3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

PRIMARY CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION

3.8.4.1 All primary containment penetration conductor overcurrent protective devices shown in Table 3.8.4.1-1 and all fuses tested pursuant to Specification 4.8.4.1.a.2 shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

a. With one or more of the above required containment penetration conductor overcurrent devices shown in Table 3.8.4.1-1 and/or fuses tested pursuant Specification 4.8.4.1.a.2 inoperable:

   1. Restore the protective device(s) to OPERABLE status or deenergize the circuit(s) by tripping, racking out, or removing the alternate device or racking out or removing the inoperable device within 72 hours, and

   2. Declare the affected system or component inoperable, and

   3. Verify at least once per 7 days thereafter the alternate device is tripped, racked out, or removed, or the device is racked out or removed.

   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 which have the inoperable device racked out or removed or, which have the alternate device tripped, racked out, or removed.

SURVEILLANCE REQUIREMENTS

4.8.4.1 Each of the primary containment penetration conductor overcurrent protective devices required above shall be demonstrated OPERABLE:

a. At least once per 18 months ~~by~~:

   1. ~~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. For the lower voltage circuit breakers the nominal trip setpoint and short circuit response times are listed in Table 3.8.4.1-1. Testing of these circuit breakers shall consist of injecting a current in excess of 120% of the breaker's nominal setpoint and measuring the response time.~~

INSERT (A) →

INSERT (A)

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 thermal (long ~~term~~ time delay) element of Types HFB-TM and KB-TM (thermal magnetic) circuit breakers, and verifying that the circuit breaker operates within the time delay band-width for that current specified by the manufacturer for the test current. The magnetic (instantaneous) element shall be tested by injecting a current in excess of 120% of the pickup value of the magnetic (instantaneous) element and verifying that the circuit breaker trips instantaneously with no intentional time delay. Type HFB-M (magnetic only) circuit breaker testing shall also follow this procedure except that no thermal trip elements 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 circuits breakers of that type have been functionally tested.

SURVEILLANCE REQUIREMENTS (Continued)

~~The measured response time will be compared to the manufacturer's data to insure that it is less than or equal to a value specified by the manufacturer. 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.~~

2. a. 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, or

   b. By replacing 100% of all required fuses.

3. Functionally testing each overcurrent relay listed in Table 3.8.4.1-1. Testing of these relays shall consist of injecting a current in excess of 120% of the nominal relay initiation current and measuring the response time. The measured response time shall be within ±10% of the specified value.

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.

Replace with new Table 3.8.4.1-1

TABLE 3.8.4.1-1

PRIMARY CONTAINMENT PENETRATION CONDUCTOR

OVERCURRENT PROTECTIVE DEVICES

CIRCUIT BREAKER LOCATION		TYPE*	FRAME RATING/UL	TRIP SET POINT (Amperes)	RESPONSE TIME (Milli-seconds/ Cycles)	SYSTEMS OR EQUIPMENT POWERED
a. Type 2 Molded Case Circuit Breakers#						
1.	2B219022	HFB-M	150/100	635	NA	HVB312F031A RRP "A" DSCH VLV
2.	2B237043	HFB-M	150/50	360	NA	HVB312F023A Recirc. PP "A" Suction
3.	2B236052	HFB-M	150/30	260	NA	HVE112F009 RHR Pump Suction Shutoff
4.	2B236023	HFB-M	150/3	10	NA	HV22603 Containment Inst. Compressor Suct. Iso. Valve
5.	2B236011	HFB-M	150/30	230	NA	2V413A - Drywell Area Unit Cooler
6.	2B236033	HFB-M	150/30	230	NA	2V414A - Drywell Area Unit Cooler
7.	2B236021	HFB-M	150/30	230	NA	2V417A - Drywell Area Unit Cooler
8.	2B236032	HFB-M	150/30	230	NA	2V412A - Drywell Area Unit Cooler
9.	2B236042	HFB-M	150/30	230	NA	2V411A - Drywell Area Unit Cooler
10.	2B236043	HFB-M	150/30	230	NA	2V416A - Drywell Area Unit Cooler
11.	2B236082	HFB-M	150/30	230	NA	2V415A - Drywell Area Unit Cooler
12.	2B236102	HFB-M	150/3	10	NA	HVB212F001 - Reactor Head Vent Valve
13.	2B236053	HFB-M	150/5	40	NA	HVG332F001 - Reactor Wtr. Clean up Inboard isolation
14.	2B237072	HFB-M	150/5	25	NA	HVB212F016 - Main Stm. Line Drain Inboard Isolation

Replace with new Table 3.8.4.1-1

TABLE 3.8.4.1-1 (Continued)

