

The following pages will be affected by this Technical Specification amendment.

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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>
<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
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(a)</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
<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 Division 1 and 2)	3/bus	2/bus	1, 2/bus	1, 2, 3, 4**, 5**	38, 39, 40
3. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage Division 3)	2/bus	2/bus	1, 2/bus	1, 2, 3, 4**, 5**	38, 41, 42

TABLE NOTATIONS

- (a) A channel may be placed in an inoperable status for up to 6 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 3.3.3-1 (Continued)

## EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

### ACTION STATEMENTS

- ACTION 30 With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement:
- For one trip system, place the inoperable channel(s) and/or that trip system in the tripped condition within 1 hour\* or declare the associated system inoperable.
  - For both trip systems, declare the associated system inoperable.
- ACTION 31 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, place the inoperable channel in the tripped condition within 1 hour; restore the inoperable channel to OPERABLE status within 7 days or declare the associated system inoperable.
- ACTION 32 With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, declare the associated system inoperable.
- ACTION 33 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, place the inoperable channel in the tripped condition within 1 hour.
- ACTION 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, restore the inoperable channel to OPERABLE status within 8 hours or declare the associated ECCS inoperable.
- ACTION 35 With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, restore the inoperable channel to OPERABLE status within 24 hours or declare the associated ADS division inoperable.
- ACTION 36 With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, place the inoperable channel in the tripped condition within 1 hour\* or declare the HPCS system inoperable.
- ACTION 37 - With the number of OPERABLE channels less than the Total Number of Channels, declare the associated emergency diesel generator inoperable and take the ACTION required by Specification 3.3.1.1 or 3.8.1.2, as appropriate.
- ~~ACTION 38 - With the number of OPERABLE channels one less than the Total Number of Channels, place the inoperable channel in the tripped condition within 1 hour\*; operation may then continue until performance of the next required CHANNEL FUNCTIONAL TEST.~~

NOTE:  
SEE  
ATTACHED  
ACTIONS

\*The provisions of Specification 3.0.4 are not applicable.



- ACTION 38 - With the number of OPERABLE channels one less than the 'TOTAL NO. OF CHANNELS', remove the inoperable channel from the trip system within 1 hour\*.
- ACTION 39 - With the number of OPERABLE channels two less than the 'TOTAL NO. OF CHANNELS', within 1 hour remove one of the inoperable channels from the trip system and place the remaining channel in the tripped condition\*.
- ACTION 40 - With the number of OPERABLE channels less than the 'MINIMUM CHANNELS OPERABLE', restore at least one channel to an OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- ACTION 41 - With the number of OPERABLE channels one less than the 'Total NO. OF CHANNELS', within 1 hour place the inoperable channel in the tripped condition\*.
- ACTION 42 - With the number of OPERABLE channels less than the 'MINIMUM CHANNELS OPERABLE', restore at least one channel to an OPERABLE status within 24 hours or declare the HPCS system inoperable.

\* The provisions of Specification 3.0.4 are not applicable.



