

MARKED-UP TECHNICAL SPECIFICATIONS

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TABLE 3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
7. Loss of Power (4.16 kV Emergency Bus Undervoltage)					
a. First Level				1, 2, 3, 4	
1) Diesel Start	1/Bus	1/Bus	1/Bus		16
2) Initiation of Load Shed	2/Bus	2/Bus	2/Bus		16
b. Second Level				1, 2, 3, 4	
1) Undervoltage Relays	2/Bus	2/Bus	2/Bus		16
2) Timers to Start Diesel	1/Bus	1/Bus	1/Bus		16
3) Timers to Shed Load	1/Bus	1/Bus	1/Bus		16
8. Engineered Safety Features Actuation System Interlocks					
a. Pressurizer Pressure; P-11	3	2	2	1, 2, 3	21
b. DELETED					
c. Reactor Trip, P-4	2	2	2	1, 2, 3	23
9. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level-Low	3	2	2	1, 2, 3, 4	36



TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

- ACTION 21 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.
- ACTION 22 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.
- ACTION 24 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated pump or valve inoperable and take the ACTION required by Specification 3.7.1.5 or 3.7.1.2 as applicable.
- ACTION 25 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 29 - With the number of OPERABLE channels less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected RCS Loop Delta-T channel(s), either:
- The Trip Time Delay threshold power level for zero seconds time delay is adjusted to 0% RTP, or
 - With the number of OPERABLE channels one less than the Total Number of Channels, the affected Steam Generator Water Level-Low-Low channels are placed in the tripped condition.
- ACTION 35 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
- The inoperable channel is placed in the trip condition within 6 hours, and
 - The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.

INSERT A



Insert A

ACTION 36 With the number of OPERABLE channels one less than the Total Number of Channels, within 6 hours place the inoperable channel in cut-out and restore the inoperable channel to OPERABLE status within 72 hours; or be in at least Hot Standby within the next 6 hours and be in Cold Shutdown within the next 30 hours.



TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
7. Loss of Power (4.16 kV Emergency Bus Undervoltage)		
a. First Level		
1) Diesel Start	≥ 0 volts with a ≥ 0.8 second time delay and ≥ 2583 volts with a ≥ 10 second time delay One relay	≥ 0 volts with a ≥ 0.8 second time delay and ≥ 2583 volts with ≥ 10 second time delay One relay
2) Initiation of Load Shed	≥ 0 volts with a ≥ 4 second time delay and ≥ 2583 volts with a ≥ 25 second time delay with one relay ≥ 2870 volts, instantaneous	≥ 0 volts with a ≥ 4 second time delay and ≥ 2583 volts with a ≥ 25 second time delay with one relay ≥ 2870 volts, instantaneous
b. Second Level		
1) Diesel Start	≥ 3785 volts with a ≥ 10 second time delay	≥ 3785 volts with a ≥ 10 second time delay
2) Initiation of Load Shed	≥ 3785 volts with a ≥ 20 second time delay	≥ 3785 volts with a ≥ 20 second time delay
8. Engineered Safety Features Actuation System Interlocks		
a. Pressurizer Pressure, P-11	≤ 1915 psig	≤ 1920.6 psig
b. DELETED		
c. Reactor Trip, P-4	N.A.	N.A.

INSERT B

NOTE 1: Time constants utilized in the lead-lag controller for Steam Pressure - Low are $\tau_1 = 50$ seconds and $\tau_2 = 5$ seconds.

NOTE 2: Steam Generator Water Level Low-Low Trip Time Delay

$$TD = B1(P)^3 + B2(P)^2 + B3(P) + B4$$

Where: P = RCS Loop ΔT Equivalent to Power (%RTP), $P \leq 50\%$ RTP

TD = Time delay for Steam Generator Water Level Low-Low (in seconds)

$$B1 = -0.007128$$

$$B2 = +0.8099$$

$$B3 = -31.40$$

$$B4 = +464.1$$

NOTE 3: Time constants utilized in the rate-lag controller for Negative Steam Line Pressure Rate-High are $\tau_3 = 50$ seconds and $\tau_4 = 50$ seconds.



Insert B

9. Residual Heat Removal
Pump Trip on
Refueling Water Storage
Tank Level - Low

32.56%

$\leq 33.68\%$ and

$\geq 31.44\%$



TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALI- BRATION</u>	<u>CHANNEL OPERA- TIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERA- TIONAL TEST</u>	<u>ACTUATION LOGIC TEST</u>	<u>MASTER RELAY TEST</u>	<u>SLAVE RELAY TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
6. Auxiliary Feedwater (Continued)								
d. Undervoltage - RCP	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1
e. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
7. Loss of Power								
a. 4.16 kV Emergency Bus Level 1	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 4.16 kV Emergency Bus Level 2	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
8. Engineered Safety Feature Actuation System Interlocks								
a. Pressurizer Pressure, P-11	N.A.	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
b. DELETED								
c. Reactor Trip, P-4	N.A.	N.A.	N.A.	R24	N.A.	N.A.	N.A.	1, 2, 3

TABLE NOTATIONS

- (1) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (2) For the Containment Ventilation Exhaust Radiation - High monitor only, a CHANNEL FUNCTIONAL TEST shall be performed at least once every 31 days.
- (3) Trip function automatically blocked above P-11 (Pressurizer Pressure Interlock) setpoint and is automatically blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked.
- (4) Deleted.
- (5) For Mode 3, the Trip Time Delay associated with the Steam Generator Water Level-Low-Low channel must be less than or equal to 464.1 seconds.

