2.

ITS 3.3.4

11-26-77

A.1

ITS
3.3
3.3.4

INSTRUMENTATION

AUXILIARY SHUTDOWN PANEL MONTIORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.4

3.3.3.5 The auxiliary shutdown panel monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.

M.2
LA.1

APPLICABILITY: MODES 1, 2 and 3.

A.2 | R2

Note

ACTION: INSERT PROPOSED Note

Action A

a. With the number of OPERABLE auxiliary shutdown panel monitoring channels less than required by Table 3.3-9, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours.

Action B

INSERT PROPOSED Required Action B.1

M.1

b. The provisions of specification 3.0.4 are not applicable.

M.3 | R2

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1
3.3.4.3

4.3.3.5 Each auxiliary shutdown panel monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

SR 3.3.4.2

INSERT proposed SR

M.2 | Rev 6

ITS 3.3.4

8-21-80

A.1

ITS 3.3 3.3.4

INSTRUMENTATION

AUXILIARY SHUTDOWN PANEL MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.4

3.3.3.5 The auxiliary shutdown panel monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.

M.2 LA.1

APPLICABILITY: MODES 1, 2 and 3.

A.2 R.

Note

ACTION: INSERT PROPOSED Note

Action A

a. With the number of OPERABLE auxiliary shutdown panel monitoring channels less than required by Table 3.3-9, either restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours. 30 INSERT PROPOSED Required Action B.1

L.2 M.1

Action B

b. The provisions of Specification 3.0.4 are not applicable.

M.3 R2

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1 3.3.4.3

4.3.3.5 Each auxiliary shutdown panel monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

M.2

SR 3.3.4.2 INSERT PROPOSED SR

Rev 6

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.5

23. LCO 3.3.5 CTS Discussion of Changes LA.1 and LA.4 classifications have been changed from Category Type 1 – Removal of Details of System Design to Category Type 3 – Removing Procedural Details. DOCs LA.3 and LA.4 are modified to clarify the specific change to the CTS requirement.

M.4 CTS Surveillance Requirements 4.3.2.1.1 and 4.3.2.1.2 require the periodic testing of Loss of Voltage and Degraded Voltage Functions for the Loss of Power on the 4160 kV emergency bus. ITS SRs 3.3.5.1, 3.3.5.2, and 3.3.5.3 require the testing of the LOP EDG start instruments for this unit and the other unit that supplies shared electrical power to shared components. These requirements are specified as LCO 3.3.5.a and LCO 3.3.5.b Functions. This changes the CTS by requiring the other unit loss of voltage and degraded voltage Functions to be tested for this unit if they support shared components. RAI 3.3.5-1 R6

The purpose of this change is to ensure that if a shared component is electrically powered from the other unit, the LOP EDG start instrumentation of the other unit is required to be OPERABLE by this unit's Technical Specifications. This change is acceptable because shared components provide safety functions for this unit while being electrically powered from the other unit. For this unit to rely on components electrically powered from the other unit, this unit must require the OPERABILITY of the other unit LOP EDG start instrumentation to ensure the shared component(s) may fulfill the unit's safety functions. This change is more restrictive because the ITS provides additional requirements that are not specified in the CTS.

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS 3.3.2.1 Action a requires that with an ESFAS instrumentation channel trip setpoint found less conservative than the value shown in the Allowable Values column of Table 3.3-4, the channel be declared inoperable and Action a be entered. ITS 3.3.5 LCO requires three channels per function to be OPERABLE and Action A requires an inoperable channel to be placed in trip within 72 hours. This changes the CTS by moving the discussion of the relationship between the Allowable Value and OPERABILITY from the Technical Specification to the Bases. R6

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS continue to require an inoperable undervoltage and degraded voltage channel to be placed in a trip condition within 72 hours. The relationship between the Allowable Value and OPERABILITY provides detailed information that is covered in the Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is categorized as less restrictive removal of details because information has been moved from the Technical Specifications to the Bases. R6 R6