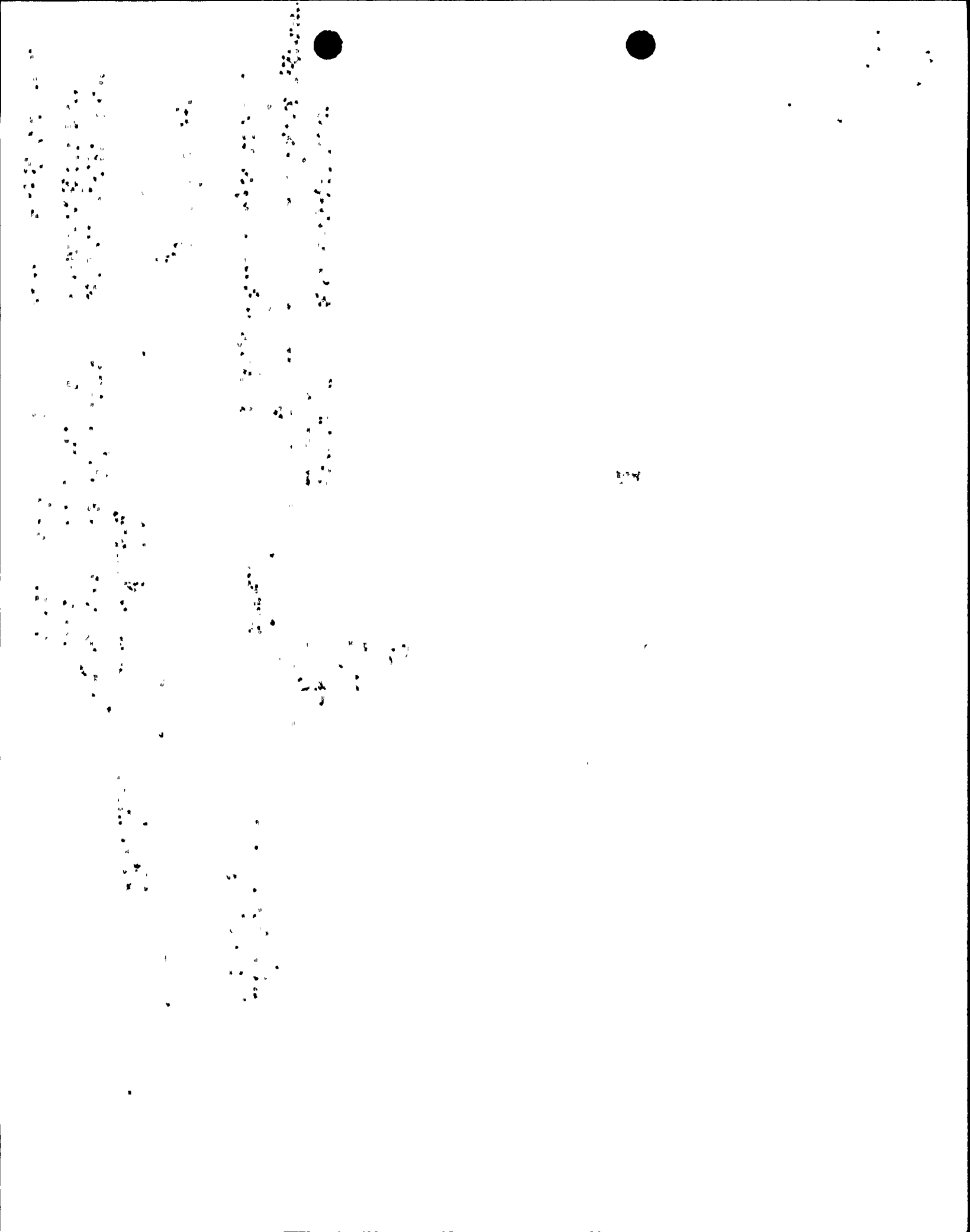
TABLE 3.3.3-2 (Continued)

