

#75760#

TABLE 3.5-2

ENGINEERED SAFETY FEATURES ACTUATION

<u>NO.</u>	<u>FUNCTIONAL UNIT</u>	<u>1</u> <u>MIN.</u> <u>OPERABLE</u> <u>CHANNELS</u>	<u>2</u> <u>MIN.</u> <u>DEGREE</u> <u>OF</u> <u>REDUN-</u> <u>DANCY</u>	<u>3</u> <u>OPERATOR ACTION</u> <u>IF CONDITIONS OF</u> <u>COLUMN 1 OR 2</u> <u>CANNOT BE MET</u>
1.	SAFETY INJECTION			
1.1	Manual	1	0	Cold Shutdown
1.2	High Containment Pressure	2	1	Cold Shutdown
1.3	High Differential Pressure between any Steam Line and the Steam Line Header	2	1	Cold Shutdown
1.4	Pressurizer Low Pressure*	2	1	Cold Shutdown
1.5	High Steam Flow in 2/3 Steam Lines with Low T_{avg} or Low Steam Line Pressure	1/line in each of 2 lines	1	Cold Shutdown
2.	CONTAINMENT SPRAY			
2.1	High Containment Pressure and High-High Containment Pressure (coincident)	2 per set	1/set	Cold Shutdown
3.	AUXILIARY FEEDWATER			
3.1	Low-Low Steam Generator Level	2	1	Hot Shutdown
3.2	Loss of Power			
	a. 4.16kV Emergency Bus undervoltage (Loss of Voltage)	2	0	Cold Shutdown
	b. 480 v Load Centers (2 instantaneous relays per load center)**	1	0	Cold Shutdown
	c. 480 v Load Centers (2 inverse time relays per load center)**	1	0	Cold Shutdown

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TABLE 3.5-2 (Cont'd.)

ENGINEERED SAFETY FEATURES ACTUATION

<u>NO.</u>	<u>FUNCTIONAL UNIT</u>	1	2	3
		MIN. OPERABLE CHANNELS	MIN. DEGREE OF REDUN- DANCY	OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
3.3	Safety Injection	(---See 1 above---)		
3.4	Trip of both Main Feedwater Pump Breakers	2	0	Cold Shutdown

* This signal may be manually bypassed, when the reactor is shutdown and pressure is below 2000 psig.

** These items do not apply on Unit 3 until after implementation of PC/M 79-116 and on Unit 4 until after implementation of PC/M 80-44.

TABLE 3.5-4 (Sheet 1)

ENGINEERED SAFETY FEATURE SETPOINTS

<u>No.</u>	<u>FUNCTIONAL UNIT</u>	<u>CHANNEL ACTION</u>	<u>SET POINT</u>
1.	High Containment Pressure	Safety Injection Containment Spray* Steam Line Isolation* Containment Isolation*	≤ 6 psig
2.	High-High Containment Pressure	See No. 1	≤ 30 psig
3.	Pressurizer Low Pressure	Safety Injection	≥ 1715 psig
4.	High Steam Line Differential Pressure (2/3 between any header and any line)	Safety Injection	≤ 150 psi
5.	High Steam Line Flow (2/3 lines)	Safety Injection Steam Line Isolation	d/p for 3.84×10^6 lb/hr, 770 psig, 100% RP d/p for 0.64×10^6 lb/hr, 1005 psig, 0% RP d/p linear with 1st stg. press., 0-100% RP
	Coincident with:		
	Low Steam Line Pressure, or Low T_{avg}		> 600 psig ≥ 531 F
6.	Low-Low Steam Generator Level	Auxiliary Feedwater	$\geq 15\%$ narrow range
7a.	Loss of Voltage (either 4 KV bus)	Auxiliary Feedwater	N.A.

* High and High-High coincident

TABLE 3.5-4 (Sheet 2)

ENGINEERED SAFETY FEATURE SETPOINTS

<u>No.</u>	<u>FUNCTIONAL UNIT</u>	<u>CHANNEL ACTION</u>	<u>SET POINT</u>
7b.	Degraded Voltage ** (480 Volt Load Center)	Auxiliary Feedwater	All with tolerance of ± 5 volts.
	<u>Load Center</u>	<u>Instantaneous Setpoint</u>	<u>Delay Setpoint</u>
	3A**	431V (10 sec. delay)#	419V (60 sec ± 30 sec. delay)
	3B**	411V (10 sec. delay)#	426V (60 sec ± 30 sec. delay)
	3C**	412V (10 sec. delay)#	427V (60 sec ± 30 sec. delay)
	3D**	423V (10 sec. delay)#	436V (60 sec ± 30 sec. delay)
	4A**	410V (10 sec. delay)#	427V (60 sec ± 30 sec. delay)
	4B**	409V (10 sec. delay)#	424V (60 sec ± 30 sec. delay)
	4C**	396V (10 sec. delay)#	413V (60 sec ± 30 sec. delay)
	4D**	398V (10 sec. delay)#	412V (60 sec ± 30 sec. delay)
8.	Safety Injection	Auxiliary Feedwater	All SI setpoints
9.	Trip of both Main Feedwater Pump Breakers	Auxiliary Feedwater	N.A.

** These items do not apply on Unit 3 until after implementation of PC/M 79-116 and on Unit 4 until after implementation of PC/M 80-44.

Channel action is subject to condition being concurrent with Safety Injection signal.

TABLE 4.1-1 SHEET 3

<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Test</u>	<u>Remarks</u>
23. Environmental Radiological Monitors	N.A.	A(1)	M(1)	(1) Flow
24. Logic Channels	N.A.	N.A.	M†	
25. Emer. Portable Survey Instruments	N.A.	A	M	
26. Seismograph	N.A.	N.A.	Q	Make trace. Test battery (change semi-annually)
27. Auxiliary Feedwater Flow Rate	M†	R	N.A.	
28. RCS Subcooling Margin Monitor	M†	R	N.A.	
29. PORV Position Indicator (Primary Detector)	M†	N.A.	R	Check consists of monitoring
30. PORV Block Valve Position Indicator	M†	N.A.	R	indicated position and verifying
31. Safety Valve Position Indicator	M†	R	N.A.	by observation of related parameters.
32. a. Loss of Voltage (both 4kv bussess)	N.A.	N.A.	R	For AFW actuation at power only
b. Undervoltage (both 4KV busses and 480 volt Load Centers)**	S†	R	M†	
33. Trip of both Main Feedwater Pump Breakers	N.A.	N.A.	R	For AFW actuation at power only

** This item does not apply on Unit 3 until after implementation of PC/M 79-116 and on Unit 4 until after implementation of PC/M 80-44.



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