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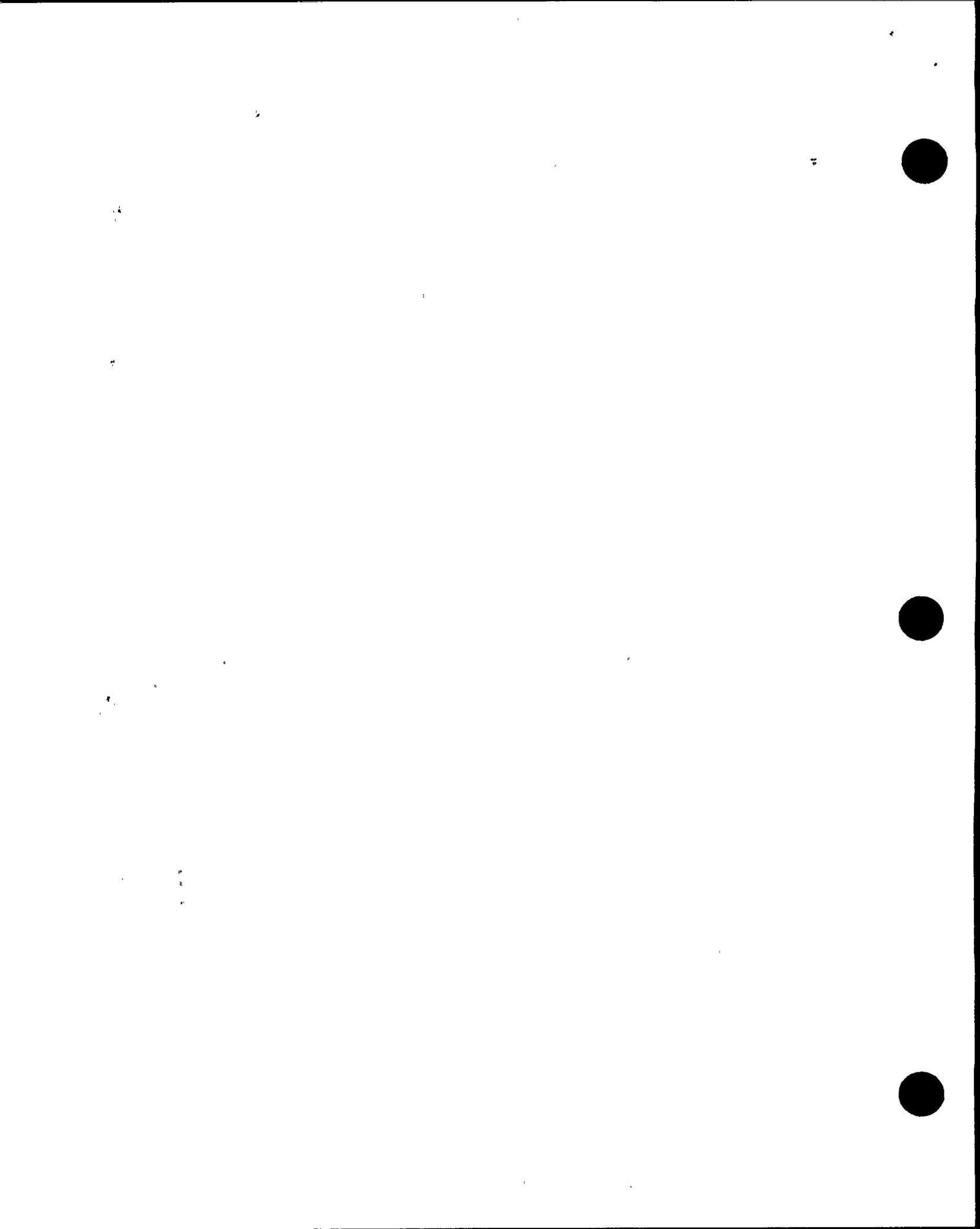
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TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALI- BRATION</u>	<u>CHANNEL OPERA- TIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERA- TIONAL TEST</u>	<u>ACTUATION LOGIC TEST</u>	<u>MASTER RELAY TEST</u>	<u>SLAVE RELAY TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
9. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level - Low	S	R24	N.A.	N.A.	R24	N.A.	N.h.	1,2,3,4



INSTRUMENTATION

BASES

REACTOR PROTECTION SYSTEM and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

To accommodate the instrument drift that may occur between operational tests and the accuracy to which setpoints can be measured and calibrated, Allowable Values for the setpoints have been specified in Table 3.3-4. Operation with setpoints less conservative than the Trip Setpoint, but within the Allowable Value, is acceptable.

The methodology to derive the Trip Setpoints is based upon combining all of the uncertainties in the channel. Inherent to the determination of the Trip Setpoints are the magnitudes of these channel uncertainties. Sensor and rack instrumentation utilized in these channels are expected to be capable of operating within the allowances of these uncertainty magnitudes.

ESF response times specified in Table 3.3-5, which include sequential operation of the RWST and VCT valves (Table Notations 4 and 5), are based on values assumed in the non-LOCA safety analyses. These analyses take credit for injection of borated water from the RWST. Injection of borated water is assumed not to occur until the VCT charging pump suction isolation valves are closed following opening of the RWST charging pump suction isolation valves. When the sequential operation of the RWST and VCT valves is not included in the response times (Table Notation 7), the values specified are based on the LOCA analyses. The LOCA analyses takes credit for injection flow regardless of the source. Verification of the response times specified in Table 3.3-5 will assure that the assumptions used for the LOCA and non-LOCA analyses with respect to the operation of the VCT and RWST valves are valid.

For slave relays in the ESF actuation system circuit that are Potter & Brumfield type MDR relays, the SLAVE RELAY TEST is performed on a refueling frequency. The test frequency is based on relay reliability assessments presented in WCAP-13878, "Reliability Assessment of Potter and Brumfield MDR Series Relays," WCAP-13900, "Extension of Slave Relay Surveillance Test Intervals," and WCAP-14117, "Reliability Assessment of Potter and Brumfield MDR Series Relays." These reliability assessments are relay specific and apply only to Potter and Brumfield MDR series relays. Note that for normally energized applications, the relays may have to be replaced periodically in accordance with the guidance given in WCAP-13878 for MDR relays.

Undervoltage protection will generate a loss of power diesel generator start in the event a loss of voltage or degraded voltage condition occurs. The diesel generators provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. The first level undervoltage relays (FLURs) detect the loss of bus voltage (less than 69% bus voltage). The second level undervoltage relays (SLURs) provide a second level of undervoltage protection which protects all Class 1E loads from short or long term degradation in the offsite power system. The SLUR allowable value is the minimum steady state voltage needed on the 4160 volt vital bus to ensure adequate voltage is available for safety related equipment at the 4160 volt, 480 volt, and 120 volt levels.

Insert D



Insert D

The RWST low level trip of the RHR pumps, the only automatic action in the switchover to the containment recirculation sump, assures that continued cooling is provided by the ECCS to remove decay heat. After the RWST low level trip is received, operators manually switch the source of water for the ECCS pumps to the containment recirculation sump. Switchover from the RWST to the containment sump must occur before the RWST empties to prevent damage to the ECCS pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support RHR pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST. This ensures the reactor remains shut down in the recirculation mode.

The RWST low level trip of the RHR pumps is included in the RHR pump control system and is not a part of the solid state protection system. Each of the three channels is provided with a cut-out feature, which allows the channel to be bypassed. A channel may be placed in the cut-out mode for up to 72 hours, consistent with the associated Action, to allow maintenance and testing. This places the system in a two-out-of-two trip logic.



