

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM(a)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
<b>C. DIVISION 3 TRIP SYSTEM</b>			
<b>1. HPCS SYSTEM</b>			
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
<del>f. Pump Discharge Pressure-High (Pump Running)</del>	<del>1</del>	<del>1, 2, 3, 4*, 5*</del>	<del>32</del>
g. HPCS System Flow Rate-Low (Minimum Flow)	1	1, 2, 3, 4*, 5*	31
h. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34

	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE OPERATIONAL CONDITIONS	ACTION
<b>D. LOSS OF POWER</b>					
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)	3/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	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

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
<b>C. DIVISION 3 TRIP SYSTEM</b>		
<b>1. HPCS SYSTEM</b>		
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 - High	> 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
<del>f. Pump Discharge Pressure - High (Pump Running)</del>	<del>&gt; 140 psig</del>	<del>&gt; 125 psig</del>
g. HPCS System Flow Rate - Low (Minimum Flow)	> 1250 gpm	> 1200 gpm
h. Manual Initiation	N.A.	N.A.
<b>D. LOSS OF POWER</b>		
1. 4.16 kV Emergency Bus Undervoltage Loss of Voltage ##	a. 4.16 kV Basis - $2870 \pm 86$ volts b. 120 V Basis - $82 \pm 2.5$ volts	2870 $\pm$ 172 volts 82 $\pm$ 5 volts
a. Divisions 1 and 2	a. 4.16 kV Basis - $3016 \pm 90$ volts	3016 $\pm$ 180 volts
b. Division 3	b. 120 V Basis - $87 \pm 2.5$ volts	87 $\pm$ 5 volts
2. 4.16 kV Emergency Bus Undervoltage Degraded Voltage (Divisions 1, 2, and 3)	a. 4.16 kV Basis - $3632 \pm 108$ volts b. 120 V Basis - $104.0 \pm 3.0$ volts c. 8 $\pm$ 0.04 sec time delay	3632 $\pm$ 216 volts 103.8 $\pm$ 6.0 volts 8 $\pm$ 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

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
<b>C. <u>DIVISION 3 TRIP SYSTEM</u></b>				
<b>1. <u>HPCS SYSTEM</u></b>				
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		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*
<del>f. Pump Discharge Pressure-High (Pump Running)</del>	<del>N.A.</del>	<del>M</del>	<del>R</del>	<del>1, 2, 3, 4*, 5*</del>
g. HPCS System Flow Rate-Low (Minimum Flow)	N.A.	M	R	1, 2, 3, 4*, 5*
h. Manual Initiation	N.A.	R	N.A.	1, 2, 3, 4*, 5*
<b>D. <u>LOSS OF POWER</u></b>				
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)	N.A.	M	R	1, 2, 3, 4**, 5**

## 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.