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Table 3.3-4 functional unit 7, Loss of Power, lists the Trip

Setpoints for the undervoltage and degraded voltage on the 4160-volt emergency bus. CTS 3.3.2.1 LCO and Action a state that the instrumentation channels' trip setpoints will be set, "consistent with the Trip Setpoint values." ITS 3.3.5 LCO and Actions do not contain these requirements. This changes the CTS by moving the Trip Setpoints and the trip setpoint adjustment, "consistent with the Trip Setpoint value," from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for three channels of the Loss of Power undervoltage and degraded voltage to be OPERABLE or appropriate Required Actions and associated Completion Times are required to be entered. Also, this change is acceptable because these types of procedural details will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Table 4.3-2 requires a quarterly (Q) CHANNEL FUNCTIONAL TEST (CFT) of the Loss of Power function. The Surveillance Requirement is modified by Note (5), which states, "Each train or logic channel shall be functionally tested up to and including input coil continuity testing to the ESF relays." ITS SR 3.3.5.1 requires a TADOT to be performed every 92 days. The ITS does not contain the requirements of Note 5. This changes the CTS by moving the requirement of Note 5 to the Bases.

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS Bases contain the details for determining the OPERABILITY for a function. This type of information is consistent with that level of detail and is moved to the Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is categorized as less restrictive removal of details because information has been moved from the Technical Specifications to the Bases. | R6

LA.4 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Surveillance Requirement 4.3.2.1.2 requires the ENGINEERED SAFETY FEATURES RESPONSE TIME test on each ESFAS function at least once per 18 months. The requirement additionally states, "one channel per function (will be tested) such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific | R6

ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3." ITS SR 3.3.5.3 requires the ESFAS RESPONSE TIMES to be within limits. This changes the CTS by moving details of scheduling the test from the Specification to the ITS Bases. R6

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Action and Surveillance requirement to ensure the function remains OPERABLE. All necessary requirements for the function remain in the Technical Specifications. Changes to the Bases are controlled by the Technical Specification Bases Control Program, described in Chapter 5 of the ITS. This requirement provides for control of changes to the Bases and will ensure that any changes to the Bases are properly evaluated. This change is categorized as less restrictive removal of details because information has been moved from the Technical Specifications to the Bases. R6

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for Engineered Safety Feature Actuation System (ESFAS) instrumentation has three columns stating various requirements for each function. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." ITS Table 3.3.2-1 states the channel requirement for each ESFAS function as, "REQUIRED CHANNELS." This changes the CTS by stating all of the channel requirements for each function as the required channels and moving the information of the number of channels to trip and the minimum channels needed to maintain the function OPERABLE to the UFSAR.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels and the appropriate Condition to be entered if a required channel becomes inoperable. This change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59 which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications. RAI 3.3.5-3 R6

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 for ESFAS instrumentation states the total number of channels as three for the loss of power (LOP) functions (loss of voltage and degraded voltage). CTS Action 19 is required to be entered for an inoperable channel, and the inoperable channel is required to be

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.5

24. The Technical Requirements Manual (TRM) is addressed in Bases Background section and again in Surveillance Requirement section for SR 3.3.5.3. The second reference to the Technical Requirements Manual is abbreviated as TRM.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1 (continued)

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. 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. R6 RAI 3.3.5-07 R6

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION for channels required by LCO 3.3.5.a and LCO 3.3.5.b. RAI 3.3.5-01 R6

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 verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-07 RAI 3.3.5-01 R6

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.

SR 3.3.5.3

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). RAI 3.3.5-01 R6

(continued)

INSERT 1

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at an 18 month frequency with applicable extensions.

