

The four reactor protection channels were provided with key operated bypass switches to allow on-line testing or maintenance on only one channel at a time during power operation. Each channel is provided alarm and lights to indicate when that channel is bypassed. There will be one reactor protection system bypass switch key permitted in the control room.

Each reactor protection channel key operated shutdown bypass switch is provided with alarm and lights to indicate when the shutdown bypass switch is being used.

Power is normally supplied to the control rod drive mechanisms from two separate parallel 460 volt sources. Redundant trip devices are employed in each of these sources. The AC Trip Breaker is one means to trip a source. The redundant means is a parallel configuration consisting of two DC Trip Breakers and five SCR power supplies. The SCRs are turned off by the "electronic trip relays."

Diverse trip features are provided on each breaker. These are the undervoltage relay and shunt trip attachment. Each trip feature is tested separately. Failure of one breaker trip feature does not result in loss of redundancy and a reasonable time limit is provided for corrective action.

Failure in the untripped state of a breaker or SCR electronic trip results in loss of redundancy and prompt action is required. Failure of both trip features on one breaker is considered failure of the breaker.

Power may be restored through the failed breaker (SCRs) for a limited time to perform required testing.

The 4.16kv ES Bus Undervoltage Relays detect a degraded voltage or Loss of Voltage on the associated ES Bus. Detection of low voltage will separate the ES bus from the offsite power, initiate load shedding and start the associated diesel generator. The relays do not function during design basis events where acceptable offsite voltage is available. If the voltage relays on either train are not operable, the time permitted for repair is consistent with other safety related equipment. If both trains are affected then shutdown is initiated in accordance with Specification 3.0.1 since automatic response of the diesel generator is required to assure completion of the safety function if offsite power is degraded or lost.

Automatic initiation of EFW is provided on loss of all reactor coolant pumps, loss of both main feedwater pumps, low OTSG level, and high reactor building pressure. High reactor building pressure would be indicative of a loss of coolant accident, main steam line or feedwater line break inside the reactor building. Operability of these instruments is required in order to assure that the EFW system will actuate and control at the appropriate OTSG level without operator action for those events where timely initiation of EFW is required.

Automatic isolation of main feedwater is provided on low OTSG pressure in order to maintain appropriate RCS cooling (minimize overcooling) following a loss of OTSG integrity and minimize the energy released to the Reactor Building atmosphere.

TABLE 3.5-1 (Continued)

INSTRUMENTS OPERATING CONDITIONS

Functional Unit

C. Engineered Safety Features (cont'd)

- (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) The operability requirement for the undervoltage relay, its associated auxiliary relay, and the timer
 1. If the minimum conditions are not met on one of the 4.16kv ES Buses, restore the function to operable status within 72 hours or be in hot shutdown within an additional 6 hours.
 2. If the minimum conditions are not met on either 4.16kv ES Bus then Specification 3.0.1 applies.
- (f) Discontinue Reactor Building purging and close AHV-1A, 1B, 1C, and 1D. Note: (a) above does not apply if AHV-1A, 1B, 1C, and 1D are closed.