PROPOSED TECHNICAL SPECIFICATION PAGES



TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
7. Loss of Power (4.16 kV Emergency Bus Undervoltage)					
a. First Level				1, 2, 3, 4	
1) Diesel Start	1/Bus	1/Bus	1/Bus		16
2) Initiation of Load Shed	2/Bus	2/Bus	2/Bus		16
b. Second Level				1, 2, 3, 4	
1) Undervoltage Relays	2/Bus	2/Bus	2/Bus		16
2) Timers to Start Diesel	1/Bus	1/Bus	1/Bus		16
3) Timers to Shed Load	1/Bus	1/Bus	1/Bus		16
8. Engineered Safety Features Actuation System Interlocks					
a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	21
b. DELETED					
c. Reactor Trip, P-4	2	2	2	1, 2, 3	23
9. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level-Low	3	2	2	1, 2, 3, 4	36



TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

- ACTION 21 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.
- ACTION 22 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.
- ACTION 24 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated pump or valve inoperable and take the ACTION required by Specification 3.7.1.5 or 3.7.1.2 as applicable.
- ACTION 25 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 29 - With the number of OPERABLE channels less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected RCS Loop Delta-T channel(s), either:
- The Trip Time Delay threshold power level for zero seconds time delay is adjusted to 0% RTP, or
 - With the number of OPERABLE channels one less than the Total Number of Channels, the affected Steam Generator Water Level-Low-Low channels are placed in the tripped condition.
- ACTION 35 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
- The inoperable channel is placed in the trip condition within 6 hours, and
 - The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.
- ACTION 36 - With the number of OPERABLE channels one less than the Total Number of Channels, within 6 hours place the inoperable channel in cut-out and restore the inoperable channel to OPERABLE status within 72 hours; or be in at least Hot Standby within the next 6 hours and be in Cold Shutdown within the next 30 hours.



TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
7. Loss of Power (4.16 kV Emergency Bus Undervoltage)		
a. First Level		
1) Diesel Start	≥ 0 volts with a ≤ 0.8 second time delay and ≥ 2583 volts with a ≤ 10 second time delay One relay	≥ 0 volts with a ≤ 0.8 second time delay and ≥ 2583 volts with ≤ 10 second time delay One relay
2) Initiation of Load Shed	≥ 0 volts with a ≤ 4 second time delay and ≥ 2583 volts with a ≤ 25 second time delay with one relay ≥ 2870 volts, instantaneous	≥ 0 volts with a ≤ 4 second time delay and ≥ 2583 volts with a ≤ 25 second time delay with one relay ≥ 2870 volts, instantaneous
b. Second Level		
1) Diesel Start	≥ 3785 volts with a ≤ 10 second time delay	≥ 3785 volts with a ≤ 10 second time delay
2) Initiation of Load Shed	≥ 3785 volts with a ≤ 20 second time delay	≥ 3785 volts with a ≤ 20 second time delay
8. Engineered Safety Features Actuation System Interlocks		
a. Pressurizer Pressure, P-11	≤ 1915 psig	≤ 1920.6 psig
b. DELETED		
c. Reactor Trip, P-4	N.A.	N.A.
9. Residual Heat Removal Pump Trip On Refueling Water Storage Tank Level-Low	32.56%	$\leq 33.68\%$ and $\geq 31.44\%$

NOTE 1: Time constants utilized in the lead-lag controller for Steam Pressure - Low are $\tau_1 = 50$ seconds and $\tau_2 = 5$ seconds.

NOTE 2: Steam Generator Water Level Low-Low Trip Time Delay

$$TD = B1(P)^3 + B2(P)^2 + B3(P) + B4$$

Where: P = RCS Loop ΔT Equivalent to Power (%RTP), $P \leq 50\%$ RTP

TD = Time delay for Steam Generator Water Level Low-Low (in seconds)

$$B1 = -0.007128$$

$$B2 = +0.8099$$

$$B3 = -31.40$$

$$B4 = +464.1$$

NOTE 3: Time constants utilized in the rate-lag controller for Negative Steam Line Pressure Rate-High are $\tau_3 = 50$ seconds and $\tau_4 = 50$ seconds.

