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Robert L. Mittl General Manager
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May 13, 1985

Director of Nuclear Reactor Regulation
S. Nuclear Regulatory Commission
0 Norfolk Avenue
sda, Maryland 20814

: Mr. Walter Butler, Chief
Licensing Branch 2
Division of Licensing

EPORT TECHNICAL SPECIFICATION ISSUES
STATION

rrent list which provides a status of
ification Issues identified in Section 16
luation Report (SER). Items identified as
chose for which PSE&G has provided responses
nation of status has been received from the
ill consider these items closed unless notified
In order to permit timely resolution of items
ed as "complete" which may not be resolved to the
s satisfaction, please provide a specific description
ne issue which remains to be resolved.

Enclosed for your review and approval (see Attachment 3) are the resolutions to the SER Technical Specification Issues listed in Attachment 2.

Also enclosed (Attachment 4) for your use and incorporation into the Hope Creek Generating Station Draft Technical Specifications are five (5) sets of the following revised Hope Creek Generating Station Draft Technical Specification pages:

B001
1/1

MP85 81 02 1-vw

ADD: STEWART BROWN, SEPB

Page: ix
3/4 3-37 3/4 8-25 3/4 8-29
3/4 3-40 3/4 8-26 3/4 8-30
3/4 3-43 3/4 8-27 3/4 8-31
3/4 8-24 3/4 8-28

These pages are submitted as Revision 4 to the Hope Creek Generating Station Draft Technical Specification and have been revised in accordance with the resolutions to the SER Technical Specification Issues provided in Attachment 3. Also included are copies of the updated Hope Creek Generating Station Draft Technical Specification List of Effective Pages (LEP).

Should you have any questions or require any additional information on these items, please contact us.

Very truly yours,

R.L. Mittl
Bap

Attachments

C D. H. Wagner
USNRC Licensing Project Manager (w/attach.)

A. R. Blough
USNRC Senior Resident Inspector (w/attach.)

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Attachment 1

SER TECHNICAL SPECIFICATION ISSUE	SER SECTION NUMBER	SUBJECT	STATUS	R. L. MITTL TO A. SCHWENCER LETTER DATED
1	2.4.11.2	Service water intake temperature	Complete	4/10/85
2	2.4.14	Closing of doors and hatches	Complete	4/10/85
3	3.9.6	Pressure isolation valves	Open	
4	4.4.4	Thermal-hydraulic instability	Complete	4/10/85
5	4.4.4	Single-loop operation	Complete	4/10/85
6	4.4.5	Crud effects	Complete	4/10/85
7	4.4.6	Loose parts monitoring system channel operability	Complete	4/10/85
8	5.2.2	Safety/relief valve (SRV) test program	Complete	5/13/85
9	5.2.5	Reactor coolant pressure boundary leakage rates	Complete	4/10/85
10	5.4.6	Reactor core isolation cooling pump testing	Complete	4/10/85
11	5.4.7	Residual heat removal system pump operability	Complete	4/10/85
12	6.2.1.6	Torus/drywell vacuum breaker and vent system testing	Open	
13	6.2.1.6	Vacuum breaker position indication accuracy	Complete	5/13/85
14	6.2.3	Testing of inleakage rate and draw-down time	Complete	4/10/85
15	6.2.4.1	Leakage testing for valves with resilient seals	Open	
16	6.2.6	Containment isolation valve leakage	Open	

SER TECHNICAL SPECIFICATION ISSUE	SER SECTION NUMBER	SUBJECT	STATUS	R. L. MITTL TO A. SCHWENCER LETTER DATED
17	6.2.6, 6.7, 15.6.5.2	Main steam isolation valve leak rate testing	Open	
18	6.2.6	Various valve leak rates	Open	
19	6.3.4.2	Emergency core cooling system (ECCS) subsystem flow rates	Complete	5/13/85
20	6.3.4.2	ECCS subsystem operating sequence	Complete	5/13/85
21	6.5.1.3	Water seal bucket drain tap surveillance	Complete	4/10/85
22	7.2.2.3	Testability of plant protection system at power	Complete	5/13/85
23	7.2.2.8, 7.6.2.2	Anticipated transients without scram mitigation	Open	
24	7.2.2.9	Reactor mode switch	Complete	5/13/85
25	7.3.2.3	Freeze protection of water-filled lines	Open	
26	7.4.2.3	Remote shutdown system operability	Open	
27	7.6.2.1	Low-pressure/high-pressure systems interlocks	Open	
28	7.6.2.3	Average power range monitor electrical protection assemblies	Complete	5/13/85
29	7.7.2.2	Nonsafety-related equipment operability	Complete	5/13/85
30	8.3.1.3	Diesel generator connected loads	Complete	4/10/85
31	8.3.1.7	Load sequencer logic	Complete	4/10/85
32	8.3.2.7	DC system monitoring	Complete	4/10/85

