

TABLE 3.3-3 (Continued)
ENGINEERED SAFETY FEATURE 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>
b. Undervoltage-RCP Start Turbine- Driven Pump	3-2/bus	2	2	1	14
c. S.I. Start Motor Driven Pumps	See 1 above (all S.I. initiating functions and requirements)				
7. LOSS OF POWER					
a. 4.16 KV Emergency Bus Undervoltage (Loss of Voltage)	3/bus	2/bus	2/bus	1, 2, 3	19*,////
b. 4.16 KV Emergency Bus Undervoltage (De- graded Voltage)	3/bus	2/bus	2/bus	1, 2, 3	19*,////

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TABLE 3.3-3 (Continued)

TABLE NOTATION

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- # Trip function may be bypassed in this MODE below P-11.
- ## Trip function may be bypassed in this MODE below P-12.
- ### The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped mode.
- #### Trip function may be bypassed for up to two hours for surveillance testing.
- * The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

- ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.
- ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.
- ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.
- ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the minimum Channels OPERABLE requirements is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

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TABLE 3.3-3 (Continued)

- ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.
- ACTION 18 - 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 the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the tripped condition within one hour.

ENGINEERED SAFETY FEATURES INTERLOCKS

<u>DESIGNATION</u>	<u>CONDITION AND SETPOINT</u>	<u>FUNCTION</u>
P-11	With 2 of 3 pressurizer pressure channels \geq 2010 psig.	P-11 prevents manual block of safety injection actuation on low pressurizer pressure coincident with low pressurizer water level
P-12	With 2 of 3 T_{avg} channels $< 541^{\circ}\text{F}$.	Permits manual block of S.I; Causes steam line isolation on high steam flow; Affects steam dump blocks.
	With 2 of 3 T_{avg} channels $> 545^{\circ}\text{F}$	Prevents manual block of safety injection actuation on low steam line pressure.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
6. Auxiliary Feedwater		
a. Steam Generator Water Level-Low-Low	$\geq 15\%$ of narrow range instrument span-each steam generator	$\geq 14\%$ of narrow range instru- ment span-each steam generator
b. Undervoltage - RCP	≥ 2680 RCP bus voltage	≥ 2640 RCP bus voltage
c. S.I.	see 1 above (all SI Setpoints)	
7. Loss of Power		
a. 4.16 KV Emergency Bus Under- voltage (Loss of Voltage)	≥ 3255 volts bus voltage *	≥ 3222 volts bus voltage *
b. 4.16 KV Emergency Bus Under- voltage (Degraded Voltage)	≥ 3675 volts bus voltage *	≥ 3638 volts bus voltage *

* The time delay shall be within 5% of that specified in the manufacturer's published undervoltage relay time curves.

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TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
7. <u>Containment Pressure--High-High</u>	
a. Steam Line Isolation	≤ 7.0
8. <u>Containment Pressure--High-High-High</u>	
a. Containment Spray	≤ 45.0
b. Containment Isolation-Phase "B"	Not Applicable
9. <u>Steam Generator Water Level--High-High</u>	
a. Turbine Trip-Reactor Trip	≤ 2.5
b. Feedwater Isolation	≤ 32.0###
10. <u>Steam Generator Water Level--Low-Low</u>	
a. Motor-driven Auxiliary Feedwater Pumps**	60.0
b. Turbine-driven Auxiliary Feedwater Pumps***	60.0
11. <u>Undervoltage RCP</u>	
a. Turbine-driven Auxiliary	60.0
12. <u>S.I. Signal</u>	
a. Motor-driven Auxiliary Feedwater Pump	60.0

Insert 1.....

**On 2/3 Any Steam Generator

***On 2/3 in 2/3 Steam Generators

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INSERT 1

13. Loss of Power

a. 4.16 KV Emergency Bus
Undervoltage (Loss of
Voltage)

1.2 ****

b. 4.16 KV Emergency Bus
Undervoltage (Degraded
Voltage)

**** The response time limit from voltage decreasing below
68% of nominal voltage to generation of the Diesel
start signal.

***** The response time shall include the time delay
associated with the undervoltage relays as determined
in Table 3.3-4 plus an additional second associated
with interposing relay and circuit breaker operation.

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure--High-High	S	R	M	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T _{avg} --Low-Low	S	R	M	1, 2, 3
e. Steam Line Pressure-Low	S	R	M	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	M	1, 2, 3
6. Auxiliary Feedwater				
a. Steam Generator Water Level-Low-Low	S	R	M	1, 2, 3
b. Undervoltage - RCP	S	R	M	1
c. S.I.	See 1 above (all SI surveillance requirements)			

Insert 2.....

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INSERT 2

7. Loss of Power

a. 4.16 KV Emergency Bus Undervoltage (Loss of Voltage)	N/A	R (3)	M (4)	1, 2, 3
b. 4.16 KV Emergency Bus Undervoltage (Degraded Voltage)	N/A	R (3)	M (4)	1, 2, 3

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TABLE 4.3-2 (Continued)

TABLE NOTATION

- (1) Manual actuation switches shall be tested at least once per 18 months during shutdown. Each train or logic channel or all other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once every other 31 days.
- (2) Each train or logic channel shall be tested at least every other 31 days.
- (3) Channel calibration shall exclude actuation of the final trip actuation relay.
- (4) Functional testing shall consist of verification of relay operation upon removal of input voltage and operation of 2-out-of-3 logic excluding the final trip actuation relay.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
 4. Verifying the diesel starts from ambient condition, and accelerates to at least 900 rpm for the 2850 Kw generator and 514 rpm for the 4075 Kw generator \leq in 10 seconds,
 5. Verifying the generator is synchronized, loaded to > 2050 kw for the 4075 kw generator and > 1475 kw for the 2850 kw generator and operates for ≥ 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
 7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within $\pm 10\%$ of its required value or 0.5 seconds which ever is greater.
- b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained in accordance with ASTM-D270-65 is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment,
- c. At least once per 18 months during shutdown by:
1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service,
 2. Verifying the generator capability to reject, without tripping, a load of > 672 kw for the 4075 kw generator and 448 kw for the 2850 kw generator.
 3. Simulating a loss of offsite power in conjunction with a safety injection test signal, and:
 - (a) Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer and operates for > 5 minutes while its generator is loaded with the emergency loads.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- (b) Verifying that all diesel generator trips, except engine overspeed, lubrication oil pressure low and generator differential, are automatically bypassed upon loss of voltage on the emergency bus and/or safety injection test signal.
- 4. Verifying the diesel generator operates for ≥ 60 minutes while loaded to ≥ 4075 kw for the 4075 kw diesel generator and ≥ 2850 for the 2850 kw diesel generator.
- 5. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 4353 kw and 3100 kw for the 4075 generator and the 2850 generator, respectively.
- 6. Simulating a loss of offsite power by itself, and:
 - (a) Verifying de-energization of the emergency buses and load shedding from the emergency buses.
 - (b) Verifying the diesel starts from ambient condition on the autostart signal, energizes the emergency buses with permanently connected loads, and the sequencer closes the supply breakers for the auto-connected emergency loads.
- 7. Verifying that on a safety injection test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for ≥ 5 minutes.