

TABLE 3.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION <sup>(a)</sup>	APPLICABLE OPERATIONAL CONDITIONS	ACTION
<b>A. DIVISION I TRIP SYSTEM</b>			
<b>1. RHR-A (LPCI MODE) &amp; LPCS SYSTEM</b>			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2 <sup>(b)</sup>	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2 <sup>(b)</sup>	1, 2, 3	30
c. LPCS Pump Discharge Flow-Low (Bypass)	1	1, 2, 3, 4*, 5*	31
d. <del>LPCI</del> <sup>LPCI A</sup> Injection Valve <del>Differential Pressure</del> <sup>Injection Line Pressure</sup> -Low (Permissive)	1/valve	1, 2, 3 4*, 5*	32 33
e. <del>LPCI</del> <sup>LPCS/LPCI A</sup> Injection Valve <del>Differential</del> <sup>Reactor</sup> Pressure-Low (Permissive)	2	1, 2, 3 4*, 5*	<del>32</del> 33 <del>33</del> 33
f. LPCI Pump A Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32
g. LPCI Pump A Discharge Flow-Low (Bypass)	1	1, 2, 3, 4*, 5*	31
h. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34
<b>2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A" #</b>			
a. Reactor Vessel Water Level - Low Low Low, Level 1 coincident with	2 <sup>(b)</sup>	1, 2, 3	30
b. Drywell Pressure - High	2 <sup>(b)</sup>	1, 2, 3	30
c. ADS Timer	1	1, 2, 3	32
d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32
e. LPCS Pump Discharge Pressure-High (Permissive)	2	1, 2, 3	32
f. LPCI Pump A Discharge Pressure-High (Permissive)	2	1, 2, 3	32
g. Manual Initiation	1/division	1, 2, 3	34

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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 FUNCTION</u> (a)	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
<b>B. <u>DIVISION 2 TRIP SYSTEM</u></b>			
<b>1. <u>RHR B &amp; C (LPCI MODE)</u></b>			
a. Reactor Vessel Water Level - Low, Low Low, Level 1	2(b)	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2(b)	1, 2, 3	30
c. LPCI <sup>B/C</sup> Injection Valve <del>Differential</del> <sup>Injection Line</sup> Pressure-Low (Permissive)	1/valve	1, 2, 3 4*, 5*	32 33
d. LPCI Pump B Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32
e. LPCI Pump Discharge Flow - Low (Bypass)	1/pump	1, 2, 3, 4*, 5*	31
f. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34
g. <del>LPCI B/C Injection Valve</del> <sup>LPCI B/C Injection Valve</sup> Reactor Pressure - Low (Permissive)	2	1, 2, 3 4*, 5*	38 <del>38</del> 33
<b>2. <u>AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B" #</u></b>			
a. Reactor Vessel Water Level - Low Low Low, Level 1 coincident with	2(b)	1, 2, 3	30
b. Drywell Pressure - High	2(b)	1, 2, 3	30
c. ADS Timer	1	1, 2, 3	32
d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32
e. LPCI Pump B and C Discharge Pressure - High (Permissive)	2/pump	1, 2, 3	32
f. Manual Initiation	1/division	1, 2, 3	34

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TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

ACTION

- ACTION 30 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:
- a. With one channel inoperable, place the inoperable channel in the tripped condition within one hour\* or declare the associated system inoperable.
  - b. With more than one channel inoperable, declare the associated system inoperable.
- ACTION 31 - With the number of OPERABLE channels less than required by the Minimum OPERABLE channels per Trip Function, place the inoperable channel in the tripped condition within one 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 Function requirement, declare the associated ADS trip system or ECCS inoperable.
- ACTION 33 - With the number of OPERABLE channels less than the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour.
- ACTION 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 8 hours or declare the associated ADS valve or ECCS inoperable.
- ACTION 35 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement
- a. For one trip system, place that trip system in the tripped condition within one hour\* or declare the HPCS system inoperable.
  - b. For both trip systems, declare the HPCS system inoperable.
- ACTION 36 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within one 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 3.8.1.1 or 3.8.1.2, as appropriate.

\*The provisions of Specification 3.0.4 are not applicable.