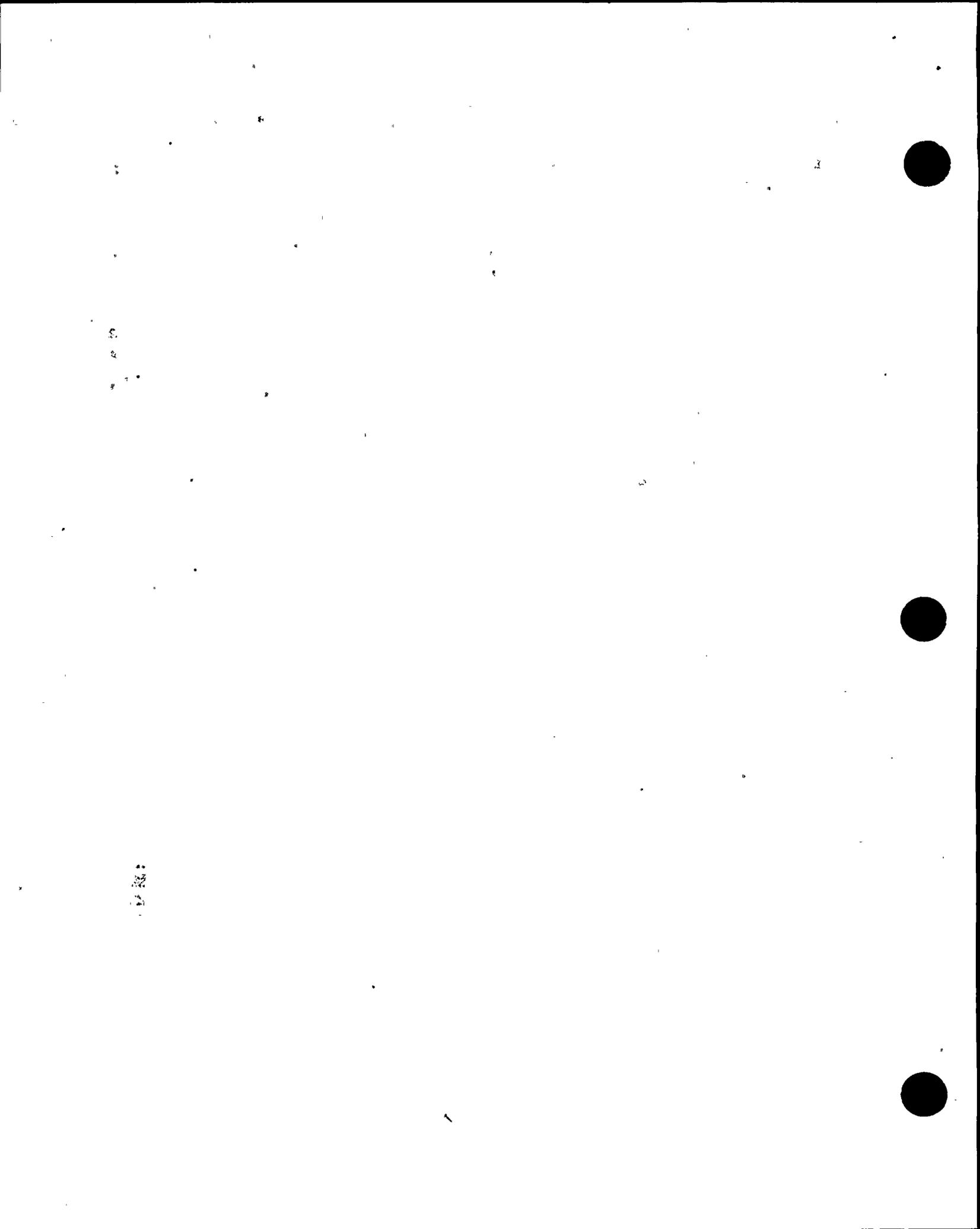


TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALI- BRATION</u>	<u>CHANNEL OPERA- TIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERA- TIONAL TEST</u>	<u>ACTUATION LOGIC TEST</u>	<u>MASTER RELAY TEST</u>	<u>SLAVE RELAY TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
6. Auxiliary Feedwater (Continued)								
d. Undervoltage - RCP	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1
e. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
7. Loss of Power								
a. 4.16 kV Emergency Bus Level 1	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 4.16 kV Emergency Bus Level 2	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
8. Engineered Safety Feature Actuation System Interlocks								
a. Pressurizer Pressure, P-11	N.A.	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
b. DELETED								
c. Reactor Trip, P-4	N.A.	N.A.	N.A.	R24	N.A.	N.A.	N.A.	1, 2, 3
9. Residual Heat Removal Pump Trip On Refueling Water Storage Tank Level-Low	S	R24	N.A.	N.A.	R24	N.A.	N.A.	1, 2, 3, 4

TABLE NOTATIONS

- (1) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (2) For the Containment Ventilation Exhaust Radiation - High monitor only, a CHANNEL FUNCTIONAL TEST shall be performed at least once every 31 days.
- (3) Trip function automatically blocked above P-11 (Pressurizer Pressure Interlock) setpoint and is automatically blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked.
- (4) Deleted.
- (5) For Mode 3, the Trip Time Delay associated with the Steam Generator Water Level-Low-Low channel must be less than or equal to 464.1 seconds.



INSTRUMENTATION

BASES

REACTOR PROTECTION SYSTEM and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The RWST low level trip of the RHR pumps, the only automatic action in the switchover to the containment recirculation sump, assures that continued cooling is provided by the ECCS to remove decay heat. After the RWST low level trip is received, operators manually switch the source of water for the ECCS pumps to the containment recirculation sump. Switchover from the RWST to the containment sump must occur before the RWST empties to prevent damage to the ECCS pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support RHR pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST. This ensures the reactor remains shut down in the recirculation mode.

The RWST low level trip of the RHR pumps is included in the RHR pump control system and is not a part of the solid state protection system. Each of the three channels is provided with a cut-out feature, which allows the channel to be bypassed. A channel may be placed in the cut-out mode for up to 72 hours, consistent with the associated Action, to allow maintenance and testing. This places the system in a two-out-of-two trip logic.



**MARK-UP OF LICENSE AMENDMENT REQUEST 97-09
IMPROVED TECHNICAL SPECIFICATIONS**

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	I.1 -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- Place channel in trip. OR I.2.1 Be in MODE 2. AND I.2.2 Be in MODE 3 for function 5.b.	6 hours 12 hours 12 hours
J. Not used		
K. Not used. One channel inoperable		

(continued)

K.1.1 Place channel in cut-out	6 hours
AND K.1.2 return the inoperable channel to an OPERABLE STATUS	72 hours
OR K.2.1 Be in MODE 3	6 hours
AND K.2.2 Be in MODE 5	36 hours



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.2.11 -----NOTE----- Verification of setpoint not required. ----- Perform TADOT.	18 months

SR 3.3.2.12 Perform ACTUATION LOGIC TEST . 24 months



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
6. Auxiliary Feedwater (continued)						
e. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
f. Not used						
g. Undervoltage Reactor Coolant Pump	1	2 per bus	I	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.10	≥ 7730 volts	≥ 8050 volts
h. Not used						
i. Not used						
7. Residual Heat Removal Pump Trip on Refueling Water Storage Tank (RWST) Level-low	1.2.3.4	3	K	SR 3.3.2.11 SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.12	≤ 32.9% ≤ 33.68% ≥ 31.44%	32.56% ≤ 33%

(continued)



B 3.3 INSTRUMENTATION

B 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based on the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary, and to mitigate accidents.

The ESFAS instrumentation is segmented into three distinct but interconnected modules as identified below:

- Field transmitters or process sensors and instrumentation: provide a measurable electronic signal based on the physical characteristics of the parameter being measured;
- Signal processing equipment including digital protection system, field contacts, and protection channel sets: provide signal conditioning, bistable setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous indications; and
- Solid State Protection System (SSPS) including input, logic, and output bays: initiates the proper unit shutdown or engineered safety feature (ESF) actuation in accordance with the defined logic and based on the bistable outputs from the signal process control and protection system.

Field Transmitters or Sensors

To meet the design demands for redundancy and reliability, more than one, and often as many as four, field transmitters or sensors are used to measure unit parameters. In many cases, field transmitters or sensors that input to the ESFAS are shared with the Reactor Trip System (RTS). In some cases, the same channels also provide control system inputs. To account for calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the Trip Setpoint and Allowable

The residual heat removal pump trip on refueling water storage tank level-low is not processed by the SSPS. The associated relays are located in the residual heat removal pump control system.

(continued)



BASES

APPLICABLE
SAFETY ANALYSES,
LCO, AND
APPLICABILITY

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be a secondary, or backup, actuation signal for one or more other accidents. For example, Pressurizer Pressure-Low is a primary actuation signal for small loss of coolant accidents (LOCAs) and a backup actuation signal for steam line breaks (SLBs) outside containment. Functions such as manual initiation, not specifically credited in the accident safety analysis, are qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. These Functions may also serve as backups to Functions that were credited in the accident analysis (Ref. 3).

The LCO requires all instrumentation performing an ESFAS Function to be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

The LCO generally requires OPERABILITY of four or three channels in each instrumentation function and two channels in each logic and manual initiation function. The two-out-of-three and the two-out-of-four configurations allow one channel to be tripped ^{cut-out,} or bypassed during maintenance or testing without causing an ESFAS initiation. Two logic or manual initiation channels are required to ensure no single random failure disables the ESFAS.

