

TABLE 3.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM<sup>(B)</sup></u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
<b>A. <u>DIVISION 1 TRIP SYSTEM</u></b>			
<b>1. <u>RHR-A (LPCI MODE) &amp; LPCS SYSTEM</u></b>			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2	1, 2, 3	30
c. LPCS Pump Discharge Flow-Low (Minimum Flow)	1	1, 2, 3, 4*, 5*	31
d. Reactor Vessel Pressure-Low (LPCS Permissive)	1	1, 2, 3, 4*, 5*	32 33
e. Reactor Vessel Pressure-Low (LPCI Permissive)	1	1, 2, 3, 4*, 5*	32 33
f. LPCI Pump A Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32
g. LPCI Pump A Discharge Flow-Low (Minimum Flow)	1	1, 2, 3, 4*, 5*	31
h. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34
<b>2. <u>AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A" #</u></b>			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2	1, 2, 3	30
<del>b. Drywell Pressure - High</del>	<del>2</del>	<del>1, 2, 3</del>	<del>30</del>
b. 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 (Pump Running)	2	1, 2, 3	32
f. LPCI Pump A Discharge Pressure-High (Pump Running)	2	1, 2, 3	32
g. Manual Initiation	2/division	1, 2, 3	35
g. Inhibit switch	1/division	1, 2, 3	35

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TABLE 3.3.3-1 (Continued)

## EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM <sup>(a)</sup>	APPLICABLE OPERATIONAL CONDITIONS	ACTION
<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	2	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2	1, 2, 3	30
c. Reactor Vessel Pressure-Low (LPCI Permissive)	1/valve	1, 2, 3, 4*, 5*	32
d. LPCI Pump B Start Time Delay Relay	1	1, 2, 3, 4*, 5*	33
e. LPCI Pump Discharge Flow-Low (Minimum Flow)	1/pump	1, 2, 3, 4*, 5*	32
f. Manual Initiation	1/division	1, 2, 3, 4*, 5*	31
			34
<b>2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B" #</b>			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2	1, 2, 3	30
<del>b. Drywell Pressure - High</del>	<del>2</del>	<del>1, 2, 3</del>	<del>30</del>
b-e. ADS Timer	1	1, 2, 3	32
c-d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32
d-e. LPCI Pump B and C Discharge Pressure - High (Pump Running)	2/pump	1, 2, 3	32
e-f. Manual Initiation	2/division	1, 2, 3	35
f. Inhibit switch	1/division	1, 2, 3	35



TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
<b>A. <u>DIVISION 1 TRIP SYSTEM</u></b>		
<b>1. <u>RHR-A (LPCI MODE) AND LPCS SYSTEM</u></b>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	> -129 inches*	> -136 inches
b. Drywell Pressure - High	≤ 1.65 psig	≤ 1.85 psig
c. LPCS Pump Discharge Flow-Low (Minimum Flow)	> 770 gpm	< 900 gpm
d. Reactor Vessel Pressure-Low (LPCS Permissive)	≥ 470 psig, decreasing	≥ 450 psig, decreasing
e. Reactor Vessel Pressure-Low (LPCI Permissive)	≥ 470 psig, decreasing	≥ 450 psig, decreasing
f. LPCI Pump A Start Time Delay Relay	≤ 5 seconds	≤ 6 seconds
g. LPCI Pump A Discharge Flow-Low (Minimum Flow)	≥ 800 gpm	> 650 gpm
h. Manual Initiation	N.A.	N.A.
<b>2. <u>AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"</u></b>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	> -129 inches*	> -136 inches
<del>b. Drywell Pressure - High</del>	<del>≤ 1.65 psig</del>	<del>≤ 1.85 psig</del>
b-e. ADS Timer	< 105 seconds	< 117 seconds
c-d. Reactor Vessel Water Level-Low, Level 3 (Permissive)	≥ 13.0 inches*	≥ 11 inches
d-e. LPCS Pump Discharge Pressure-High (Pump Running)	≥ 145 psig, increasing	≥ 125 psig, increasing
e-f. LPCI Pump A Discharge Pressure-High (Pump Running)	> 125 psig, increasing	> 115 psig, increasing
f-g. Manual Initiation	N.A.	N.A.
g. Inhibit switch	N.A.	N.A.