INSERT 2

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. R6 RAI 3.3.5-7 R6

INSERT 3

The verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-1 R6

INSERT 4

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). R6

Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate TRM response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. R6

Response time may be verified by actual response time test in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.5

25. SR 3.3.5.3 in the third paragraph states that the measured response times are compared to the values in the UFSAR. These values are contained in the TRM.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.3 (continued)

Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate TRM response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. |R6

Response time may be verified by actual response time test in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these devices every 18 months. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. The RESPONSE TIME testing for a channel of a function shall be conducted so that all channels are tested at N times 18 months. N is the total number of channels.

REFERENCES

1. UFSAR, Section 8.3.

2. Technical Requirements Manual.

INSERT 1

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at an 18 month frequency with applicable extensions.

INSERT 2

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. R6 RAI 3.3.5-7 R6

INSERT 3

The verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-1 R6

INSERT 4

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). R6

Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate TRM response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. R6

Response time may be verified by actual response time test in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.5

26. The ISTS SR 3.3.5.2 requires a TADOT to be performed every [31 days]. The Bases for the SR states that the setpoint for the relays are verified and adjusted if necessary as a part of the surveillance requirement. ITS SR 3.3.5.1 requires a TADOT to be performed every 92 days. The SR is modified by a Note that states "Verification of setpoint is not required." The ITS Bases state, "The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION."

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated EDG made inoperable by LOP EDG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.3.5.1	----------NOTE---------- Verification of setpoint is not required. ----------		R6
	Perform TADOT for LCO 3.3.5.a and LCO 3.3.5.b Functions.	92 days	RAI 3.3.5-01 R6
SR 3.3.5.2	Perform CHANNEL CALIBRATION with Allowable Values as follows:	18 months	
	a. Loss of voltage Allowable Values ≥ 2935 V and ≤ 3225 V with a time delay of ≤ 3.0 seconds for LCO 3.3.5.a and LCO 3.3.5.b Functions.		RAI 3.3.5-01 R6
	b. Degraded voltage Allowable Values ≥ 3720 V and ≤ 3772 V with:		
	1. A time delay ≤ 9.0 seconds with a Safety Injection (SI) signal for LCO 3.3.5.a Function; and		RAI 3.3.5-01 R6
	2. A time delay ≤ 63.0 seconds without an SI signal for LCO 3.3.5.a and LCO 3.3.5.b Functions.		RAI 3.3.5-01 R6
SR 3.3.5.3	Verify ESF RESPONSE TIMES are within limit for LCO 3.3.5.a and LCO 3.3.5.b Functions.	18 months on a STAGGERED TEST BASIS	RAI 3.3.5-01 R6

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1 (continued)

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. 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. R6 RAI 3.3.5-07 R6

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION for channels required by LCO 3.3.5.a and LCO 3.3.5.b. RAI 3.3.5-01 R6

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 verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-07 RAI 3.3.5-01 R6

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.

SR 3.3.5.3

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). RAI 3.3.5-01 R6

(continued)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
NEW C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.5.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.5.2 Perform TADOT. for LCO 3.3.5.a and LCO 3.3.5.b functions	92 days

4.3.2.1.1 and Function 7 of Table 3.3-4.

(continued)