The required channels of ESFAS instrumentation provide unit protection in the event of any of the analyzed accidents. ESFAS protection functions are as follows:

1. Safety Injection

Safety Injection (SI) provides two primary functions:

1. Primary side water addition to ensure maintenance or recovery of reactor vessel water level (coverage of the active fuel for heat removal, clad integrity, and for limiting peak clad temperature to < 2200°F); and

(continued)



BASES

APPLICABLE
SAFETY ANALYSES,
LCO, and
APPLICABILITY
(continued)

trip is not indicative of a condition requiring automatic AFW initiation of the TDAFW pump. No other anticipatory start signals are necessary for the TDAFW pump, only low level in 2 of 4 SGs.

i. Not used

7. ~~Not used~~ INSERT A

8. Engineered Safety Feature Actuation System Interlocks

To allow some flexibility in unit operations, several interlocks are included as part of the ESFAS. These interlocks permit the operator to block some signals, automatically enable other signals, prevent some actions from occurring, and cause other actions to occur. The 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 is open. This Function allows operators to manually block reactivation 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. The functions of the P-4 interlock are:

- Trip the main turbine;
- Isolate MFW with coincident low $T_{avg} \leq 554^{\circ}\text{F}$;
- Allows manual block of the automatic reactivation of SI ;
- Transfer the steam dump from the load rejection controller to the plant trip controller; and
- Prevent opening of the MFW reg valves or bypass valves if they were closed on SI or high SG Water Level.

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

(continued)



Insert A

7. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level - Low

At the end of the injection phase of a LOCA, the RWST will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is manually switched to the containment recirculation sump. This pump trip feature is blocked if the RHR pumps are already taking suction from the containment recirculation sump. The low head RHR pumps draw the water from the containment recirculation sump, the RHR pumps pump the water through the RHR heat exchanger, inject the water back into the RCS, and supply the cooled water to the other ECCS pumps. Switchover from the RWST to the containment sump must occur before the RWST empties to prevent damage to the RHR pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support RHR pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST. This ensures the reactor remains shut down in the recirculation mode.

During the injection phase of a LOCA, the RWST is the source of water for all ECCS pumps. The RHR pump trip on RWST low level provides protection against a loss of water for the ECCS pumps and indicates the end of the injection phase of the LOCA. The RWST is equipped with three level transmitters. These transmitters provide no control functions. Therefore, a two-out-of-three logic is adequate to initiate the protection function actuation.

The Allowable Value/Trip Setpoint upper limit is selected to ensure adequate water inventory in the containment sump to provide RHR pump suction. The high limit also ensures enough borated water is injected to ensure the reactor remains shut down.

The transmitters are located in an area not affected by HELBs or post accident high radiation. Thus, they will not experience any adverse environmental conditions and the trip setpoint reflects only steady state instrument uncertainties.



Insert A (continued)

This Function must be OPERABLE in MODES 1, 2, 3, and 4 when there is a potential for a LOCA to occur, to ensure a continued supply of water for the ECCS pumps. This Function is not required to be OPERABLE in MODES 5 and 6 because there is adequate time for the operator to evaluate unit conditions and respond by manually starting systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. System pressure and temperature are very low and many ESF components are prevented from actuating to prevent inadvertent overpressurization of unit systems or are not required to be operable.



BASES

ACTIONS

I.1 and I.2 (continued)

partial trip condition where one additional tripped channel will result in actuation. The 6 hour Completion Time is justified in Ref. 8. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours, requires the Unit to be placed in MODE 2 within the following 6 hours. The allowed Completion time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power conditions in an orderly manner without challenging unit systems. In MODE 2, this Function is no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to [4] hours for surveillance testing of other channels. The 6 hours allowed to place the inoperable channel in the tripped condition, and the 4 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 8.

J.1 and J.2 - Not used

K.1.1, K.1.2

~~K.1.1, K.2.1 and K.2.2~~

the Residual Heat Removal Pump Trip on cut-out

Condition K applies to RWST Level Low, which trips both RHR pumps. Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass condition within 6 hours is sufficient to ensure that the Function remains OPERABLE, and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed low).

Placing the out-of-service channel in bypass will generate a high level signal on that channel, which will ensure that under no circumstances can a failure of an additional channel low prevent the RHR pumps from starting as the result of an SI signal. The 6 hour Completion Time is justified in Reference 8. If the channel cannot be placed in the bypass condition within 6 hours, and returned to an OPERABLE status within 72 hours, the unit must immediately enter LCO 3-0-3. The 72 hour Allowed Outage Time (AOT) is the same AOT that is allowed for one inoperable RHR pump.

This comparison is reasonable because the possible consequences of losing a second level channel can, in the worst case, be no more severe than the loss of one RHR pump, and the probability of losing the level channel is even lower than that of losing an RHR pump. The allowed Completion Times for shutdown 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. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the pump trip function noted above

be brought to MODE 3 within the following 6 hours, and MODE 5 within the next 30 hours

(continued)

cut-out removes that channel from the trip logic, similar to a bypass function. This provides a two-out-of-two trip logic.

a second



BASES

ACTIONS

~~K.1, K.2.1 and K.2.2 (continued)~~

The Required Actions are modified by a Note that allows placing a channel in the bypass condition for up to 4 hours for surveillance testing. The total of 12 hours to reach MODE 3 and 4 hours for a channel to be bypassed is acceptable based on the results of Reference 8.

L.1, L.2.1 and L.2.2

Condition L applies to the P-11 interlock.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The verification determination can be made by observation of the associated annunciator window(s). 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.

M.1 or M.2

Condition M applies to the Trip Time Delay (TTD) for the SG low-water level actuation of AFW pumps. With one or more TTD circuitry delay timers inoperable, 6 hours are allowed to adjust the threshold power level for no time delay to 0% RTP or to place the affected SG water level low-low channel in trip. The specified Completion Time is reasonable considering the nature of these Functions, the available redundancy, and the low probability of an event occurring during this interval. If the TTD threshold power level cannot be adjusted or the affected SG water level low-low channel cannot be placed in trip, 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 in an orderly manner and without challenging unit systems. In MODE 4, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above.

(continued)



BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.2.10 (continued)

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.

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 650 psig in the SGs.

SR 3.3.2.11

SR 3.3.2.11 is the performance of a TADOT as described in SR 3.3.2.8, except that it is performed for the P-4 Reactor Trip Interlock. The 18 month Frequency is based on operating experience.

Insert B

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

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 7.
3. FSAR, Chapter 15.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. WCAP-11082, Rev. 2, "Westinghouse Setpoint Methodology for Protection Systems Diablo Canyon Stations - Eagle 21 Version," May 1993
7. WCAP-13900, "Extension of Slave Relay Surveillance Test intervals", April 1994
8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

(continued)



Insert B

SR 3.3.2.12

SR 3.3.2.12 is the performance of an ACTUATION LOGIC TEST as described in TS 1.0 "Definitions." This SR is applied to the RHR Pump Trip on RWST Level-Low actuation logic and relays which are not processed through the SSPS. This test is performed every refueling outage. The frequency is adequate based on site and industry operating experience, considering equipment reliability and history data.