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	$\leq 1.65$ psig	$\leq 1.85$ psig
c. Reactor Vessel Pressure-Low (LPCI Permissive)	$\geq 470$ psig, decreasing 5 seconds	$\geq 450$ psig, decreasing $\leq 6$ seconds
d. LPCI Pump B Start Time Delay Relay		
e. LPCI Pump Discharge Flow-Low (Minimum Flow)	$\geq 800$ gpm	$> 650$ gpm
f. Manual Initiation	N.A.	N.A.
<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
<del>b. Drywell Pressure - High</del>	<del><math>\leq 1.65</math> psig</del>	<del><math>\leq 1.85</math> psig</del>
b e. ADS Timer	$\leq 105$ seconds	$\leq 117$ seconds
c d. Reactor Vessel Water Level-Low, Level 3 (Permissive)	$\geq 13.0$ inches*	$\geq 11$ inches
d e. LPCI Pump B and C Discharge Pressure-High (Pump Running)	$> 125$ psig, increasing	$> 115$ psig, increasing
e f. Manual Initiation	N.A.	N.A.
f. Inhibit switch		



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
<b>A. DIVISION I TRIP SYSTEM</b>				
<b>1. RHR-A (LPCI MODE) AND LPCS SYSTEM</b>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	N.A.	M	R	1, 2, 3
c. LPCS Pump Discharge Flow-Low (Minimum Flow)	N.A.	M	R	1, 2, 3, 4*, 5*
d. Reactor Vessel Pressure-Low (LPCS Permissive)	N.A.	M	R	1, 2, 3, 4*, 5*
e. Reactor Vessel Pressure-Low (LPCI Permissive)	N.A.	M	R	1, 2, 3, 4*, 5*
f. LPCI Pump A Start Time Delay Relay	N.A.	M	Q	1, 2, 3, 4*, 5*
g. LPCI Pump A Flow-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>2. AUTOMATIC DEPRESSURIZATION SYSTEM</b>				
<b>TRIP SYSTEM "A" W</b>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
<del>b. Drywell Pressure-High</del>	<del>N.A.</del>	<del>M</del>	<del>R</del>	<del>1, 2, 3</del>
b. ADS Timer	N.A.	M	Q	1, 2, 3
c. Reactor Vessel Water Level - Low, Level 3 (Permissive)	S	M	R	1, 2, 3
d. LPCS Pump Discharge Pressure-High (Pump Running)	N.A.	M	R	1, 2, 3
e. LPCI Pump A Discharge Pressure-High (Pump Running)	N.A.	M	R	1, 2, 3
f. Manual Initiation	N.A.	R	N.A.	1, 2, 3
g. Inhibit switch	N.A.	M	N.A.	1, 2, 3

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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. <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	S	H	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	N.A.	H	R	1, 2, 3
c. Reactor Vessel Pressure-Low (LPCI Permissive)	N.A.	H	R	1, 2, 3, 4*, 5*
d. LPCI Pump B Start Time Delay Relay	N.A.	H	Q	1, 2, 3, 4*, 5*
e. LPCI Pump Discharge Flow-Low (Minimum Flow)	N.A.	H	R	1, 2, 3, 4*, 5*
f. Manual Initiation	N.A.	R	N.A.	1, 2, 3, 4*, 5*
<b>2. <u>AUTOMATIC DEPRESSURIZATION SYSTEM</u></b>				
<b><u>TRIP SYSTEM "B" #</u></b>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	H	R	1, 2, 3
<del>b. Drywell Pressure-High</del>	<del>N.A.</del>	<del>H</del>	<del>R</del>	<del>1, 2, 3</del>
b. ADS Timer	N.A.	H	Q	1, 2, 3
c. Reactor Vessel Water Level - Low, Level 3 (Permissive)	S	H	R	1, 2, 3
d. LPCI Pump B and C Discharge Pressure-High (Pump Running)	N.A.	H	R	1, 2, 3
e. Manual Initiation	N.A.	R	N.A.	1, 2, 3
f. Inhibit switch	N.A.	M	N.A.	1, 2, 3