PRIMARY CONTAINMENT PENETRATION CONDUCTOR

OVERCURRENT PROTECTIVE DEVICES

CIRCUIT BREAKER LOCATION		TYPE*	FRAME RATING/UL	TRIP SET POINT (Amperes)	RESPONSE TIME (Milli-seconds/ Cycles)	SYSTEMS OR EQUIPMENT POWERED
Type 2 Molded Case Circuit Breakers# (Continued)						
15.	2B219023	HFB-M	150/10	80	NA	HVB312F032A - RRP "A" Dsch Byps Vlv
16.	2B237073	HFB-M	150/10	60	NA	HVE112F022 - Reac Heater Spray Shutoff Inboard
17.	2B237082	HFB-M	150/10	90	NA	HVE412F002 - HPCI Stm. Supply Inboard Isolation
18.	2B246011	HFB-M	150/50	360	NA	HVB312F023B - Reactor Recirc Pump Suction
19.	2B229022	HFB-M	150/100	635	NA	HVB312F031B - Reactor Recirc Pump Disch
20.	2B246022	HFB-M	150/5	25	NA	HVE512F007 - RCIC Inbrd Steam Line Isolation
21.	2B246051	HFB-M	150/30	230	NA	2V417B - Drywell Area Unit Clr Fan
22.	2B246061	HFB-M	150/30	230	NA	2V414B - Drywell Area Unit Clr Fan
23.	2B229023	HFB-M	150/10	80	NA	HVB312E032B - RRP "B" Dsch Byps Vlv
24.	2B246072	HFB-M	150/30	230	NA	2V415B - Drywell Area Unit Clr Fan
25.	2B246081	HFB-M	150/30	230	NA	2V416B - Drywell Area Unit Clr. Fan
26.	2B246091	HFB-M	150/30	230	NA	2V411B - Drywell Unit Clr. Fan
27.	2B246102	HFB-M	150/30	230	NA	2V413B - Drywell Area Unit Clr. Fan
28.	2B246103	HFB-M	150/30	230	NA	2V412B - Drywell Area Unit Clr. Fan

Replace with New Table 3.8.4.1-1

TABLE 3.8.4.1-1 (Continued)

PRIMARY CONTAINMENT PENETRATION CONDUCTOR

OVERCURRENT PROTECTIVE DEVICES

CIRCUIT BREAKER LOCATION		TYPE*	FRAME RATING/UL	TRIP SET POINT (Amperes)	RESPONSE TIME (Milli-seconds/ Cycles)	SYSTEMS OR EQUIPMENT POWERED
Type 2 Molded Case Circuit Breakers# (Continued)						
29.	2B246112	HFB-M	150/3	10	NA	HVB212F002 - Reactor Head Vent Valve
30.	2B246113	HFB-M	150/3	10	NA	HVB212F005 - Reactor Heat Vent Valve
31.	2B246062	HFB-M	150/3	15	NA	HV21346 - RBCCW Containment Iso. Vlv.
32.	2B246012	HFB-M	150/3	15	NA	HV21345 - RBCCW Containment Iso. Vlv.
33.	2B253063	HFB-M	150/5	20	NA	2P402A - Drywell Floor Drain Sump "A" Pump "A"
34.	2B253053	HFB-M	150/5	20	NA	HVG332F102 - Line Suction Inside Control Valve
35.	2B263043	HFB-M	150/3	10	NA	HVG332F100 - RWCU Loop "A" Suction
36.	2B263053	HFB-M	150/3	10	NA	HVG332F106 - RWCU Loop "B" Suction
37.	2B263081	HFB-M	150/3	10	NA	HVG332F101 - RWCU Sys Vessel Drain Line Recirc.
38.	2B263071	HFB-M	150/5	20	NA	2P402B - Drywell Floor Drain Sump "A" Pump "B"
39.	2B253043	HFB-M	150/5	20	NA	2P403A - Drywell Floor Drain Sump "B" Pump "A"
40.	2B263072	HFB-M	150/5	20	NA	2P403B - Drywell Floor Drain Sump "B" Pump "B"
41.	2B253021	HFB-M	150/50	400	NA	HVB212F011A Feedwater Inlet Shutoff Valve
42.	2B263023	HFB-M	150/50	400	NA	HVB212F011B - Feed-water Inlet Shutoff Valve

*HFB-M - Westinghouse Type HFB, magnetic only

#Each location number represents two breakers in series.

Replace with new Table 3.8.4.1-1.