**REVISED
IMPROVED TECHNICAL SPECIFICATIONS**



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	<p>I.1 -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>Place channel in trip.</p> <p><u>OR</u></p> <p>I.2.1 Be in MODE 2.</p> <p><u>AND</u></p> <p>I.2.2 Be in MODE 3 for function 5.b.</p>	<p>6 hours</p> <p>12 hours</p> <p>12 hours</p>
J. Not used		
K. One channel inoperable.	<p>K.1.1 Place channel in cut-out.</p> <p><u>AND</u></p> <p>K.1.2 Return the inoperable channel to an OPERABLE STATUS.</p> <p><u>OR</u></p> <p>K.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>K.2.2 Be in MODE 5.</p>	<p>6 hours</p> <p>72 hours</p> <p>6 hours</p> <p>36 hours</p>

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

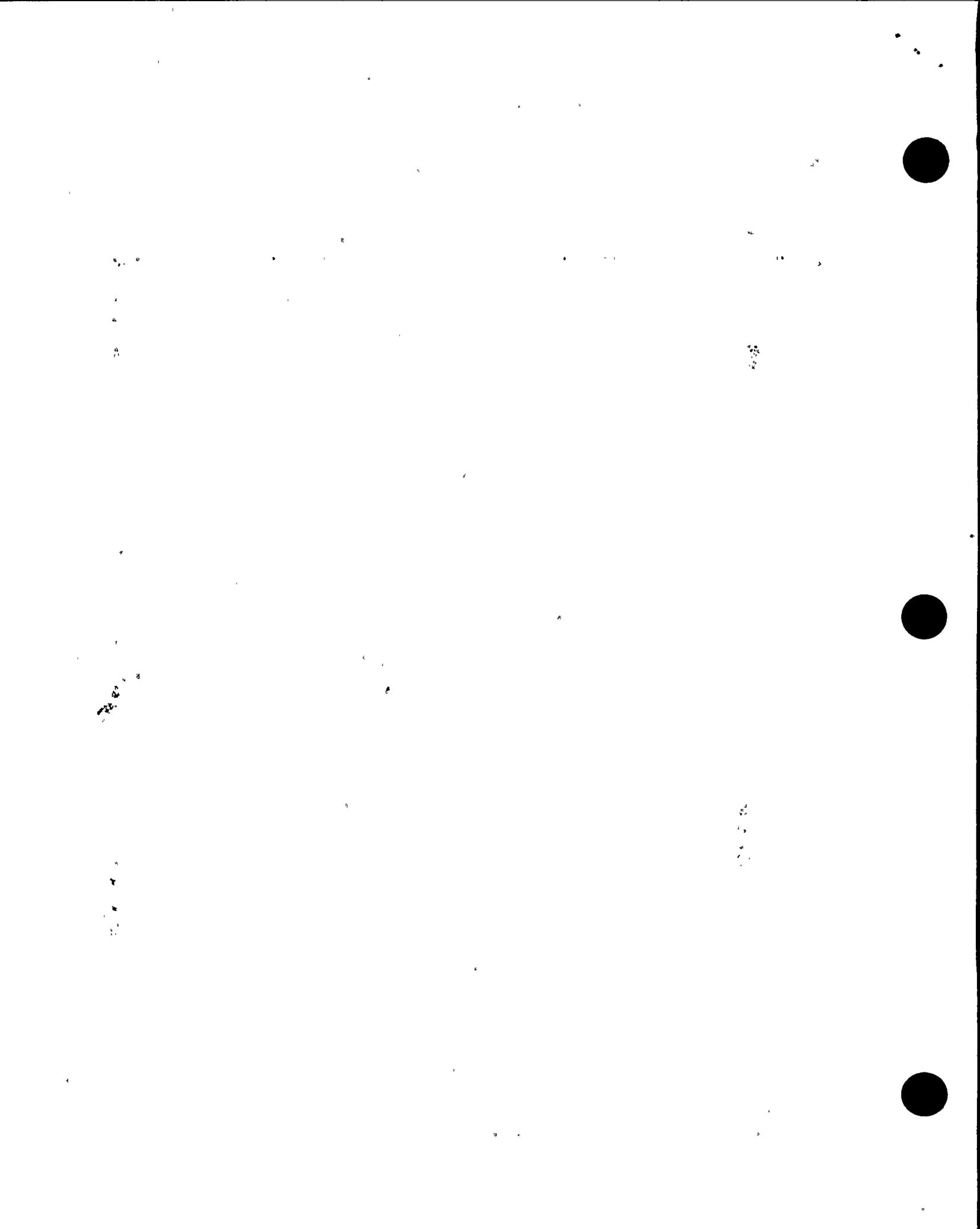
SURVEILLANCE	FREQUENCY
SR 3.3.2.11 -----NOTE----- Verification of setpoint not required. ----- Perform TADOT.	18 months
SR 3.3.2.12 Perform ACTUATION LOGIC TEST.	24 months



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
6. Auxiliary Feedwater (continued)						
e. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
f. Not used						
g. Undervoltage Reactor Coolant Pump	1	2 per bus	I	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.10	≥ 7730 volts	≥ 8050 volts
h. Not used						
i. Not used						
7. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level-low	1,2,3,4	3	K	SR 3.3.2.1 SR 3.3.2.9 SR 3.3.2.12	≤33.68% ≥31.44%	≤ 32.56%

(continued)



B 3.3 INSTRUMENTATION

B 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based on the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary, and to mitigate accidents.