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Action 38 - see attached

Table 3.3.3-1 (continued)

Action 38 - With the number of Operable Channels less than required by the Minimum Operable channels per trip function requirements:

- a. With one channel inoperable, <sup>remove</sup> ~~place~~ the inoperable channel within one hour, restore the inoperable channel to OPERABLE status within 7 days or declare the associated ECCS systems ~~to~~ inoperable.
- b. With both channels inoperable, restore ~~the~~ at least one channel to operable status within ~~1~~ hour or declare the associated ECCS systems inoperable.

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TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
<u>A. DIVISION 1 TRIP SYSTEM</u>		
<u>1. RHR-A (LPCI MODE) AND LPCS SYSTEM</u>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	>- 129 inches*	>- 136 inches*
b. Drywell Pressure - High	< 1.69 psig	< 1.89 psig
c. LPCS Pump Discharge Flow-Low	> 750 gpm	> 640 gpm
<del>d. LPCS Injection Valve Differential Pressure Low</del>	<del>&gt; 729 psid, decreasing</del>	<del>&gt; 709 psid, decreasing</del>
<del>e. LPCI Injection Valve Differential Pressure Low</del>	<del>&gt; 729 psid, decreasing</del>	<del>&gt; 709 psid, decreasing</del>
f. LPCI Pump A Start Time Delay Relay	< 5 seconds	< 6 seconds
g. LPCI Pump A Discharge Flow-Low	> 1000 gpm	> 550 gpm
h. Manual Initiation	NA	NA
<u>2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"</u>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	>- 129 inches*	>- 136 inches*
b. Drywell Pressure - High	< 1.69 psig	< 1.89 psig
c. ADS Timer	< 105 seconds	< 117 seconds
d. Reactor Vessel Water Level-Low, Level 3	> 12.5 inches*	> 11 inches*
e. LPCS Pump Discharge Pressure-High	> 146 psig, increasing	> 136 psig, increasing
f. LPCI Pump A Discharge Pressure-High	> 119 psig, increasing	> 106 psig, increasing
g. Manual Initiation	NA	NA
<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 10px;">}</div> <div> <p>d. LPCS/LPCI A Injection Valve Inj Line -Low Pressure Interlock</p> <p>e. LPCS/LPCI A Injection Valve Reactor Pressure Low Interlock</p> </div> </div>		
	500 psig	± 20 psig
	500 psig	± 20 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>
<b>B. <u>DIVISION 2 TRIP SYSTEM</u></b>		
<b>1. <u>RHR B AND C (LPCI MODE)</u></b>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	>- 129 inches*	>- 136 inches*
b. Drywell Pressure - High	< 1.69 psig	< 1.89 psig
<del>c. LPCI Injection Valve Differential Pressure-Low</del>	<del>&gt; 729 psid, decreasing</del>	<del>&gt; 709 psid, decreasing</del>
d. LPCI Pump B Start Time Delay Relay	< 5 seconds	< 6 seconds
e. LPCI Pump Discharge Flow-Low	> 1000 gpm	> 550 gpm
f. Manual Initiation	NA	NA
<b>g. <u>LPCI B/C Injection Valve Rx. Press. Low Interlock</u></b>	<b>500 psig</b>	<b>± 20 psig</b>
<b>2. <u>AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"</u></b>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	>- 129 inches*	>- 136 inches*
b. Drywell Pressure - High	< 1.69 psig	< 1.89 psig
c. ADS Timer	< 105 seconds	< 117 seconds
d. Reactor Vessel Water Level-Low, Level 3	> 12.5 inches*	> 11 inches*
e. LPCI Pump B and C Discharge Pressure-High	> 119 psig, increasing	> 106 psig, increasing
f. Manual Initiation	NA	NA
<b>c. <u>LPCI B/C Injection Valve Inj. Line Low Pressure Interlock</u></b>	<b>500 psig</b>	<b>± 20 psig</b>

TABLE 3.3.3-3

EMERGENCY CORE COOLING SYSTEM RESPONSE TIMES

<u>ECCS</u>	<u>RESPONSE TIME (Seconds)</u>
1. LOW PRESSURE CORE SPRAY SYSTEM	$\leq 40$ ✖
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM	
a. Pumps A and B	$< \overset{40}{45}$ ✖
b. Pump C	$\leq 40$ ✖
3. AUTOMATIC DEPRESSURIZATION SYSTEM	NA
4. HIGH PRESSURE CORE SPRAY SYSTEM	$\leq 27$
5. LOSS OF POWER	NA

\* Injection valves shall be fully OPEN within 20 seconds after receipt of the Rx Vessel Pressure/ECCS Injection Line Pressure Interlock signal concurrently with power source available and receipt of an accident initiation signal.



