

TABLE 3.5-1

INSTRUMENTS OPERATING CONDITIONS

Functional Unit	(A) Minimum Operable Channels	(B) Minimum Degree of Redundancy	(C) Operator Action if Conditions of Column A Cannot be Met
A. <u>Reactor Protection System</u>			
1. Manual pushbutton	1	0	Maintain hot shutdown
2. Power range instrument channel	3(a)	1(a)	Maintain hot shutdown
3. Intermediate range instrument channels	1	0	Maintain hot shutdown (b)
4. Source range instrument channels	1	0	Maintain hot shutdown (c)
5. Reactor coolant temperature instrument channels	2	1	Maintain hot shutdown
6. Pressure-temperature instrument channels	2	1	Maintain hot shutdown
7. Flux/imbalance/flow instrument channels	2	1	Maintain hot shutdown
8. Reactor coolant pressure			
a. High reactor coolant pressure instrument channels	2	1	Maintain hot shutdown
b. Low reactor coolant pressure instrument channels	2	1	Maintain hot shutdown

TABLE 3.5-1 Continued

INSTRUMENTS OPERATING CONDITIONS

Functional Unit	(A) Minimum Operable Channels	(B) Minimum Degree of Redundancy	(C) Operator Action if Conditions of Column A Cannot be Met
A. <u>Reactor Protection System (con't.)</u>			
9. Power/number of pumps instrument channels	2	1	Maintain hot shutdown
10. High reactor building pressure channels	2	1	Maintain hot shutdown
(a) For channel testing, calibration, or maintenance, the minimum number of operable channels may be two and a degree of redundancy of one for a maximum of four hours.			
(b) When 2 of 4 power range instrument channels are greater than 10 percent full power, hot shutdown is not required.			
(c) When 1 of 2 intermediate range instrument channels is greater than 10^{-10} amps, or 2 of 4 power range instrument channels are greater than 10 percent full power, hot shutdown is not required.			
B. <u>Other Reactor Trips</u>			
1. Loss of Feedwater	2(a)	1(a)	Maintain less than 7% indicated power
2. Turbine Trip	2(b)	1(b)	Maintain less than 20% indicated power
(a) Bypass of the feedwater pump trip signal may be placed in effect when indicated reactor power is less than 7%. The bypass will be removed when reactor power is raised above 7%.			
(b) The main turbine trip bypass may be placed in effect when indicated power is less than 20%. The bypass will be removed when the reactor power is increased above 20%.			

TABLE 3.5-1 Continued

INSTRUMENTS OPERATING CONDITIONS

Functional Unit	(A) Minimum Operable Analog Channels	(B) Minimum Degree of Redundancy	(C) Operator Action if Conditions of Column A and B Cannot be Met(a)
C. <u>Engineered Safety Features</u>			
1. Makeup and Purification System (high pressure injection mode)			
a. Reactor Coolant Pressure Instrument Channels	2	1	Hot Shutdown
b. Reactor Building 4 psig Instrument Channels	2	1	Hot Shutdown
c. Manual Pushbutton (b)	2	1	Hot Shutdown
2. Decay Heat System (low pressure injection mode)			
a. Reactor Coolant Pressure Instrument Channels	2	1	Hot Shutdown
b. Reactor Building 4 psig Instrument Channels	2	1	Hot Shutdown
c. Reactor Coolant Pressure D.H. Valve Interlock Bistable	1	0	Open circuit breaker at MCC for DH-V1 or DH-V2 with the affected valve in the closed position or maintain R.C. pressure less than 350 psig.

TABLE 3.5-1 Continued

INSTRUMENTS OPERATING CONDITIONS

Functional Unit	(A) Minimum Operable Analog Channels	(B) Minimum Degree of Redundancy	(C) Operator Action if Conditions of Column A and B Cannot be Met(a)
C. <u>Engineered Safety Features con't.</u>			
3. Reactor Building Isolation and Reactor Building Cooling System			
a. Reactor Building 4 psig Instrument Channel	2	1	Hot Shutdown
b. Manual Pushbutton	2	1	Hot Shutdown
c. RPS Trip	2	1	Hot Shutdown
d. Reactor Building 30 psig	2	1	Hot Shutdown
e. RCS Pressure less than 1600 psig	2	1	Hot Shutdown
4. Reactor Building Spray System			
a. Reactor Building 30 psig Instrument Channel	2(d)	1	Hot Shutdown
b. Spray Pump Manual Switches (c)	2	1	Hot Shutdown
5. 4.16KV ES Bus Undervoltage Relays			
a. Degraded Grid Voltage Relays	2	1	(e)
b. Loss of Voltage Relay	2	1	(e)
6. Emergency Feedwater System			
Loss of Feedwater or RC Pump (all four) - Start Motor and Turbine Pumps	2	1	Hot Shutdown

TABLE 3.5-1 Continued

INSTRUMENTS OPERATING CONDITIONS

Functional Unit

C. Engineered Safety Features (con't.)

- (a) If minimum conditions are not met within 24 hours, the unit shall then be placed in a cold shutdown condition.
- (b) Also initiates Low Pressure injection.
- (c) Spray valves opened by manual pushbutton listed in item 3 above.
- (d) Two out of three switches in each actuation channel operable.
- (e) If a relay fails in the untripped state, it shall be placed in a tripped state within 12 hours to obtain a degree of redundancy of 1. The relay may be removed from the tripped state for up to 2 hours for functional testing pursuant to Table 4.1-1.