ELECTRICAL POWER SYSTEMS

PRIMARY CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION

3.8.4.2 All primary containment penetration conductor overcurrent protective devices shown in Table 3.8.4.2-1 shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

a. With one or more of the primary containment penetration conductor overcurrent protective devices shown in Table 3.8.4.2-1 inoperable, declare the affected system or component inoperable and apply the appropriate ACTION statement for the affected system and:

   1. For 6.9 kV circuit breakers, de-energize the 6.9 kV circuit(s) by tripping the associated redundant circuit breaker(s) within 72 hours and verify the redundant circuit breaker to be tripped at least once per 7 days thereafter.

   2. For 480 volt circuit breakers, remove the inoperable circuit breaker(s) from service by removing the fuses within 72 hours and verify the fuses associated with the inoperable breaker(s) to be removed at least once per 7 days thereafter.

   Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. The provisions of Specification 3.0.4 are not applicable to overcurrent devices in 6.9 kV circuits which have their redundant circuit breakers tripped or to 480 volt circuits which have the fuses associated with the inoperable circuit breaker removed.

SURVEILLANCE REQUIREMENTS

4.8.4.2 Each of the primary containment penetration conductor overcurrent protective devices shown in Table 3.8.4.2-1 shall be demonstrated OPERABLE:

a. At least once per 18 months:

   1. By verifying that the medium voltage, 6.9 kV, circuit breakers are OPERABLE by selecting, on a rotating basis, at least 10% of the circuit breakers of each voltage level and performing:

      a) A CHANNEL CALIBRATION of the associated protective relays, and

      b) An integrated system functional test which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and overcurrent control circuits function as designed.

      c) For each circuit breaker found inoperable during these functional tests, an additional representative sample of at least 10% of all the circuit breakers of the inoperable type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.

SURVEILLANCE REQUIREMENTS (Continued)

2. By selecting and functionally testing a representative sample of at least 10% of each type of lower voltage circuit breakers. Circuit breakers selected for functional testing shall be selected on a rotating basis. Testing of these circuit breakers shall consist of injecting a current with a value equal to 300% of the pickup of the longtime delay trip element and 150% of the pickup of the short time delay trip element, and verifying that the circuit breaker operates within the time delay bandwidth for that current specified by the manufacturer. The instantaneous element shall be tested by injecting a current equal to ±20% of the pickup value of the element and verifying that the circuit breaker trips instantaneously with no intentional time delay. Molded case circuit breaker testing shall also follow this procedure except that generally no more than two trip elements, time delay, and instantaneous, will be involved. Circuit breakers found inoperable during functional testing shall be restored to OPERABLE status prior to resuming operation. For each circuit breaker found inoperable during these functional tests, an additional representative sample of at least 10% of all the circuit breakers of the inoperable type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.

~~3. By selecting and functionally testing a representative sample of each type of fuse on a rotating basis. Each representative sample of fuses shall include at least 10% of all fuses of that type. The functional test shall consist of a non-destructive resistance measurement test which demonstrates that the fuse meets its manufacturer's design criteria. Fuses found inoperable during these functional testing shall be replaced with OPERABLE fuses prior to resuming operation. For each fuse found inoperable during these functional tests, an additional representative sample of at least 10% of all fuses of that type shall be functionally tested until no more failures are found or all fuses of that type have been functionally tested.~~

b. At least once per 60 months by subjecting each circuit breaker to an inspection and preventive maintenance in accordance with procedures prepared in conjunction with its manufacturer's recommendations.