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TABLE 4.3.3.1-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
<u>A. DIVISION I TRIP SYSTEM</u>				
<u>1. RHR-A (LPCI MODE) AND LPCS SYSTEM</u>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. LPCS Pump Discharge Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
<del>d. LPCS Injection Valve Differential Pressure-Low</del>	<del>S/NA</del>	M	R	1, 2, 3, 4*, 5*
<del>e. LPCI Injection Valve Differential Pressure-Low</del>	<del>S/NA</del>	M	R	1, 2, 3, 4*, 5*
f. LPCI Pump A Start Time Delay Relay	NA	M	Q	1, 2, 3, 4*, 5*
g. LPCI Pump A Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
h. Manual Initiation	NA	R	NA	1, 2, 3, 4*, 5*
<u>2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A" #</u>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
b. Drywell Pressure-High	NA	M	Q	1, 2, 3
c. ADS Timer	NA	M	Q	1, 2, 3
d. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3
e. LPCS Pump Discharge Pressure-High	NA	M	Q	1, 2, 3
f. LPCI Pump A Discharge Pressure-High	NA	M	Q	1, 2, 3
g. Manual Initiation	NA	R	NA	1, 2, 3
d. LPCS/LPCI <sup>A</sup> Injection Valve Inj. Line Press. Low Interlock				
e. LPCS/LPCI A Injection Valve, Rx Press Low Interlock				



## REACTOR COOLANT SYSTEM

### SURVEILLANCE REQUIREMENTS (Continued)

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1 shall be demonstrated OPERABLE:

- a. Pursuant to Specification 4.0.5, except that in lieu of any leakage testing required by Specification 4.0.5, each valve shall be demonstrated OPERABLE by verifying leakage to be within its limit:

1. At least once per 18 months, and
2. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

~~In addition, until the LPCS system and the LPCI system injection valve differential pressure low permissive is modified during or before the first refueling outage, the LPCS system check valve 1E21 F006 and the LPCI system check valves 1E12 F041 A, B, and C shall also be demonstrated OPERABLE by verifying leakage to be within its limit.~~

- ~~1. Whenever the unit has been in COLD SHUTDOWN or REFUELING, after the last valve disturbance prior to reactor coolant system temperature exceeding 200°F~~
- ~~2. Within 24 hours following valve disturbance except when in COLD SHUTDOWN or REFUELING.~~

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3.

- b. By demonstrating OPERABILITY of the high/low pressure interface valve leakage pressure monitors by performance of a:

1. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
2. CHANNEL CALIBRATION at least once per 18 months,

With the alarm setpoint for the:

1. HPCS system  $\leq$  100 psig.
2. LPCS system  $\leq$  500 psig.
3. LPCI/shutdown cooling system  $\leq$  400 psig.
4. RHR shutdown cooling  $\leq$  190 psig.
5. RCIC  $\leq$  90 psig.

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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>
<b>B. DIVISION 2 TRIP SYSTEM</b>				
<b>1. RHR B AND C (LPCI MODE)</b>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
<del>c. LPCI Injection Valve Differential Pressure-Low</del>	<del>NA</del>	<del>M</del>	<del>R</del>	<del>1, 2, 3, 4*, 5*</del>
d. LPCI Pump B Start Time Delay Relay	NA	M	Q	1, 2, 3, 4*, 5*
e. LPCI Pump Discharge Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
f. Manual Initiation	NA	R	NA	1, 2, 3, 4*, 5*
g. <i>LPCI B/C Inj. Valve Rx Press Low Interlock</i>	<i>NA</i>	<i>M</i>	<i>R</i>	<i>1, 2, 3, 4*, 5*</i>
<b>2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B" #</b>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
b. Drywell Pressure-High	NA	M	Q	1, 2, 3
c. ADS Timer	NA	M	Q	1, 2, 3
d. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3
e. LPCI Pump B and C Discharge Pressure-High	NA	M	Q	1, 2, 3
f. Manual Initiation	NA	R	NA	1, 2, 3
 <i>c. LPCI B/C Injection Valve Inj Line Pressure Low Interlock</i>				

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