TABLE 3.1.1
REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENTS

Minimum Number Operable Inst. Channels per Trip (1) System	Trip Function	Trip Level Setting	Modes in which Function Must be Operable: Refuel (6)	Startup/Hot Standby	Run	Action*
1	Mode Switch in Shutdown		X	X	X	A
1	Manual Scram		X	X	X	A
	IRM					
3	High Flux	(LT/E) 120/125 of Full Scale	X	X	N/A	A
3	Inoperative		X	X	N/A	A
	APRM					
2	High Flux	Specification 2.1.A.1	X	X(8)	X	A or B
2	Inoperative **		X	X(8)	X	A or B
2	High Flux (15% Scram)	Specification 2.1.A.2	X	X	N/A	A
2	High Reactor Pressure	(LT/E) 1060 psig	X(10)	X	X	A
2	High Drywell Pressure	(LT/E) 2 psig	X(7), X(9)	X(7), (9)	X(9)	A
2	Reactor Low Water Level	(GT/E) 1 inch***	X	X	X	A
2 (Per Bank)	High Water Level in Scram Discharge Volume (Thermal and dP Switch)	(LT/E) 40 inches above bottom of the Instrument Volume	X(2)	X	X	A or D
2	Turbine Condenser Low Vacuum	(GT/E) 21 in. Hg Vacuum	X(3)	X(3)	X	A or C
2	Main Steam Line High Radiation	(LT/E) 3 X Normal Full Power Background	X	X	X(11)	A or C
4(5)	Main Steam Line Isolation valve Closure	(LT/E) 10% Valve Closure	X(3)	X(3)	X	A or C
2	Generator Load Rejection, turbine control valve trip system oil pressure low	(GT/E) 460 psig****	X(4)	X(4)	X(4)	A or C
2	Turbine Stop Valve Closure	(LT/E) 10% Valve Closure	X(4)	X(4)	X(4)	A or C
2	Turbine Control - Loss of Control Oil Pressure	(GT/E) 900 psig	X(4)	X(4)	X(4)	A or C

Notes: (LT/E) = Less than or equal to.
(GT/E) = Greater than or equal to.
(Notes continue on next two pages)

3.1 LIMITING CONDITION FOR OPERATION BASES (Cont'd.)

Loss of condenser vacuum occurs when the condenser can no longer handle the heat input. Loss of condenser vacuum initiates a closure of the turbine stop valves and turbine bypass valves which eliminates the heat input to the condenser. Closure of the turbine stop and bypass valves causes a pressure transient, neutron flux rise, and an increase in surface heat flux. To prevent the clad safety limit from being exceeded if this occurs, a reactor scram occurs on turbine stop valve closure. The turbine stop valve closure scram function alone is adequate to prevent the clad safety limit from being exceeded in the event of a turbine trip transient with bypass closure. (Ref. Section 4.4.3 SAR) The condenser low vacuum scram is a backup to the stop valve closure scram and causes a scram before the stop valves are closed and thus the resulting transient is less severe. Scram occurs at 21" Hg vacuum, stop valve closure occurs at 20" Hg vacuum, and bypass closure at 7" Hg vacuum.

High radiation levels in the main steam line tunnel above that due to the normal nitrogen and oxygen radioactivity is an indication of leaking fuel. A scram is initiated whenever such radiation level exceeds 3 times full power background for all condition except for greater than 20% power with hydrogen being injected during which the Main Steam Line trip setting is less than or equal to 3 times full power background with hydrogen addition (See Note 15 of Table 3.1.1). The purpose of this scram is to reduce the source of such radiation to the extent necessary to prevent excessive turbine contamination. Discharge of excessive amounts of radioactivity to the site environs is prevented by the air ejector off-gas monitors which cause an isolation of the main condenser off-gas line provided the limit specified in Specification 3.8 is exceeded.

The main steam line isolation valve closure scram is set to scram when the isolation valves are 10% closed from full open. This scram anticipates the pressure and flux transient, which would occur when the valves close. By scramming at this setting, the resultant transient is insignificant.

A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status. (Ref. Section 7.7.1.2 SAR).

The manual scram function is active in all modes, thus providing for a manual means of rapidly inserting control rods during all modes of reactor operation.