SER TECHNICAL SPECIFICATION ISSUE	SER SECTION NUMBER	SUBJECT	STATUS	R. L. MITTL TO A. SCHWENCER LETTER DATED
33	8.3.3.3.5	Testing of breaker time-overcurrent trip characteristics	Complete	5/13/85
34	8.3.3.4.1	Periodic system testing	Complete	4/10/85
35	8.3.3.4.2	Load sequencer testing	Complete	4/10/85
36	8.3.3.5.4	Testing of fuses	Complete	4/10/85
37	9.1.3	Fuel pool cooling system pumps	Open	
38	9.2.1	Station service water pump testing	Complete	4/10/85
39	9.2.2	Safety auxiliaries cooling system and reactor auxiliaries cooling system pump availability	Complete	4/10/85
40	9.2.2	Safety auxiliaries operability to ensure diesel generator cooling	Open	
41	9.2.7	Control area chilled water system availability	Open	
42	9.3.1, 9.3.6	Air quality testing	Complete	5/13/85
43	9.3.2	Core damage estimate procedure	This is a confirmatory item.	
44	9.5.1.5	Fire watch	Complete	4/10/85
45	10.2	Turbine steam valve inspection	Complete	4/10/85
46	10.4.4	Turbine bypass valve surveillance	Complete	4/10/85
47	15.2	Turbine bypass system and level 8 high-water trip performance	Complete	5/13/85
48	15.4.9	Scram speed	Complete	5/13/85
49	15.6.4	Primary coolant activity	Complete	5/13/85

Attachment 1 (Cont'd)

SER TECHNICAL SPECIFICATION ISSUE	SER SECTION NUMBER	SUBJECT	STATUS	R. L. MITTL TO A. SCHWENCER LETTER DATED
50	15.6.4	Main steam isolation valve closure time	Complete	4/10/85
51	15.9.3	SRV failure reporting	Complete	4/10/85
52	15.9.3	Automatic depressurization system logic	Complete	5/13/85

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ATTACHMENT 2

SER TECHNICAL SPECIFICATION ISSUE	SER SECTION	SUBJECT
8	5.2.2	Safety-relief valves test program
13	6.2.1.6	Vacuum breaker position indication accuracy
19	6.3.4.2	Emergency Core Cooling System (ECCS) Subsystem flow rates
20	6.3.4.2	ECCS Subsystem operating sequence
22	7.2.2.3	Testability of plant protection system at power
24	7.2.2.9	Reactor mode switch
28	7.6.2.3	Average power range monitor electrical protection assemblies
29	7.7.2.2	Nonsafety-related equipment operability
33	8.3.3.3.5	Testing of breaker time-overcurrent trip characteristics
42	9.3.1, 9.3.6	Air quality testing
47	15.2	Turbine bypass system and level 8 high-water trip performance
48	15.4.9	Scram speed
49	15.6.4	Primary coolant activity
52	15.9.3	Automatic depressurization system logic

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5/10/85
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ATTACHMENT 3

SER Technical Specification Issue No. 8 (SER Section 5.2.2)

Safety-Relief Valves (SRV) Test Program

The nominal pressure setpoints of the SRVs are distributed in three valve groups with a minimum setpoint of 1,108 psig and maximum of 1,130 psig. Total relief capacity at set pressure is approximately 105 percent of rated steam flow. Before valves are installed, the SRV manufacturer tests the valves hydrostatically for response, set pressure, and seat leakage to certify that design and performance requirements have been met. During the preoperational test program, specified manual and automatic actuation is verified, as recommended in R/G 1.68. The valves will be removed for maintenance, are inspected and tested in accordance with ASME Code, Section XI. The test program will be included in the plant Technical Specifications.

Response:

HCGS Draft Technical Specification Section 4.0.5 provides the requirement for inspection and testing of these valves in accordance with ASME Section XI.

SER Technical Specification Issue No. 13 (SER Section 6.2.1.6)
Vacuum breaker position indication accuracy

Appendix A also requires that redundant position indicators be placed on all vacuum breakers with redundant position indication and an alarm system in the control room. The vacuum breaker position indicator system should be designed to provide the plant operators with continuous surveillance of the vacuum breaker position. The indicators should have adequate sensitivity to detect valve openings that would not result in leakage greater than that from a 1-in. diameter opening if all valves were at this maximum offset.