TABLE 3.8.4.1-1 (Continued)

PRIMARY CONTAINMENT PENETRATION CONDUCTOR

OVERCURRENT PROTECTIVE DEVICES

CIRCUIT BREAKER LOCATION	TYPE**	FRAME RATING/UL	RESPONSE TIME (Milli-seconds/ Cycles)	SYSTEMS OR EQUIPMENT POWERED
b. Type 3 Molded Case Circuit Breakers				
1. 2B216092	KB-TM	250/150	NA	2E440A - Containment Recomb. Elect. Htr. Ass'y.
2. 2B226103	KB-TM	250/150	NA	2E440B - Containment Recomb Elect. Htr. Ass'y.
3. 2B236103	KB-TM	250/150	NA	2E440C - Containment Recomb Elect. Htr. Ass'y.
4. 2B246033	KB-TM	250/150	NA	2E440D - Containment Recomb Elect. Htr. Ass'y.

c. Circuit Breakers Tripped By Overcurrent Relays	Relay Type	Relay Initiation Current (Amperes)	Response Time (Seconds)	Systems or Equipment Powered
1. 2A20501	50D	5	80	2P401A Reactor Recirc Pump
2. 2A20502	50D	5	80	2P401A Reactor Recirc Pump
3. 2A20601	50D	5	80	2P401B Reactor Recirc Pump
4. 2A20602	50D	5	80	2P401B Reactor Recirc Pump

**KB-TM - Westinghouse Type KB, Thermal-magnetic

TABLE 3.8.4.1-1

PRIMARY CONTAINMENT PENETRATION CONDUCTOR

OVERCURRENT PROTECTIVE DEVICES

Circuit Breaker Designation	System/Equipment Powered
A. Type HFB-TM*	
1. 2B237043	Rx Recirc/HV-B31-2F023A
2. 2B219022	Rx Recirc/HV-B31-2F031A
3. 2B219023	Rx Recirc/HV-B31-2F032A
4. 2B246011	Rx Recirc/HV-B31-2F023B
5. 2B229022	Rx Recirc/HV-B31-2F031B
6. 2B229023	Rx Recirc/HV-B31-2F032B
7. 2B236042	Drywell Air Flow/2V411A
8. 2B236032	Drywell Air Flow/2V412A
9. 2B236011	Drywell Air Flow/2V413A
10. 2B236033	Drywell Air Flow/2V414A
11. 2B236082	Drywell Air Flow/2V415A
12. 2B236043	Drywell Air Flow/2V416A
13. 2B236021	Drywell Air Flow/2V417A
14. 2B246091	Drywell Air Flow/2V411B
15. 2B246103	Drywell Air Flow/2V412B
16. 2B246102	Drywell Air Flow/2V413B
17. 2B246061	Drywell Air Flow/2V414B
18. 2B246072	Drywell Air Flow/2V415B
19. 2B246081	Drywell Air Flow/2V416B
20. 2B246051	Drywell Air Flow/2V417B
21. 2B236052	RHR/HV-E11-2F009
22. 2B237073	RHR/HV-E11-2F022

[illegible]

Circuit Breaker Designation	System/Equipment Powered
23. 2B237082	HPCI/HV-E41-2F002
24. 2B253021	NSSS/HV-B21-2F011A
25. 2B263023	NSSS/HV-B21-2F011B
26. 2B253041	MSIV Hoist/TB0815
27. 2B263021	MSIV Hoist/TB0816

B. Type HFB-M*

1. 2B236023	Cont. Inst. Gas/HV-22603
2. 2B246022	RCIC/HV-E51-2F007
3. 2B237072	NSSS/HV-B21-2F016
4. 2B236102	NSSS/HV-B21-2F001
5. 2B246112	NSSS/HV-B21-2F002
6. 2B246113	NSSS/HV-B21-2F005
7. 2B236053	RWCU/HV-G33-2F001
8. 2B253053	RWCU/HV-G33-2F102
9. 2B263043	RWCU/HV-G33-2F100
10. 2B263053	RWCU/HV-G33-2F106
11. 2B263081	RWCU/HV-G33-2F101
12. 2B246062	RBCCW/HV-21346
13. 2B246012	RBCCW/HV-21345
14. 2B253063	Drywell Sump/2P402A
15. 2B263071	Drywell Sump/2P402B
16. 2B253043	Drywell Sump/2P403A
17. 2B263072	Drywell Sump/2P403B

Circuit Breaker Designation	System/Equipment Powered
C. Type KB-TM	
1. 2B216083 2B216092	Cont. H2 Recombiner/2E440A
2. 2B226102 2B226103	Cont. H2 Recombiner/2E440B
3. 2B236103 2B236121	Cont. H2 Recombiner/2E440C
4. 2B246032 2B246033	Cont. H2 Recombiner/2E440D
D. Circuit Breakers Tripped By Overcurrent Relays	
1. 2A20501 2A20502	Rx Recirc/2P401A
2. 2A20601 2A20602	Rx Recirc/2P401B

* Each circuit breaker designation represents two redundant circuit breakers.