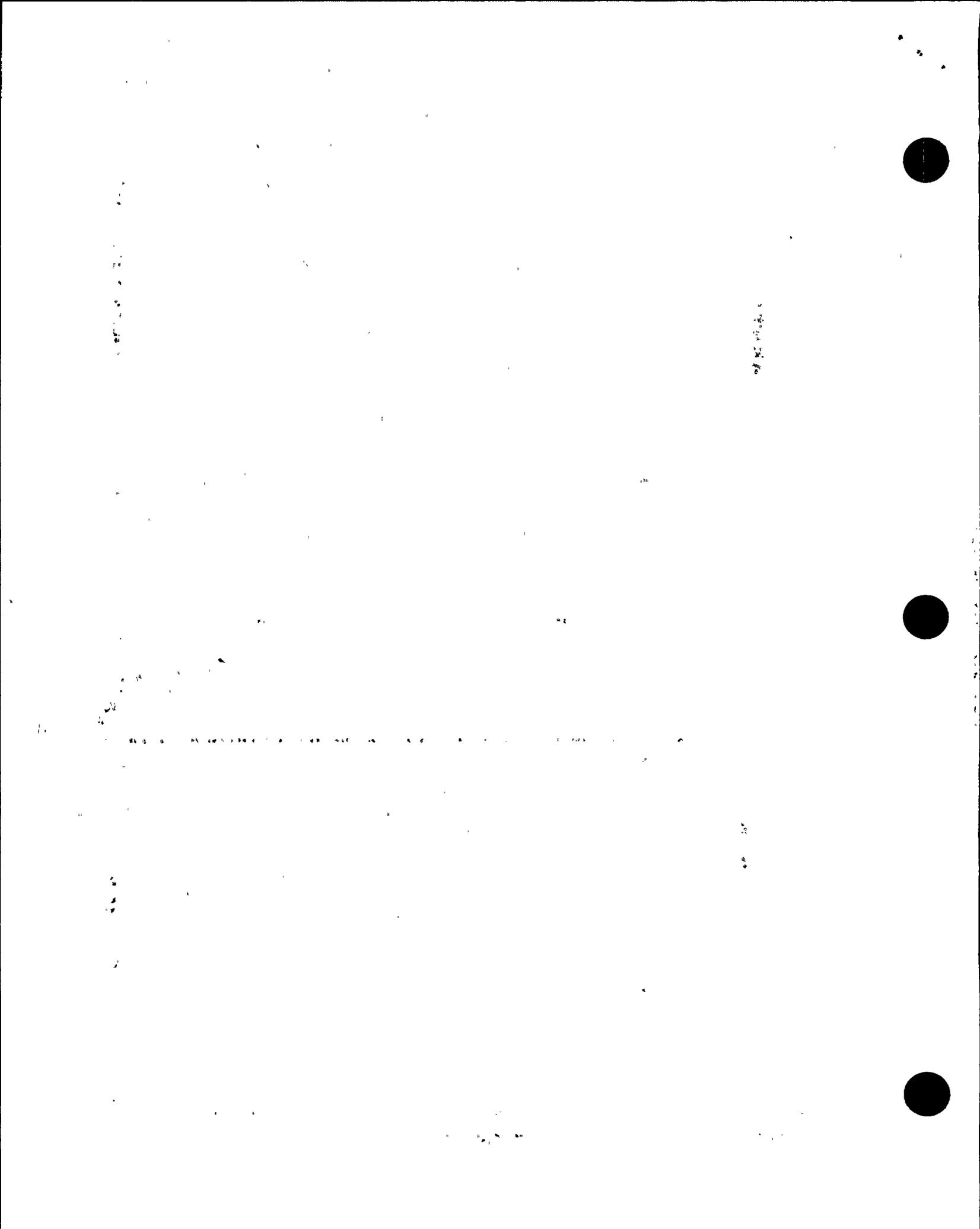
The ESFAS instrumentation is segmented into three distinct but interconnected modules as identified below:

- Field transmitters or process sensors and instrumentation: provide a measurable electronic signal based on the physical characteristics of the parameter being measured;
- Signal processing equipment including digital protection system, field contacts, and protection channel sets: provide signal conditioning, bistable setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous indications; and
- Solid State Protection System (SSPS) including input, logic, and output bays: initiates the proper unit shutdown or engineered safety feature (ESF) actuation in accordance with the defined logic and based on the bistable outputs from the signal process control and protection system. The residual heat removal pump trip on refueling water storage tank level-low is not processed by the SSPS. The associated relays are located in the residual heat removal pump control system.

Field Transmitters or Sensors

To meet the design demands for redundancy and reliability, more than one, and often as many as four, field transmitters or sensors are used to measure unit parameters. In many cases, field transmitters or sensors that input to the ESFAS are shared with the Reactor Trip System (RTS). In some cases, the same channels also provide control system inputs. To account for calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the Trip Setpoint and Allowable

(continued)



BASES

APPLICABLE
SAFETY ANALYSES,
LCO, AND
APPLICABILITY

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be a secondary, or backup, actuation signal for one or more other accidents. For example, Pressurizer Pressure-Low is a primary actuation signal for small loss of coolant accidents (LOCAs) and a backup actuation signal for steam line breaks (SLBs) outside containment. Functions such as manual initiation, not specifically credited in the accident safety analysis, are qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. These Functions may also serve as backups to Functions that were credited in the accident analysis (Ref. 3).

The LCO requires all instrumentation performing an ESFAS Function to be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

The LCO generally requires OPERABILITY of four or three channels in each instrumentation function and two channels in each logic and manual initiation function. The two-out-of-three and the two-out-of-four configurations allow one channel to be tripped, cut-out, or bypassed during maintenance or testing without causing an ESFAS initiation. Two logic or manual initiation channels are required to ensure no single random failure disables the ESFAS.

The required channels of ESFAS instrumentation provide unit protection in the event of any of the analyzed accidents. ESFAS protection functions are as follows:

1. Safety Injection

Safety Injection (SI) provides two primary functions:

1. Primary side water addition to ensure maintenance or recovery of reactor vessel water level (coverage of the active fuel for heat removal, clad integrity, and for limiting peak clad temperature to < 2200°F); and

(continued)



BASES

APPLICABLE
SAFETY ANALYSES,
LCO, and
APPLICABILITY
(continued)

trip is not indicative of a condition requiring automatic AFW initiation of the TDAFW pump. No other anticipatory start signals are necessary for the TDAFW pump, only low level in 2 of 4 SGs.

i. Not used

7. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level - Low

At the end of the injection phase of a LOCA, the RWST will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is manually switched to the containment recirculation sump. This pump trip feature is blocked if the RHR pumps are already taking suction from the containment recirculation sump. The low head RHR pumps draw the water from the containment recirculation sump, the RHR pumps pump the water through the RHR heat exchanger, inject the water back into the RCS, and supply the cooled water to the other ECCS pumps. Switchover from the RWST to the containment sump must occur before the RWST empties to prevent damage to the RHR pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support RHR pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST. This ensures the reactor remains shut down in the recirculation mode.

During the injection phase of a LOCA, the RWST is the source of water for all ECCS pumps. The RHR pump trip on RWST low level provides protection against a loss of water for the ECCS pumps and indicates the end of the injection phase of the LOCA. The RWST is equipped with three level transmitters. These transmitters provide no control functions. Therefore, a two-out-of-three logic is adequate to initiate the protection function actuation.

The allowable value/trip setpoint upper limit is selected to ensure adequate water inventory in the containment sump to provide RHR pump suction. The high limit also ensures enough borated water is injected to ensure the reactor remains shut down.

The transmitters are located in an area not affected by HELBs or post accident high radiation. Thus, they will not experience any adverse environmental conditions and the trip setpoint reflects only steady state instrument uncertainties.

(continued)



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BASES

This function must be OPERABLE in MODES 1, 2, 3, and 4 when there is a potential for a LOCA to occur, to ensure a continued supply of water for the ECCS pumps. This function is not required to be OPERABLE in MODES 5 and 6 because there is adequate time for the operator to evaluate unit conditions and respond by manually starting systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. System pressure and temperature are very low and many ESF components are prevented from actuating to prevent inadvertent overpressurization of unit systems or are not required to be operable.