RAI 3.3.5-1 R6

INSERT 1

R6

----------NOTE----------
Verification of setpoint is not required.
---

9. ISTS LCO 3.3.5 states, "[Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function shall be OPERABLE." ISTS SR 3.3.5.2 requires a TADOT to be performed and SR 3.3.5.3 states that a CHANNEL CALIBRATION shall be performed with ALLOWABLE VALUES listed. ITS LCO 3.3.5 requires three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function for the following 4160 VAC buses to be OPERABLE: a. The H and J Train buses; and b. One bus on the other unit for each required shared component. In addition, ITS SRs are modified to reflect the appropriate testing. SR 3.3.5.1 requires the TADOT for both LCO 3.3.5.a and LCO 3.3.5.b Functions. SR 3.3.5.2.a requires a CHANNEL CALIBRATION for both LCO 3.3.5.a and LCO 3.3.5.b Functions on loss of voltage. SR 3.3.5.2.b.1 requires a CHANNEL CALIBRATION for LCO 3.3.5.a degraded voltage Function with a SI signal. SR 3.3.5.2.b.2 requires a CHANNEL CALIBRATION for both LCO 3.3.5.a and LCO 3.3.5.b degraded voltage Function without a SI signal. These changes are appropriate because these requirements specify the unit's LOP EDG start instrumentation requirements from its and the other unit's instrumentation channels when the other unit is needed to support this unit's safety function. An example of the other unit LOP EDG start instrumentation being required for this unit is as follows: Four Service Water (SW) pumps are required to be OPERABLE for this unit. Two of the SW pumps are electrically powered from this unit and two from the other unit. If a SI signal on this unit occurs with a loss of all offsite electrical power to both units, the two SW pumps receive a start signal from this unit and are electrically supplied from this unit's emergency electrical buses. The required SW pumps on the other unit must be electrically powered from that unit's EDGs. The other unit's EDGs receive a start signal from its LOP EDG start instrumentation channels on a loss or degraded voltage condition on its emergency buses to support the two SW pumps needed by this unit.

RAI 3.3.5-1 R6

10. ISTS SR 3.3.5.2 requires the performance of a TADOT every [31 days]. ITS SR 3.3.5.1 states that a TADOT be performed every 92 days. The SR is modified by a Note that states, "Verification of setpoint is not required." The inclusion of the Note for the SR is acceptable because this SR is applicable to the Emergency bus loss of voltage and degraded voltage relays. The setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION; therefore setpoint verification should not be required for the 92-day TADOT and is excluded by the Note.

R6

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1

SR 3.3.5.1 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 3.3.5.2

SR 3.3.5.2 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.

SR 3.3.5.3 >

REFERENCES

1. FSAR, Section 8.3.
2. FSAR, Chapter [15].
3. Unit Specific RTS/ESFAS Setpoint Methodology Study.
4. PLANT-SPECIFIC Risk Assessment Consistent with WCAP 14333-P-A
5. UFSAR, Chapter 15.

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INSERT 1

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at an 18 month frequency with applicable extensions.

INSERT 2

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION. Each train or logic channel shall be functionally tested up to and including input coil continuity testing of the ESF slave relay. R6 RAI 3.3.5-7 R6

INSERT 3

The verification of degraded voltage with a SI signal is not required by LCO 3.3.5.b. RAI 3.3.5-1 R6

INSERT 4

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis for channels required by LCO 3.3.5.a and LCO 3.3.5.b. Response Time testing acceptance criteria are included in the TRM (Ref. 2). R6

Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate TRM response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. R6

Response time may be verified by actual response time test in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these

A.1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	SLAVE RELAY TEST	MODES IN WHICH SURVEILLANCE REQUIRED
7. LOSS OF POWER 4.16 KV Emergency Bus					
a. Loss of Voltage	N.A.	R	Q	N.A.	1, 2, 3, 4
b. Degraded Voltage	N.A.	R	Q	N.A.	1, 2, 3, 4
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	N.A	R	R	N.A.	1, 2, 3
b. Low - Low T_{avg}, P-12	N.A.	R	R	N.A.	1, 2, 3
c. Reactor Trip, P-4	N.A.	N.A.	R	N.A.	1, 2, 3

