

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

| <u>TRIP FUNCTION</u> | <u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM(a)</u> | <u>APPLICABLE OPERATIONAL CONDITIONS</u> | <u>ACTION</u> |
|---|---|--|---------------|
| C. <u>DIVISION 3 TRIP SYSTEM</u> | | | |
| 1. <u>HPCS SYSTEM</u> | | | |
| a. Reactor Vessel Water Level - Low, Low, Level 2 | 2(b) | 1, 2, 3, 4*, 5* | 30 |
| b. Drywell Pressure - High | 2(b) | 1, 2, 3 | 30 |
| c. Reactor Vessel Water Level-High, Level 8 | 2(c) | 1, 2, 3, 4*, 5* | 32 |
| d. Condensate Storage Tanks Level-Low | 2(d) | 1, 2, 3, 4*, 5* | 36 |
| e. Suppression Pool Water Level-High | 2(d) | 1, 2, 3, 4*, 5* | 36 |
| f. HPCS System Flow Rate-Low (Minimum Flow) | 1 | 1, 2, 3, 4*, 5* | 31 |
| g. Manual Initiation | 1/division | 1, 2, 3, 4*, 5* | 34 |

| | <u>TOTAL NO. OF CHANNELS</u> | <u>CHANNELS TO TRIP</u> | <u>MINIMUM CHANNELS OPERABLE</u> | <u>APPLICABLE OPERATIONAL CONDITIONS</u> | <u>ACTION</u> |
|---|------------------------------|-------------------------|----------------------------------|--|---------------|
| D. <u>LOSS OF POWER</u> | | | | | |
| 1. 4.16 kV Emergency Bus Under-voltage (Loss of Voltage) | 2/bus | 1/bus | 2/bus | 1, 2, 3, 4**, 5** | 37 |
| 2. 4.16 kV Emergency Bus Under-voltage (Degraded Voltage) <i>Division 1 and 2</i> | 3/bus | 2/bus | 2/bus | 1, 2, 3, 4**, 5** | 38 |
| 3. 4.16 kV Emergency Bus Under-voltage (Degraded Voltage <i>Division 3</i>) | 2/bus | 2/bus | 2/bus | 1, 2, 3. | 38 |

TABLE NOTATIONS

- (a) A channel may be placed in an inoperable status for up to 2 hours during periods of required surveillance without placing the trip system in the tripped condition provided at least one other OPERABLE channel in the same trip system is monitoring that parameter.
- (b) Also activates the associated division diesel generator.
- (c) Provides signal to close HPCS pump discharge valve only on 2-out-of-2 logic.
- (d) Provides signal to HPCS pump suction valves only.
- * When the system is required to be OPERABLE per Specification 3.5.2 or 3.5.3.
- ** Required when ESF equipment is required to be OPERABLE.
- # Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 128 psig.

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TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

| <u>TRIP FUNCTION</u> | <u>TRIP SETPOINT</u> | <u>ALLOWABLE VALUE</u> |
|--|--|---|
| C. <u>DIVISION 3 TRIP SYSTEM</u> | | |
| 1. <u>HPCS SYSTEM</u> | | |
| a. Reactor Vessel Water Level - Low Low, Level 2 | > -50 inches* | > -57 inches |
| b. Drywell Pressure - High | < 1.65 psig | < 1.85 psig |
| c. Reactor Vessel Water Level - High, Level 8 | < 54.5 inches* | < 56.0 inches |
| d. Condensate Storage Tank Level - Low | > 448 ft 3 in. elevation | > 448 ft 0 in. elevation |
| e. Suppression Pool Water Level - High | ≤ 466 ft 8 in. elevation | ≤ 466 ft 10 in. elevation |
| f. HPCS System Flow Rate - Low (Minimum Flow) | > 1250 gpm | > 1200 gpm |
| g. Manual Initiation | N.A. | N.A. |
| D. <u>LOSS OF POWER</u> | | |
| 1. 4.16 kV Emergency Bus Undervoltage Loss of Voltage ## | a. 4.16 kV Basis - 2870 ± 86 volts b. 120 V Basis - 82 ± 2.5 volts | 2870 ± 172 volts 82 ± 5 volts |
| a. Divisions 1 and 2 | a. 4.16 kV Basis - 3016 ± 90 volts | 3016 ± 180 volts |
| b. Division 3 | b. 120 V Basis - 87 ± 2.5 volts | 87 ± 5 volts |
| 2. 4.16 kV Emergency Bus Undervoltage Degraded Voltage (Divisions 1, 2, and 3) | a. 4.16 kV Basis - 3632 ± 108 volts b. 120 V Basis - 104.0 ± 3.0 volts c. 8 ± 0.4 sec time delay | 3632 ± 216 volts 103.8 ± 6.0 volts 8 ± 0.8 sec time delay |

TABLE NOTATIONS

*See Bases Figure B 3/4 3-1.

##These are inverse time delay voltage relays or instantaneous voltage relays with a time delay. The voltages shown are the maximum that will not result in a trip. Lower voltage conditions will result in decreased trip times.

TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| <u>TRIP FUNCTION</u> | <u>CHANNEL CHECK</u> | <u>CHANNEL FUNCTIONAL TEST</u> | <u>CHANNEL CALIBRATION</u> | <u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u> |
|---|----------------------|--------------------------------|----------------------------|---|
| C. <u>DIVISION 3 TRIP SYSTEM</u> | | | | |
| 1. <u>HPCS SYSTEM</u> | | | | |
| a. Reactor Vessel Water Level - Low Low, Level 2 | S | M | R | 1, 2, 3, 4*, 5* |
| b. Drywell Pressure-High | N.A. | M | R | 1, 2, 3 |
| c. Reactor Vessel Water Level-High, Level 8- | S | M | R | 1, 2, 3, 4*, 5* |
| d. Condensate Storage Tank Level - Low | N.A. | M | R | 1, 2, 3, 4*, 5* |
| e. Suppression Pool Water Level - High | N.A. | M | R | 1, 2, 3, 4*, 5* |
| f. HPCS System Flow Rate-Low (Minimum Flow) | N.A. | M | R | 1, 2, 3, 4*, 5* |
| g. Manual Initiation | N.A. | R | N.A. | 1, 2, 3, 4*, 5* |
| D. <u>LOSS OF POWER</u> | | | | |
| 1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage) | N.A. | N.A. | R | 1, 2, 3, 4**, 5** |
| 2. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage Division 1 and 2) | N.A. | M *** | R | 1, 2, 3, 4**, 5** |
| 3. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage Division 3) | N.A. | N.A. | R | 1, 2, 3 * |

TABLE NOTATIONS

#Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 128 psig.

*When the system is required to be OPERABLE per Specification 3.5.2.

**Required when ESF equipment is required to be OPERABLE.

*** The secondary time delay 3-second relays are exempt from this monthly testing. The secondary time delay relays associated with this logic will be functionally tested as part of the Logic System Functional Testing each refueling outage.

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