8. Engineered Safety Feature Actuation System Interlocks

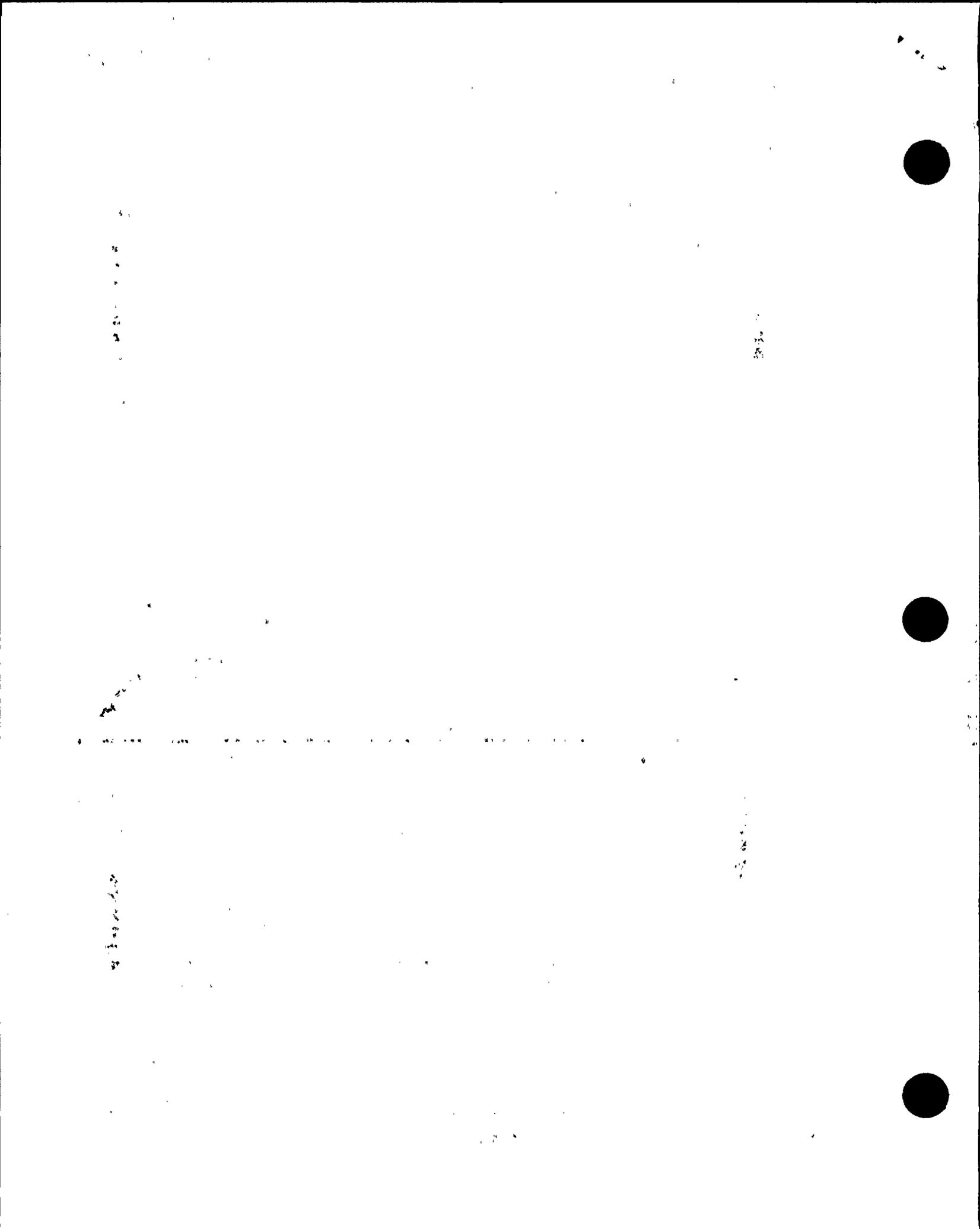
To allow some flexibility in unit operations, several interlocks are included as part of the ESFAS. These interlocks permit the operator to block some signals, automatically enable other signals, prevent some actions from occurring, and cause other actions to occur. The interlock Functions back up manual 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 is open. This Function allows operators to manually block reactivation 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. The functions of the P-4 interlock are:

- Trip the main turbine;
- Isolate MFW with coincident low $T_{avg} \leq 554^{\circ}\text{F}$;
- Allows manual block of the automatic reactivation of SI ;
- Transfer the steam dump from the load rejection controller to the plant trip controller; and
- Prevent opening of the MFW reg valves or bypass valves if they were closed on SI or high SG Water Level.

(continued)



BASES

ACTIONS

I.1 and I.2 (continued)

partial trip condition where one additional tripped channel will result in actuation. The 6 hour Completion Time is justified in Ref. 8. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours, requires the Unit to be placed in MODE 2 within the following 6 hours. The allowed Completion time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power conditions in an orderly manner without challenging unit systems. In MODE 2, this Function is no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to [4] hours for surveillance testing of other channels. The 6 hours allowed to place the inoperable channel in the tripped condition, and the 4 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 8.

J.1 and J.2 - Not usedK.1.1, K.1.2, K.2.1 and K.2.2

Condition K applies to the residual heat removal pump trip on RWST Level - Low. Restoring the channel to OPERABLE status or placing the inoperable channel in the cut-out condition within 6 hours is sufficient to ensure that the Function remains OPERABLE, and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed low). Placing the out-of-service channel in cut-out removes that channel from the trip logic, similar to a bypass function. This provides a two-out-of-two trip logic. The 6 hour Completion Time is justified in Reference 8. If the channel cannot be placed in the cut-out condition within 6 hours, and returned to an OPERABLE status within 72 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 hours. The 72 hour Allowed Outage Time (AOT) is the same AOT that is allowed for one inoperable RHR pump. This comparison is reasonable because the possible consequences of losing a second level channel can be no more severe than the loss of a second RHR pump, and the probability of losing the level channel is lower than that of losing an RHR pump. The allowed Completion Times for shutdown 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. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the pump trip function noted above.

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BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.2.10 (continued)

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.

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 650 psig in the SGs.

SR 3.3.2.11

SR 3.3.2.11 is the performance of a TADOT as described in SR 3.3.2.8, except that it is performed for the P-4 Reactor Trip Interlock. The 18 month Frequency is based on operating experience.

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

SR 3.3.2.12

SR 3.3.2.12 is the performance of an ACTUATION LOGIC TEST as described in TS 1.0 "Definitions." This SR is applied to the RHR pump trip on RWST Level-Low actuation logic and relays which are not processed through the SSPS. This test is performed every refueling outage. The frequency is adequate based on site and industry operating experience, considering equipment reliability and history data.

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 7.
3. FSAR, Chapter 15.
4. IEEE-279-1971.

(continued)