NORTH ANNA - UNIT 1

ITS

SRs 3.3.5.1 3.3.5.2

M.4 3.3.5.2 R 3.3.5.1 Q LA.3 3.3.5.2 R 3.3.5.1 Q

RAI 3.3.5-1 RG

see ITS 3.3.2

A.5 RG

NEW SR Note: INSERT proposed Note to SR 3.3.5.1

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A.1

NORTH ANNA - UNIT 2

ITS

TABLE 4.3-2 (CONTINUED)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	SLAVE RELAY TEST	MODES IN WHICH SURVEILLANCE REQUIRED
7. LOSS OF POWER 4.16 KV Emergency Bus		M.4			RAI 3.3.5-1 R6
SRs 3.3.5.1 3.3.5.2 a. Loss of Voltage	N.A.	3.3.5.2 (R)	3.3.5.1 (Q) (ST) LA.3	N.A.	1, 2, 3, 4
SRs 3.3.5.1 3.3.5.2 b. Degraded Voltage	N.A.	3.3.5.2 (R)	3.3.5.1 (Q) (ST)	N.A.	1, 2, 3, 4
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	N.A.	R	R	N.A.	1, 2, 3
b. Low-Low T_{avg}, P-12	N.A.	R	R	N.A.	1, 2, 3 (See ITS 3.3.2)
c. Reactor Trip, P-4	N.A.	N.A.	R	N.A.	1, 2, 3

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NEW SR Note > INSERT Proposed Note to SR 3.3.5.1

A.5 | R6

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ITS 3.3.5

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months. The requirement states, "Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months." ITS SR 3.3.5.3 requires the verification of ESFAS RESPONSE TIMES are within limits every 18 months on a STAGGERED TEST BASIS (STB). This changes the CTS by deleting the logic train requirement for the LOP EDG start instrumentation.

This change is acceptable because the testing requirements of the CTS are maintained in the ITS format. The testing of every 18 months on a STB satisfies the requirement that both trains are tested every 36 months. No logic trains exist for the LOP EDG start instrumentation. The change is designated as administrative change because it does not result in technical change to the CTS requirements.

A.5 CTS Table 4.3-2 lists for Functional Unit 7, Loss of Power 4.16KV Emergency Bus requirements for a quarterly CHANNEL FUNCTIONAL TEST for the Loss of Voltage and Degraded Voltage functions. The CHANNEL FUNCTIONAL TEST does not require a verification of relay setpoints for the Loss of Voltage and Degraded Voltage functions. ITS SR 3.3.5.1 states that a TADOT must be performed every 92 days. The SR is modified by a Note that states, "Verification of setpoint is not required." This changes the CTS by specifically stating that setpoint verification is not required for the required quarterly testing. R6

This change is acceptable because the verification of the relay setpoints require elaborate bench calibration and this is performed during the CHANNEL CALIBRATION. The CHANNEL CALIBRATION is performed every 18 months. The verification of relay setpoints has been consistently within the limits of the 18-month requirements. Therefore, the addition of the Note to the SR does not modify the CTS and is provided to clarify the requirement. The change is designated as administrative change because it does not result in technical change to the CTS requirements.

MORE RESTRICTIVE CHANGES

M.1 CTS Table 3.3-4, Engineered Safety Feature Actuation System Instrumentation Trip Setpoints, lists the Allowable Values for the Loss of Power on the 4160-Volt Emergency Bus Undervoltage for loss of voltage and degraded voltage. The degraded voltage Allowable Value is stated as, "≥ 3688 volts with a time delay of ≤ 63 seconds." This requirements is translated into the ITS SR 3.3.5.2 for the CHANNEL CALIBRATION for the degraded voltage Allowable Values and states the degraded voltage requirement as, "≥ 3720 volts with a time delay of ≤ 63 seconds without an SI signal." ITS SR 3.3.5.3 adds the Allowable Value requirement for degraded voltage time delay requirement with a safety injection signal and states the requirement as, "≥ 3720 volts with a time delay of ≤ 9 seconds with an SI signal." This changes the CTS by changing the Allowable Value from 3688 V to 3720 V and adding the requirement that the time delay with an SI signal be verified to be less than 9 seconds.

CHANGES TO ITS SUBMITTAL NOT ASSOCIATED WITH RAIs
VARIOUS LCOs

LCO 3.3.2

27. The Applicability for Automatic Actuation Logic and Actuation Relays and Steam Generator (SG) Water Level – High High for ESFAS Functions 5.a and 5.b have an exception for MODES 2 and 3. Note (e) for these MODES specifies valves to be closed to isolate Main Feedwater (MFW) from the SGs. The MFW pump discharge valves can also accomplish this function and are credited by the safety analysis. Therefore, the MFW pump discharge valves are added to Note (e).

