TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
4. AUTOMATIC DEPRESSURIZATION SYSTEM##			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2(f)	1, 2, 3	30
b. Drywell Pressure - High	2(f)	1, 2, 3	30
c. ADS Timer	1(f)	1, 2, 3	31
d. Core Spray Pump Discharge Pressure - High (Permissive)	2(d)(f)	1, 2, 3	31
e. ~~SHR~~ LPCI Mode Pump Discharge Pressure - High (Permissive)	2(d)(e)(f)	1, 2, 3	31
f. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1(f)	1, 2, 3	31
g. ADS Drywell Pressure Bypass Timer	2(f)	1, 2, 3	31
h. Manual Inhibit	1	1, 2, 3	33
i. Manual Initiation	1/valve	1, 2, 3	33

TRIP FUNCTION	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE OPERATIONAL CONDITIONS	ACTION
5. LOSS OF POWER					
a. 4.16 kv ESS Bus Undervoltage (Loss of Voltage, <20%)	1/bus	1/bus	1/bus	1, 2, 3, 4**, 5**	35
b. 4.16 kv ESS Bus Undervoltage (Degraded Voltage, <65%)	2/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	36
c. 4.16 kv ESS Bus Undervoltage (Degraded Voltage <93%~~<94%~~)	2/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	36

See footnotes on next page.

SUSQUEHANNA - UNIT 1

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Amendment No. 44

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TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
4. AUTOMATIC DEPRESSURIZATION SYSTEM		
a. Reactor Water Level - Low Low Low, Level 1	≥ -129 inches*	≥-136 inches
b. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
c. ADS Timer	≤ 102 seconds	≤ 114 seconds
d. Core Spray Pump Discharge Pressure - High	145 ± 10 psig	145 ± 20 psig
e. RHR LPCI Mode Pump Discharge Pressure - High	125 ± 4 psig	125 ± 10 psig
f. Reactor Vessel Water Level-Low, Level 3	≥ 13 inches	≥ 11.5 inches
g. ADS Drywell Pressure Bypass Timer	≤ 420 seconds	≤ 450 seconds
h. Manual Inhibit	NA	NA
i. Manual Initiation	NA	NA
5. LOSS OF POWER		
a. 4.16 kv ESS Bus Undervoltage (Loss of Voltage, <20%)	a. 4.16 kv Basis - 840 ± 16.8 volts b. 120 v Basis - 24 ± 0.48 volts c. 0.5 ± 0.1 second time delay	840 ± 59.6 volts 24 ± 1.7 volts 0.5 ± 0.1 second time delay
b. 4.16 kv ESS Bus Undervoltage (Degraded Voltage, <65%)	a. 4.16 kv Basis - 2695 ± 53.9 volts b. 120 v Basis - 77 ± 1.54 volts c. 3.0 ± 0.3 second time delay	2695 ± 191.3 volts 77 ± 5.5 volts 3 ± 0.3 second time delay
c. 4.16 kv ESS Bus Undervoltage (Degraded Voltage, ~~<84%~~ <93%)	3868 ± 38.7 volts a. 4.16 kv Basis - ~~3483 ± 69.7 volts~~ b. 120 v Basis - ~~99.5 ± 1.99~~ volts c. 5 minute ± 30 second time delay without LOCA 10 ± 1.0 second time delay with LOCA 110.5 ± 1.10	3868 +67, -67 ~~3483 + 247.3, - 69.7~~ volts ~~99.5 + 7.1 volts, - 1.99~~ volts 5 minutes ± 30 second time delay without LOCA 10 ± 1.0 second time delay with LOCA 110.5 +1.91, -1.91

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

TABLE 3.3.3-3

EMERGENCY CORE COOLING SYSTEM RESPONSE TIMES

TRIP FUNCTION	RESPONSE TIME (Seconds)
1. CORE SPRAY SYSTEM	
a. Reactor Vessel Water Level-Low Low Low, Level 1	≤27
b. Drywell Pressure-High	≤27
c. Reactor Vessel Steam Dome Pressure-Low	≤27
d. Manual Initation	NA
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM	
a. Reactor Vessel Water Level-Low Low Low, Level 1	≤40
b. Drywell Pressure-High	≤40
c. Reactor Vessel Steam Dome Pressure-Low	
1) System Initiation	≤40
2) Recirculation Discharge Valve Closure	≤40
d. Manual Initiation	NA
3. HIGH PRESSURE COOLANT INJECTION SYSTEM	
a. Reactor Vessel Water Level - Low Low, Level 2	≤30
b. Drywell Pressure - High	≤30
c. Condensate Storage Tank Level-Low	NA
d. Reactor Vessel Water Level-High, Level 8	NA
e. Suppression Pool Water Level-High	NA
f. Manual Initiation	NA
4. AUTOMATIC DEPRESSURIZATION SYSTEM	
a. Reactor Vessel Water Level-Low Low Low, Level 1	NA
b. Drywell Pressure-High	NA
c. ADS Timer	NA
d. Core Spray Pump Discharge Pressure-High	NA
e. RHR LPCI Mode Pump Discharge Pressure-High	NA
f. Reactor Vessel Water Level-Low, Level 3	NA
g. ADS Drywell Pressure Bypass Timer	NA
h. Manual Inhibit	NA
i. Manual Initiation	NA
5. LOSS OF POWER	
a. 4.16 kV ESS Bus Undervoltage (Loss of Voltage <20%)	NA
b. 4.16 kV ESS Bus Undervoltage (Degraded Voltage <65%)	NA
c. 4.16 kV ESS Bus Undervoltage (Degraded Voltage ~~<84%~~ <93%)	NA

