2.1 (cont'd)

2. Reactor Water Low Level Scram Trip Setting

Reactor low water level scram setting shall be ≥177 in. above the top of the active fuel (TAF) at normal operating conditions.

3. Turbine Stop Valve Closure Scram Trip Setting

Turbine stop valve scram shall be ≤10 percent valve closure from full open when the reactor is at or above 29% of rated power.

4. Turbine Control Valve Fast Closure Scram Trip Setting

Turbine control valve fast closure scram control oil pressure shall be set at 500 <P <850 psig.

5. Main Steam Line Isolation Valve Closure Scram Trip Setting

Main steam line isolation valve closure scram shall be ≤15 percent valve closure from full open.

6. Main Steam Line Isolation Valve Closure on Low Pressure

When in the run mode main steam line low pressure initiation of main steam line isolation valve closure shall be ≥825 psig.

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2.1 BASES (Cont'd)

3. Turbine Stop Valve Closure Scram Trip Settings

The turbine stop valve closure scram trip anticipates the pressure, neutron flux and heat flux increase that could result from rapid closure of the turbine stop valves. With a scram trip setting of ≤10 percent of valve closure from full open, the resultant increase in surface heat flux is limited such that MCPR remains along the Safety Limit even during the worst case transient that assumes the turbine bypass is closed. This scram is bypassed when reactor power is below 29% of rated, as measured by turbine first stage pressure, consistent with the safety analysis discussed in Reference 1.

4. Turbine Control Valve Fast Closure Scram Trip Setting

This turbine control valve fast closure scram anticipates the pressure, neutron flux, and heat flux increase that could result from fast closure of the turbine control valves due to load rejection exceeding the capability of the turbine bypass. The Reactor Protection System initiates a scram when fast closure of the control valves is initiated by the fast acting solenoid valves. This is achieved by the action of the fast acting solenoid valves in rapidly reducing hydraulic control oil pressure at the main turbine control valve actuator disc dump valves. This loss of pressure is sensed by pressure switches whose contacts form the one-out-of-two-twice logic input to the reactor protection system. This trip setting, a nominally 50 percent greater closure time and a different valve characteristic from that of the turbine stop valve, combine to produce transients very similar and no more severe than for the stop valve. No significant change in MCPR occurs. Relevant transient analyses are discussed in Section 14.5 of the Final Safety Analysis Report and Reference 1. This scram is bypassed when reactor power is below 29 percent of rated, as measured by turbine first stage pressure.

5. Main Steam Line Isolation Valve Closure Scram Trip Setting

The low pressure isolation of the main steam lines at 825 psig was provided to give protection against rapid reactor depressurization and the resulting rapid cooldown of the vessel. Advantage was taken of the scram feature which occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low reactor pressure does not occur, thus providing protection for the fuel cladding integrity safety limit. Operation of the reactor at pressures lower than 825 psig requires that the Reactor Mode Switch be in the Startup position where protection of the fuel cladding integrity safety limit is provided by the APRM high neutron flux scram and the IRM. Thus, the combination of main stream line low pressure isolation and isolation valve closure scram assures the availability of neutron flux scram protection over the entire range of applicability of the fuel cladding integrity safety limit. In addition, the isolation valve closure scram anticipates the pressure and flux transients which occur during normal or inadvertent isolation valve closure. With the scrams set at ≤15 percent valve closure, there is no increase in neutron flux.

6. Main Steam Line Isolation Valve Closure on Low Pressure

The low pressure isolation minimum limit at 825 psig was provided to give protection against fast reactor depressurization and the resulting rapid cooldown of the vessel. Advantage was taken of the scram feature which occurs when the main steam line isolation valves are closed to provide for reactor shutdown so that operation at pressures lower than those specified in the thermal hydraulic safety limit does not occur, although operation at a pressure lower than 825 psig would not necessarily constitute an unsafe condition.

TABLE 3.1-1 (cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENTS

Minimum No. of Operable Instrument Channels Per Trip System (Notes 1 and 2)	Trip Function	Trip Level Setting	Mode in Which Function Must Be Operable: Refuel (Note 7)	Startup	Run	Total Number of Instrument Channels Provided by Design for Both Trip Systems	Action (Note 3)
2	Reactor High Pressure	≤1080 psig	X (Note 9)	X	X	4	A
2	Drywell High Pressure (Note 16)	≤2.7 psig	X (Note 8)	X (Note 8)	X	4	A
2	Reactor Low Water Level (Note 16)	≥177 in. above TAF	X	X	X	4	A
3	High Water Level in Scram Discharge Volume	≤34.5 gallons per Instrument Volume	X (Note 4)	X	X	8	A
4	Main Steam Line Isolation Valve Closure	≤15% valve closure			X (Note 6)	8	A
2	Turbine Control Valve Fast Closure	500 < P < 850 psig Control oil pressure between fast closure solenoid and disc dump valve			X (Note 5)	4	A or C
4	Turbine Stop Valve Closure	≤10% valve closure			X (Notes 5 & 6)	8	A or C

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