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Steam Line Isolation					
a. Manual Initiation	1, 2[d], 3[d]	2 per steam line	F	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2[d], 3[d]	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
c. Containment Pressure–Intermediate High High	1, 2[d], 3[d]	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 18.5 psia
d. High Steam Flow in Two Steam Lines	1, 2[d], 3[d]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with T_{avg}–Low Low	1, 2[d], 3[b][d]	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 542°F
e. High Steam Flow in Two Steam Lines	1, 2[d], 3[d]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with Steam Line Pressure–Low	1, 2,[d] 3[d]	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 585 psig
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1, 2[e], 3[e]	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. SG Water Level–High High (P-14)	1, 2[e], 3[e]	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 76%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

(b) Above the P-12 (T_{avg}–Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load. R6

(d) Except when all MSTVs are closed and de-activated.

(e) Except when all Main Feedwater Pump Discharge Valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. R6

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

5. Turbine Trip and Feedwater Isolation (continued)

c. Turbine Trip and Feedwater Isolation–Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements.

Turbine Trip and Feedwater Isolation Functions must be OPERABLE in MODES 1, 2, and 3 when the MFW System is in operation and the turbine generator may be in operation. These functions are not required to be OPERABLE in MODES 2 and 3 when all MFW pump discharge valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. In MODES 4, 5, and 6, the MFW System and the turbine generator are not in service and this Function is not required to be OPERABLE. |R6

6. Auxiliary Feedwater

The AFW System is designed to provide a secondary side heat sink for the reactor in the event that the MFW System is not available. The system has two motor driven pumps and a turbine driven pump, making it available during normal unit operation, during a loss of AC power, a loss of MFW, and during a Feedwater System pipe break. The normal source of water for the AFW System is the Emergency condensate storage tank (ECST). The AFW System is aligned so that upon a pump start, flow is initiated to the respective SG immediately.

a. Auxiliary Feedwater–Automatic Actuation Logic and Actuation Relays

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

Table 3.3.2-1 (page 6 of 8)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)
5	5. Turbine Trip and Feedwater Isolation						
5b	a. Automatic Actuation Logic and Actuation Relays	1,2	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
5a	b. SG Water Level – High High (P-14)	1,2	per SG	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8 SR 3.3.2.10	≤ [84.2]%	≤ [82.4]%
5c	c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6	6. Auxiliary Feedwater						
6.a	a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
	b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)	1,2,3	2 trains	G	SR 3.3.2.3	NA	NA
6.b	SG Water Level – Low Low	1,2,3	per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [30.4]%	≥ [32.2]%

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.
Main Feedwater Pump Discharge Valves or all

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

b. Turbine Trip and Feedwater Isolation—Steam Generator Water Level—High High (P-14) (continued)

instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with a two-out-of-four logic. For units that have dedicated protection and control channels, only three protection channels are necessary to satisfy the protective requirements. For other units that have only three channels, a median signal selector is provided or justification is provided in NUREG-1218 (Ref. 7).

The transmitters (d/p cells) are located inside containment. However, the events that this Function protects against cannot cause a severe environment in containment. Therefore, the Trip Setpoint reflects only steady state instrument uncertainties.

c. Turbine Trip and Feedwater Isolation—Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements.

Turbine Trip and Feedwater Isolation Functions must be OPERABLE in MODES 1, and 2, and 3 except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. When the MFW System is in operation and the turbine generator may be in operation. In MODES 3, 4, 5, and 6, the MFW System and the turbine

(continued)

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ITS 3.3.2 RAI 3.3.2-3 R6

A.1

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TABLE 3.3-3 (Continued)

TABLE NOTATION

ITS Note a Note b Note c

* Trip function may be blocked in this MODE below the P-11 setpoint. (Above) A.11 A.4