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
4. AUTOMATIC DEPRESSURIZATION SYSTEM##			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2(f)	1, 2, 3	30
b. Drywell Pressure - High	2(f)	1, 2, 3	30
c. ADS Timer	1(f)	1, 2, 3	31
d. Core Spray Pump Discharge Pressure - High (Permissive)	2(d)(f)	1, 2, 3	31
e. RHR LPCI Mode Pump Discharge Pressure - High (Permissive)	2(d)(e)(f)	1, 2, 3	31
f. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1(f)	1, 2, 3	31
g. ADS Drywell Pressure Bypass Timer	2(f)	1, 2, 3	31
h. Manual Inhibit	1	1, 2, 3	33
i. Manual Initiation	1/valve	1, 2, 3	31

	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE OPERATIONAL CONDITIONS	ACTION
5. LOSS OF POWER					
a. 4.16 kv ESS Bus Under-voltage (Loss of Voltage, <20%)	1/bus	1/bus	1/bus	1, 2, 3, 4**, 5**	35
b. 4.16 kv ESS Bus Under-voltage (Degraded Voltage, <65%)	2/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	36
c. 4.16 kv ESS Bus Under-voltage (Degraded Voltage ~~<84%~~ <93%	2/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	36

See footnotes on next page.

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
4. AUTOMATIC DEPRESSURIZATION SYSTEM		
a. Reactor Water Level - Low Low Low, Level 1	≥ -129 inches*	≥-136 inches
b. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
c. ADS Timer	≤ 102 seconds	≤ 114 seconds
d. Core Spray Pump Discharge Pressure - High	145 ± 10 psig	145 ± 20 psig
e. RHR LPCI Mode Pump Discharge Pressure - High	125 ± 4 psig	125 ± 10 psig
f. Reactor Vessel Water Level-Low, Level 3	≥ 13 inches	≥ 11.5 inches
g. ADS Drywell Pressure Bypass Timer	≤ 420 seconds	≤ 450 seconds
h. Manual Inhibit	NA	NA
i. Manual Initiation	NA	NA
5. LOSS OF POWER		
a. 4.16 kv ESS Bus Undervoltage (Loss of Voltage, <20%)	a. 4.16 kv Basis - 840 ± 16.8 volts b. 120 v Basis - 24 ± 0.48 volts c. 0.5 ± 0.1 second time delay	840 ± 59.6 volts 24 ± 1.7 volts 0.5 ± 0.1 second time delay
b. 4.16 kv ESS Bus Undervoltage (Degraded Voltage, <65%)	a. 4.16 kv Basis - 2695 ± 53.9 volts b. 120 v Basis - 77 ± 1.54 volts c. 3.0 ± 0.3 second time delay	2695 ± 191.3 volts 77 ± 5.5 volts 3 ± 0.3 second time delay
c. 4.16 kv ESS Bus Undervoltage (Degraded Voltage, ~~<84%~~ <93%)	3868 ± 38.7 a. 4.16 kv Basis - ~~3403 ± 69.7~~ volts b. 120 v Basis - ~~99.5 ± 1.99~~ volts c. 5 minute ± 30 second time delay without LOCA 10 ± 1.0 second time delay with LOCA 110.5 ± 1.10	3868 +67, -67 ~~3401 ± 247.3, - 69.7~~ volts ~~90.4 ± 7.1 volts, ± 1.99~~ volts 5 minutes ± 30 second time delay without LOCA 10 ± 1.0 second time delay with LOCA 110.5 +1.91, -1.91

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

TABLE 3.3.3-3

EMERGENCY CORE COOLING SYSTEM RESPONSE TIMES

TRIP FUNCTION	RESPONSE TIME (Seconds)
1. CORE SPRAY SYSTEM	
a. Reactor Vessel Water Level-Low Low Low, Level 1	≤27
b. Drywell Pressure-High	≤27
c. Reactor Vessel Steam Dome Pressure-Low	≤27
d. Manual Initation	NA
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM	
a. Reactor Vessel Water Level-Low Low Low, Level 1	≤40
b. Drywell Pressure-High	≤40
c. Reactor Vessel Steam Dome Pressure-Low	
1) System Initiation	≤40
2) Recirculation Discharge Valve Closure	≤40
d. Manual Initiation	NA
3. HIGH PRESSURE COOLANT INJECTION SYSTEM	
a. Reactor Vessel Water Level - Low Low, Level 2	≤30
b. Drywell Pressure - High	≤30
c. Condensate Storage Tank Level-Low	NA
d. Reactor Vessel Water Level-High, Level 8	NA
e. Suppression Pool Water Level-High	NA
f. Manual Initiation	NA
4. AUTOMATIC DEPRESSURIZATION SYSTEM	
a. Reactor Vessel Water Level-Low Low Low, Level 1	NA
b. Drywell Pressure-High	NA
c. ADS Timer	NA
d. Core Spray Pump Discharge Pressure-High	NA
e. RHR LPCI Mode Pump Discharge Pressure-High	NA
f. Reactor Vessel Water Level-Low, Level 3	NA
g. ADS Drywell Pressure Bypass Timer	NA
h. Manual Inhibit	NA
i. Manual Initiation	NA
5. LOSS OF POWER	
a. 4.16 kV ESS Bus Undervoltage (Loss of Voltage <20%)	NA
b. 4.16 kV ESS Bus Undervoltage (Degraded Voltage <65%)	NA
c. 4.16 kV ESS Bus Undervoltage (Degraded Voltage ~~<64%~~ <93%)	NA