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REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENTS

Minimum Number Operable Inst. channels per Trip (1) System	Trip Function	Trip Level Setting	Modes in which Function Must be Operable: Refuel (6)	Startup/Hot Standby	Run	Action*
1	Mode Switch in Shutdown		X	X	X	A
1	Manual Scram		X	X	X	A
	IRM					
3	High Flux	(LT/E) 120/125 of Full Scale	X	X	N/A	A
3	Inoperative		X	X	N/A	A
	APRM					
2	High Flux	Specification 2.1.A.1	X	X(8)	X	A or B
2	Inoperative **		X	X(8)	X	A or B
2	High Flux (15% Scram)	Specification 2.1.A.2	X	X	N/A	A
2	High Reactor Pressure	(LT/E) 1060 psig	X(10)	X	X	A
2	High Drywell Pressure	(LT/E) 2 psig	X(7), X(9)	X(7), (9)	X(9)	A
2	Reactor Low Water Level	(GT/E) 1 inch***	X	X	X	A
2 (Per Bank)	High Water Level In Scram Discharge Volume (Float and dP Switch)	(LT/E) 37.25 inches above bottom of the Instrument Volume	X(2)	X	X	A or D
2	Turbine Condenser Low Vacuum	(GT/E) 21 in. Hg Vacuum	X(3)	X(3)	X	A or C
2	Main Steam Line High Radiation	(LT/E) 3 X Normal Full Power Background	X	X	X	A or C
4(5)	Main Steam Line Isolation Valve Closure	(LT/E) 10% Valve Closure	X(3)	X(3)	X	A or C
2	Generator Load Rejection, turbine control valve trip system oil pressure low	(GT/E) 460 psig****	X(4)	X(4)	X(4)	A or C
2	Turbine Stop Valve Closure	(LT/E) 10% Valve Closure	X(4)	X(4)	X(4)	A or C
2	Turbine Control - Loss of Control Oil Pressure	(GT/E) 900 psig	X(4)	X(4)	X(4)	A or C

Notes: (LT/E) = Less than or equal to.
(GT/E) = Greater than or equal to.
(Notes continue on next two pages)

3.1 LIMITING CONDITION FOR OPERATION BASES (Cont'd.)

there is sufficient volume in the piping to accommodate the scram without impairment of the scram times or the amount of insertion of the control rods. This function shuts the reactor down while sufficient volume remains to accommodate the discharged water and precludes the situation in which a scram would be required but not be able to perform its function properly.

Loss of condenser vacuum occurs when the condenser can no longer handle the heat input. Loss of condenser vacuum initiates a closure of the turbine stop valves and turbine bypass valves which eliminates the heat input to the condenser. Closure of the turbine stop and bypass valves causes a pressure transient, neutron flux rise, and an increase in surface heat flux. To prevent the clad safety limit from being exceeded if this occurs, a reactor scram occurs on turbine stop valve closure. The turbine stop valve closure scram function alone is adequate to prevent the clad safety limit from being exceeded in the event of a turbine trip transient with bypass closure. The condenser low vacuum scram is a backup to the stop valve closure scram and causes a scram before the stop valves are closed and thus the resulting transient is less severe. Scram occurs at 21" Hg vacuum, stop valve closure occurs at 20" Hg vacuum, and bypass closure at 7" Hg vacuum.

High radiation levels in the main steam line tunnel above that due to the normal nitrogen and oxygen radioactivity is an indication of leaking fuel. A scram is initiated whenever such radiation level exceeds three times normal background. The purpose of this scram is to reduce the source of such radiation to the extent necessary to prevent excessive turbine contamination. Discharge of excessive amounts of radioactivity to the site environs is prevented by the air ejector off gas monitors which cause an isolation of the main condenser offgas line provided the limit specified in Specification 3.8 is exceeded.

The main steam line isolation valve closure scram is set to scram when the isolation valves are 10% closed from full open. This scram anticipates the pressure and flux transient, which would occur when the valves close. By scramming at this setting, the resultant transient is insignificant.

A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status. (Ref. Section 7.7.1.2 SAR).

The manual scram function is active in all modes, thus providing for a manual means of rapidly inserting control rods during all modes of reactor operation.