** Trip function may be blocked in this MODE below the P-12 setpoint. (Above) A.17

*** Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. A.7

* The provisions of Specification 3.0.4 are not applicable. (or all MFW pump discharge valves) L.6 | R6

ACTION STATEMENTS

RAI 3.3.2-4 R6

Action C

ACTION 13 – Note

With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1. (Provided the other train is OPERABLE) A.18

Action D

ACTION 14 – Note

With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 72 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels per Specification 4.3.2.1. M.4

(INSERT proposed Required Action D.2)

ACTION 15 – Deleted

Action E

ACTION 16 – Note

With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in the blocked condition within 72 hours; one additional channel may be blocked for up to 12 hours for surveillance testing per Specification 4.3.2.1.1. M.5

(INSERT PROPOSED REQUIRED Action E.2) L.2

Note d (INSERT proposed Note d)

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A.1

TABLE 3.3-3(Continued)

TABLE NOTATION

ITS Note a: * Trip function may be blocked in this MODE below the P-11 setpoint. (Above)

ITS Note b: # Trip function may be blocked in this MODE below the P-12 setpoint. (Above)

ITS Note c: ## Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

* The provisions of Specification 3.0.4 are not applicable. (for all MFW pump discharge valves)

RAI 3.3.2-3 R6 — A.11, A.4, A.17, A.7, L.6 | R6

ACTION STATEMENTS

Action C — ACTION 13 – Note

With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 24 hours, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1. provided the other train is OPERABLE

RAI 3.3.2-4 R6 — A.18 |

Action D — ACTION 14 – Note

With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 72 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels per Specification 4.3.2.1.

ACTION 15 – Deleted — INSERT proposed Required Action D.2 — M.4

Action E — ACTION 16 – Note

With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in the blocked condition within 72 hours; one additional channel may be blocked for up to 12 hours for surveillance testing per Specification 4.3.2.1.1

INSERT proposed Required Action E.2 — M.5

Note d — INSERT proposed Note d — L.2

ITS 3.3.1 requirements in Table 3.3.1-1 for the Reactor Trip System interlocks P–11 and P–12 list the allowable values that prevents manual block of the functions. P–11 allowable value ≤ 2010 psig and P–12 allowable value ≤ 545 °F. This changes the CTS by not requiring these interlocks to state Allowable Values for allowing manual functions blocks.

This change is acceptable because the LCO requirements continue to ensure that the process variables are maintained consistent with the safety analyses and licensing basis. The LCO requirements continue to ensure that the process variables are maintained consistent with the safety analyses and licensing basis. The safety function for P – 11 and P – 12 is to prevent the manual blocking of the SI on low low pressurizer pressure and the SI on high steam line flow. These functions are assumed to provide the required interlocks by the safety analyses in the directions indicated above. For both functions allowing the manual block is not a safety function; therefore the Allowable Values for manual block portions of the interlocks are not required and are deleted. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS. R6

L.6 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 for Functional Units 5.a and 5.b, Turbine Trip and Feedwater Isolation on Steam Generator (SG) Water Level – High-High and Automatic Actuation Logic and Actuation Relays, requires for each an applicability of MODES 1, 2, and 3[###]. Notation [###] states, "Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve." ITS Table 3.3.2 – 1 for Function 5, Turbine Trip and Feedwater Isolation, requires that Functions 5.a and 5.b, Automatic Actuation Logic and Actuation Relays and SG Water Level – High High, be OPERABLE in MODES 1, 2[(e)], and 3[(e)]. Note [(e)] states, "Except when all Main Feedwater pump discharge valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve." This changes the CTS by modifying the MODES 2 and 3 applicability with the addition of the Main Feedwater (MFW) pump discharge valves to the list. R6

The purpose of ITS Note e is to ensure MFW is isolated from the SGs. This change is acceptable because the requirements continue to ensure that the ability to isolate MFW from the SGs is maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The addition of the MFW pump discharge valves is acceptable because the valves can provide completion isolation of the MFW system from the SGs. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.