TABLE 3.8.4.2-1

PRIMARY CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

EQUIPMENT	PRIMARY PROTECTION		BACKUP PROTECTION	
a. 6900V Circuit Breakers				
RRC-P-1A	E-CB-RRA (Relay)		E-CB-S5 (Relay)	E-CB-N2/5 (Relay)
RRC-P-1B	E-CB-RRB (Relay)		E-CB-S6 (Relay)	E-CB-N2/6 (Relay)
b. 480VAC Fused Disconnects				
~~RRC-V-67A~~	~~MC-7C~~	~~25AF~~	~~MC-7C~~	~~50AF~~
~~RCC-V-71A~~	~~MC-7C~~	~~1.125AF~~	~~MC-7C~~	~~25AF~~
RCC-V-72A	MC-7C	1.125AF	MC-7C	25AF
RCC-V-72B	MC-8C	1.25AF	MC-8C	25AF
RCC-V-17A	MC-7C	1.125AF	MC-7C	25AF
CRA-FN-1C-2	MC-8B	110AF	MC-8B	200AF
RRC-V-67B	MC-8C	25AF	MC-8C	90AF
RRC-V-23B	MC-8C	15AF	MC-8C	25AF
RWCU-V-102	MC-8C	5AF	MC-8C	25AF
RWCU-V-106	MC-8C	3AF	MC-8C	25AF
RRC-V-23A	MC-8C	1AF	MC-8C	25AF
RWCU-V-101	MC-8C	3AF	MC-8C	25AF
RWCU-V-100	MC-8C	3AF	MC-8C	25AF
RCC-V-17B	MC-8C	1.25AF	MC-8C	25AF
RCC-V-71C	MC-8C	1.25AF	MC-8C	25AF
RCC-V-71B	MC-8C	1.25AF	MC-8C	25AF
CRA-FN-1A-2	MC-7B	100AF	MC-7B	200AF
CRA-FN-1A-1	MC-7B	100AF	MC-7B	200AF
CRA-FN-2A-2	MC-7B	60AF	MC-7B	90AF
CRA-FN-2A-1	MC-7B	150AF	MC-7B	300AF
CRA-FN-5A	MC-7B	25AF	MC-7B	50AF
CRA-FN-4A	MC-7B	15AF	MC-7B	50AF
CRA-FN-5C	MC-7B	25AF	MC-7B	50AF
CRA-FN-3A	MC-7B	25AF	MC-7B	50AF
CRA-FN-1B-2	MC-8B	100AF	MC-8B	200AF
CRA-FN-1B-1	MC-8B	100AF	MC-8B	200AF
CRA-FN-1C-1	MC-8B	100AF	MC-8B	200AF
~~CRA-FN-2B-1~~	~~MC-8B~~	~~150AF~~	~~MC-8B~~	~~300AF~~
~~CRA-FN-2B-2~~	~~MC-8B~~	~~60AF~~	~~MC-8B~~	~~90AF~~
MS-V-16	MC-8B-A	Fused ~~3.5AF~~	MC-8B	125ACB
RWCU-V-1	MC-8B-A	~~5.6AF~~	MC-8B	125ACB
RHR-V-9	MC-8B-A	~~15AF~~	MC-8B	125ACB
RCIC-V-63	MC-8B-A	~~15AF~~	MC-8B	125ACB
RCC-V-4C	MC-8B-A	~~3.2AF~~	MC-8B	125ACB
RHR-V-123B	MC-8B-A	~~1.125AF~~	MC-8B	125ACB
RCIC-V-76	MC-8B-A	~~1.125AF~~	MC-8B	125ACB
~~CRA-FN-8B~~	~~MC-8B~~	~~25AF~~	~~MC-8B~~	~~50AF~~

EQUIPMENT	PRIMARY PROTECTION		BACKUP PROTECTION	
~~CRA-FN-5D~~	~~MC-8B~~	~~25AF~~	~~MC-8B~~	~~50AF~~
CRA-FN-3B	MC-8B	25AF	MC-8B	50AF
CRA-FN-3C	MC-8B	25AF	MC-8B	50AF
CRA-FN-4B	MC-8B	15AF	MC-8B	25AF
~~RCC-V-72B~~	~~MC-8C~~	~~1.25AF~~	~~SL-81~~	~~1000A Asst~~ Duplicate
MS-V-1	MC-8C-B	1AF	MC-8C-8	25AF
MS-V-2	MC-8C-8	1AF	MC-8C-8	25AF
~~MS-V-5~~	~~MC-8C-8~~	~~1AF~~	~~MC-8C-8~~	~~25AF~~
RHR-V-123A	MC-8B-A	~~1.125AF~~ fused	MC-8B	125ACB

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Primary containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers by periodic surveillance.

The surveillance requirements applicable to lower voltage circuit breakers ~~and fuses~~ provide assurance of breaker ~~and fuse~~ reliability by testing at least one representative sample of each manufacturers brand of circuit breaker. ~~and/or fuse.~~ Each manufacturer's molded case and metal case circuit breakers ~~and/or fuses~~ are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers ~~and/or fuses~~ are tested. If a wide variety exists within any manufacturer's brand of circuit breakers ~~and/or fuses~~, it is necessary to divide that manufacturer's breakers ~~and/or fuses~~ into groups and treat each group as a separate type of breaker ~~or fuses~~ for surveillance purposes.

The bypassing of the motor-operated valve thermal overload protection continuously or during accident conditions ensures that the thermal overload protection will not prevent safety-related valves from performing their function. The surveillance requirements for demonstrating the bypassing of the thermal overload protection continuously and during accident conditions are in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.