## 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 - 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.
<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 120 V Basis - $82 \pm 2.5$ volts	$2870 \pm 172$ volts $82 \pm 5$ volts
a. Divisions 1 and 2	b. 4.16 kV Basis - $3016 \pm 90$ volts 120 V Basis - $87 \pm 2.5$ volts	$3016 \pm 180$ volts $87 \pm 5$ volts
b. Division 3	3780.5 $\pm$ 8.75 V 4.16 kV Basis - <del>3632 <math>\pm</math> 108 volts</del> 120 V Basis - <del>104.0 <math>\pm</math> 3.0 volts</del> <del>0 <math>\pm</math> 0.4 sec time delay</del>	$\geq 3684.8V, \leq 3756.2V$ <del>3632 <math>\pm</math> 216 volts</del> <del>103.8 <math>\pm</math> 6.0 volts <math>\geq 105.28, \leq 107.33V</math></del> <del>0 <math>\pm</math> 0.8 sec time delay</del>
2. 4.16 kV Emergency Bus Undervoltage Degraded Voltage (Divisions 1, 2, and 3)	b. 4.16 kV Basis - $3780.5 \pm 8.75$ V 120 V Basis - $106.3 \pm .25$ V $7.85 \pm .16$	$\geq 3684.8V, \leq 3756.2V$ $\geq 105.28V, \leq 107.33V$ $\geq 7.36 \text{ sec.}, \leq 8.34 \text{ sec.}$
a. Divisions 1 and 2		
b. Division 3		
TABLE NOTATIONS		
*See Bases Figure B 3/4 3-1.		
##These are <del>inverse time delay voltage relays</del> 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. $\geq$ minimum		
transfer <del>transfer</del>		
a. 4.16 kV Basis - $3780.5 \pm 8.75$ V 120 V Basis - $106.3 \pm .25$ V $8.15 \pm .30$ sec time delay		$\geq 3684.8V, \leq 3756.2V$ $\geq 105.28V, \leq 107.33V$ $\geq 7.63 \text{ sec.}, \leq 8.69 \text{ sec.}$

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## INSTRUMENTATION

### BASES

#### 3/4.3.2 ISOLATION ACTUATION INSTRUMENTATION

This specification ensures the effectiveness of the instrumentation used to mitigate the consequences of accidents by prescribing the OPERABILITY trip setpoints and response times for isolation of the reactor systems. When necessary, one channel may be inoperable for brief intervals to conduct required surveillance. Some of the trip settings may have tolerances explicitly stated where both the high and low values are critical and may have a substantial effect on safety. The setpoints of other instrumentation, where only the high or low end of the setting have a direct bearing on safety, are established at a level away from the normal operating range to prevent inadvertent actuation of the systems involved.

Except for the MSIVs, the safety analysis does not address individual sensor response times or the response times of the logic systems to which the sensors are connected. For D.C.-operated valves, a 3-second delay is assumed before the valve starts to move. For A.C.-operated valves, it is assumed that the A.C. power supply is lost and is restored by startup of the emergency diesel generators. In this event, a time of 13 seconds is assumed before the valve starts to move. In addition to the pipe break, the failure of the D.C.-operated valve is assumed; thus the signal delay (sensor response) is concurrent with the 13-second diesel startup. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13-second delay. It follows that checking the valve speeds and the 13-second time for emergency power establishment will establish the response time for the isolation functions. However, to enhance overall system reliability and to monitor instrument channel response time trends, the isolation actuation instrumentation response time shall be measured and recorded as a part of the ISOLATION SYSTEM RESPONSE TIME.

Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that the difference between each Trip Setpoint and the Allowable Value is equal to or less than the drift allowance assumed for each trip in the safety analyses.

#### 3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

The emergency core cooling system actuation instrumentation is provided to initiate actions to mitigate the consequences of accidents that are beyond the ability of the operator to control. This specification provides the OPERABILITY requirements, trip setpoints, and response times that will ensure effectiveness of the systems to provide the design protection. Although the instruments are listed by system, in some cases the same instrument may be used to send the actuation signal to more than one system at the same time.

Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that the difference between each Trip Setpoint and the Allowable Value is equal to or less than the drift allowance assumed for each trip in the safety analyses.

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Insert to Bases paragraph 3/4.3.3 - New Page B 3/4 3-2a

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

Three degraded undervoltage relays are provided on the division 1 and 2 safety related buses to assure adequate voltage on these buses to support the ECCS loads. Actuation of two relays will result in tripping of the offsite source circuit breakers 7-1 or 8-3 as applicable. Three channels are provided to allow testing of a channel during operation at power. Two relay contacts within each trip system train are provided to minimize spurious trips of the offsite source to that division.

Two degraded undervoltage relays are provided on the division 3 safety related bus to assure adequate voltage on the bus to support HPCS loads. Actuation of both relays will result in tripping of circuit breaker 4-1.

