

TABLE 3.3.2-1

## ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	VALVE GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL CONDITION	ACTION
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low, Level 2 (Division 1 & 2)	1,5,7,8	2	1, 2, 3 and #	20
b. Reactor Vessel Water Level - Low, Level 2 (Division 3)	1	4 (1)	1, 2, 3	28
c. Drywell Pressure - High (Division 1 & 2)	1,2,5,8,9 (b)(c)	2	1, 2, 3	20
d. Drywell Pressure - High (Division 3)	1	4 (1)	1, 2, 3	28
e. Containment and Drywell Purge Exhaust Plenum Radiation - High	9	2 (g)	1, 2, 3 and *	21
f. Reactor Vessel Water Level - Low, Level 1	2 (b)(c)	2	1, 2, 3 and #	20
g. Manual Initiation (Division 1 & 2)	1,2,5,7,8,9	2 (k)	1, 2, 3 and *	22
h. Manual Initiation (Division 3)	1	1 (m)	1, 2, 3 and *	28
2. MAIN STEAM LINE ISOLATION				
a. Reactor Vessel Water Level - Low, Level 1	6	2	1, 2, 3	20
b. Main Steam Line Radiation - High	6 (d)	2	1, 2	23
c. Main Steam Line Pressure - Low	6	2	1	24
d. Main Steam Line Flow - High	6	2/line	1, 2, 3	23
e. Condenser Vacuum - Low	6	2	1, 2**, 3**	23
f. Main Steam Line Tunnel Temperature - High	6	2	1, 2, 3	23
g. Main Steam Line Tunnel $\Delta$ Temperature - High	6	2	1, 2, 3	23
h. Turbine Building Main Steam Line Temperature - High	6	2	1, 2, 3	23
i. Manual Initiation	6	2	1, 2, 3	22

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION  
ACTION

- ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- ACTION 21 - Close the affected system isolation valve(s) within one hour or:  
a. In OPERATIONAL CONDITION 1, 2 or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.  
b. In Operational Condition \*, suspend CORE ALTERATIONS, handling of irradiated fuel in the primary containment and operations with a potential for draining the reactor vessel.
- ACTION 22 - Restore the manual initiation function to OPERABLE status within 48 hours or:  
a. In OPERATIONAL CONDITION 1, 2, or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.  
b. In OPERATIONAL CONDITION \*, suspend CORE ALTERATIONS, operations with a potential for draining the reactor vessel, and handling of irradiated fuel in the primary containment.
- ACTION 23 - Be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- ACTION 24 - Be in at least STARTUP within 6 hours.
- ACTION 25 - Verify SECONDARY CONTAINMENT INTEGRITY with the annulus exhaust gas treatment system operating within one hour.
- ACTION 26 - Restore the manual initiation function to OPERABLE status within 8 hours or close the affected system isolation valves within 1 hour and declare the affected system inoperable.
- ACTION 27 - Close the affected system isolation valves within one hour and declare the affected system inoperable.
- ACTION 28 - Within one hour lock the affected system isolation valves closed, or verify, by remote indication, that the valve(s) is closed and electrically disarmed, or isolate the penetration(s) and declare the affected system inoperable.

NOTES

- \* When handling irradiated fuel in the primary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.
- \*\* When any turbine stop valve is greater than 90% open and/or the key locked Condenser Low Vacuum Bypass Switch is in the normal position.
- # During CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION  
ACTION

NOTES (Continued)

- (a) A channel may be placed in an inoperable status for up to 2 hours for 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 actuates the standby subsystem of the annulus exhaust gas treatment system.
- (c) Also actuates the control room emergency filtration system in the recirculation mode of operation.
- (d) Also trips and isolates the mechanical vacuum pumps.
- (e) Closes only RWCU system isolation valve(s) 1G33-F004 (SLCS Pump A) and 1G33-F001 (SLCS Pump B).
- (f) Manual initiation isolates 1E51-F064 and 1E51-F031 only and only following manual or automatic-initiation of the RCIC system.
- (g) Containment and Drywell Purge System inboard and outboard isolation valves each use a separate two out of two isolation logic.
- (h) Requires RCIC system steam supply pressure - low coincident with drywell pressure high to isolate valve 1E51-F077.
- (i) For this signal, one trip system has two channels which close valves 1E51-F063 and 1E51-F076 while the other trip system has two channels which close valve 1E51-F064.
- (j) Isolates both RHR and RCIC.
- (k) There is only one (1) RCIC manual initiation channel for valve group 9.
- (l) Division 3 has only one trip system consisting of four channels logically combined in a one-out-of-two-twice configuration which only closes the HPCS Suppression Pool Test Return Valve (1E22-F023).
- (m) Division 3 Manual Initiation consists of a single channel in a single trip system.

TABLE 3.3.3-1 (Continued)  
EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION</u> <sup>(a)</sup>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
C. <u>DIVISION 3 TRIP SYSTEM</u>			
1. <u>HPCS SYSTEM</u>			
a. Reactor Vessel Water Level - Low, Level 2	4 <sup>(b)</sup>	1, 2, 3, 4*, 5*	34
b. Drywell Pressure - High <sup>##</sup>	4 <sup>(b)</sup>	1, 2, 3	34
c. Reactor Vessel Water Level - High, Level 8	4 <sup>(c)</sup>	1, 2, 3, 4*, 5*	<del>31</del> 34
d. Condensate Storage Tank Level - Low	2 <sup>(d)</sup>	1, 2, 3, 4*, 5*	35
e. Suppression Pool Water Level - High	2 <sup>(d)</sup>	1, 2, 3, 4*, 5*	35
f. HPCS Pump Discharge Pressure - High (Bypass)	1	1, 2, 3, 4*, 5*	39
g. HPCS System Flow Rate - Low (Bypass)	1	1, 2, 3, 4*, 5*	39
h. Manual Initiation <sup>##</sup>	1	1, 2, 3, 4*, 5*	36

	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM OPERABLE CHANNELS</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
D. <u>LOSS OF POWER</u>					
1. 4.16 kv Emergency Bus Undervoltage <sup>###</sup> (Loss of Voltage)	2/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	37
2. 4.16 kv Emergency Bus Undervoltage <sup>###</sup> (Degraded Voltage)	2/bus	2/bus	2/bus	1, 2, 3, 4**, 5**	38

- (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 actuates the associated division diesel generator.
- (c) Provides signal to close HPCS pump injection valve only.
- (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 100 psig.
- ## The injection function of Drywell Pressure - High and Manual Initiation are not required to be OPERABLE with indicated reactor vessel water level on the wide range instrument greater than the Level 8 setpoint coincident with the reactor pressure less than 450 psig.
- ### The Loss of Voltage and Degraded Voltage functions are common to Divisions 1, 2 and 3.

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:
- With one channel inoperable, place the inoperable channel in the tripped condition within one hour or declare the associated system inoperable.
  - 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 requirement, declare the associated ADS trip system or ECCS inoperable.
- ACTION 32 - 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 33 - 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 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, <sup>the inoperable channel(s)</sup>
- ~~For one trip system, place that trip system in the tripped condition within one hour or declare the HPCS system inoperable.~~
  - ~~For both trip systems, declare the HPCS system inoperable.~~
- ACTION 35 - 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 align the HPCS system to take suction from the suppression pool, or 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.
- ACTION 38 - With the number of OPERABLE channels 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.
- ACTION 39 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, 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.