TABLE 3.2.2 (CONT'D)

REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Setting	Required Action When Minimum Conditions for Operation are not Met (Note 2)
2	Main Steam Line Tunnel Temperature	$\leq$ 212°F	Note 3
1	Time Delay (13A-K41) (13A-K42)	$\leq$ 35 minutes	Note 3
2 per set of 4	High Steam Line Space Temperature	$\leq$ 212°F	Note 3
1	High Steam Line d/p (Steam Line Break)	$\leq$ 195 inches of water	Note 3
2 (Note 4)	High Reactor Water Level	Same as HPCI	Note 3
4 (Note 5)	Low Steam Supply Pressure	$\geq$ 50 psig	Note 3
1	Gas Power Monitor	--	Note 3
1	Trip System Logic	--	Note 3
1	Time Delay (13A-K7) (13A-K31)	3$\leq$ t $\leq$ 7 secs.	Note 3

TABLE 3.2.2 NOTES

1. The main steam line low pressure need be available only in the "Run" mode.

2. If the minimum number of operable instrument channels is not available for one trip system, that trip system shall be tripped. If the minimum number of operable instrument channels is not available for both trip systems, the appropriate actions listed below shall be taken:

   A. Initiate an orderly shutdown and have reactor in the cold shutdown condition in 24 hours.

   B. Initiate an orderly load reduction and have reactor in "Hot Standby" within 8 hours.

3. Close isolation valves in system and comply with Specification 3.5.

4. One trip system arranged in a two-out-of-two logic.

5. One trip system arranged in a one-out-of-two twice logic.

6. The main steam line high flow is available only in the "Refuel", "Shutdown", and "Startup" modes.

7. This signal also automatically closes the mechanical vacuum pump suction line isolation valves.

8. Channel shared by the Reactor Protection and Primary Containment Isolation Systems.

9. An alarm setting of 1.5 times normal background at rated power shall be established to alert the operator to abnormal radiation levels in the primary coolant.

10. A key lock switch is provided to permit the bypass of this trip function to enable plant startup and shutdown when the condenser vacuum is greater than 12 inches Hg absolute provided that both turbine stop and bypass valves are closed.

3.2 (Continued)

High radiation monitors in the main steam line tunnel have been provided to detect gross fuel failure resulting from a control rod drop accident. This instrumentation causes closure of Group 1 valves, the only valves required to close for this accident. With the established setting of 3 times normal background and main steam line isolation valve closure, fission product release is limited so that 10 CFR 100 limits are not exceeded for the control rod drop accident and 10 CFR 20 limits are not exceeded for gross fuel failure during reactor operations. With an alarm setting of 1.5 times normal background, the operator is alerted to possible gross fuel failure or abnormal fission product releases from failed fuel due to transient reactor operation.

Pressure instrumentation is provided which trips when reactor pressure drops below 850 psig. A trip of this instrumentation results in closure of Group 1 isolation valves. In the refuel, shutdown, and startup modes, this trip function is provided when main steam line flow exceeds 40% of rated capacity. This function is provided primarily to provide protection against a pressure regulator malfunction which would cause the control and/or bypass valves to open. With the trip set at 850 psig, inventory loss is limited so that fuel is not uncovered and peak clad temperatures are much less than 1295°F; thus, there is no release of fission products other than those in the reactor water.

Low condenser vaccuum has been added as a trip of the Group 1 isolation valves to prevent release of radioactive gases from the primary coolant through condenser. The set point of 12 inches of mercury absolute was selected to provide sufficient margin to assure retention capability in the condenser when gas flow is stopped and sufficient margin below normal operating values.

The HPCI and/or RCIC high flow, steam supply pressure, and temperature instrumentation is provided to detect a break in the HPCI and/or RCIC piping. Tripping of this instrumentation results in actuation of HPCI and/or RCIC isolation valves; i.e., Group 6 valves. A time delay has been incorporated into the RCIC steam flow trip logic to prevent the system from inadvertantly isolating due to pressure spikes which may occur on startup. The trip settings are such that core uncovering is prevented and fission product release is within limits.

The instrumentation which initiates ECCS action is arranged in a dual channel system. As for other vital instrumentation arranged in this fashion, the specification preserves the effectiveness of the system even during periods when maintenance or testing is being performed. Permanently installed circuits and equipment may be used to trip instrument channels. In the non-fail safe systems which require energizing the circuitry, tripping an instrument channel may take the form of providing the required relay function by use of permanently installed circuits. This is accomplished in some cases by closing logic circuits with the aid of the permanently installed test jacks or other circuitry which would be installed for this purpose.

4.3 LIMITING CONDITIONS FOR OPERATION

5. Control rods shall not be withdrawn for startup or refueling unless at least two source range channels have an observed count rate greater than or equal to three counts per second.

6. During operation with limiting control rod patterns either:

   (a) Both RBM channels shall be operable; or

   (b) Control rod withdrawal shall be blocked; or

   (c) The operating power level shall be limited so that the MCPR will remain above the fuel cladding integrity safety limit assuming a single error that resuls in complete withdrawal of any single operable control rod.

4.3 SURVEILLANCE REQUIREMENTS

5. Prior to control rod withdrawal for startup or during refueling, verification shall be made that at least two source range channels have an observed count rate of at least three counts per second.

6. When a limiting control rod pattern exists, an instrument functional test of the RBM shall be performed prior to withdrawal of the designated rod(s) and daily thereafter.

7. The scram discharge volume drain and vent valves shall be verified open at least once per month. These valves may be closed intermittently for testing under administrative control.

5. The Source Range Monitor (SRM) system has no scram functions. It does provide the operator with a visual indication of neutron level. The consequences of reactivity accidents are a function of the initial neutron flux. The requirement of at least three counts per second assures that any transient, should it occur, begins at or above the initial value of 10^{-8} of rated power used in the anlyses of transients from cold conditions. One operable SRM channel is adequate to monitor the approach to criticality, therefore, two operable SRM's are specified for added conservatism.

6. The Rod Block Monitor (RBM) is designed to automatically prevent fuel damage in the event of erroneous rod withdrawal from locations of high power density during high power level operation. During reactor operation with certain limiting control rod patterns, the withdrawal of a designated single control rod could result in one or more fuel rods with MCPR less than the fuel cladding integrity safety limit. During use of such patterns, it is judged that testing of the RBM system prior to withdrawal of such rods will provide added assurance that improper withdrawal does not occur. It is the responsibility of the Nuclear Engineer to identify these limiting patterns and the designated rods either when the patterns are initially established or as they develop due to the occurrence of inoperable control rods.

7. Periodic verification that the Scram Discharge Volume (SDV) drain and vent valves are maintained in the open position provides assurance that the SDV will be available to accept the water displaced from the control rod drives in the event of a scram.