The applicant has indicated that each valve is equipped with redundant valve position indicators that indicate and alarm in the main control room. The sensitivity of the indicators is sufficient to detect an offset greater than 0.01 in. at the valve centerline. The flow through the eight suppression-pool-to-drywell vacuum breakers with each offset of 0.01 is equivalent to the flow through a 0.5-in. - diameter hole, which is less than the 1-in. criterion in Appendix A to SRP Section 6.2.1.1.C.

The applicant has also indicated that the redundant position indicators are visually observed and verified at each refueling outage in accordance with ASME Code, Section XI, to confirm that the remote valve indications accurately reflect the valve operations. The accuracy verification shall be in accordance with the instructions provided by the valve supplier and will be included in the Technical Specifications. The staff finds this acceptable.

Response

HCGS Draft Technical Specification 3/4.6.4 requires test and calibration of the position indicator every 18 months.

SER Technical Specification Issue No. 19 (SER Section 6.3.4.2)
Emergency core cooling system subsystem flow rates

The NRC staff will require the applicant to test the ECCS subsystems (except for the ADS) every 92 days, in accordance with the Standard Technical Specifications (NUREG-0123), to show that specified flow rates are attained. Also, the NRC staff will require that a test, in accordance with the Standard Technical Specifications, be performed every 18 months in which all subsystems are actuated through the emergency operating sequence. These tests comply with GDC 37.

Response

HCGS Draft Technical Specification 3/4.5.1 requires flow tests in accordance with Specification 4.0.5 and provides minimum flow rates. The Technical Specification also requires that system functional tests be performed once every 18 months. These are consistent with the Standard Technical Specifications.

SER Technical Specification Issue No. 20 (SER Section 6.3.4.2)
ECCS subsystem operating sequence

The NRC staff will require the applicant to test the ECCS subsystems (except for the ADS) every 92 days, in accordance with the Standard Technical Specifications (NUREG-0123), to show that specified flow rates are attained. Also, the NRC staff will require that a test, in accordance with the Standard Technical Specifications, be performed every 18 months in which all subsystems are actuated through the emergency operating sequence. These tests comply with GDC 37.

Response

The functional tests required in HCGS Draft Technical Specification 3/4.5.1 will demonstrate the proper actuation of the systems. This is consistent with the Standard Technical Specifications.

SER Technical Specification Issue No. 22 (SER Section 7.2.2.3)
Testability of plant protection system at power

The staff will verify that the Technical Specifications for Hope Creek include appropriate surveillance requirements to require periodic (online) demonstration of the operability of the RPS and ESF instrument channels logic and actuation devices.

Response

HCGS Draft Technical Specification 3/4.3.1, Reactor Protection System Instrumentation, provides surveillance requirements for the RPS, and Technical Specification 3/4.3.3, ECCS Actuation Instrumentation, provides surveillance requirements for the ESF instrument channels and actuation devices. These Technical Specifications are consistent with the Standard Technical Specifications.

SER Technical Specification Issue No. 24 (SER Section 7.2.2.9)
Reactor mode switch

The staff will verify that the Technical Specifications include appropriate functional tests for the IRM and APRM channels for the purposes of ensuring that the reliability of the reactor mode switch is maintained.

Response

HCGS Draft Technical Specification Table 4.3.1.1-1, items 1 and 2 provide the appropriate functional tests for the IRM and APRM channels which ensures the reliability of the reactor mode switch.

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SER Technical Specification Issue No. 28 (SER Section 7.6.2.3)
APRM electrical protection assemblies

On the basis of its conformance to the aforementioned criteria, the staff concludes that the conceptual design of the proposed modifications to the APRM system power supply configuration is acceptable contingent on implementation of acceptable surveillance, maintenance, and testing procedures that will be in conformance with the reactor protection system Technical Specifications. Therefore, the staff considers this concern resolved.

The applicant is required to implement, by means of a Technical Specification, surveillance, maintenance, and testing procedures for the Class 1E EPA solid-state protective devices located in the APRM power source configuration. These procedures should be similar to those provided for the EPA solid-state protective devices located between the RPS M/G sets and the RPS distribution panels.

Response

HCGS Draft Technical Specification Section 3/4.8.4.7, Power Range Neutron Monitoring System Electrical Power Monitoring, has been developed to provide the above requirements for APRM electrical protection assemblies.

ELECTRICAL POWER SYSTEMS

POWER RANGE NEUTRON MONITORING SYSTEM ELECTRICAL POWER MONITORING

LIMITING CONDITION FOR OPERATION

3.8.4.7 The [power range neutron monitoring system (NMS)] electric power monitoring channels for each inservice power range NMS power supply shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

a. With one [power range NMS] electric power monitoring channel for an inservice power range NMS power supply inoperable, restore the inoperable power monitoring channel to OPERABLE status within 72 hours or ~~remove~~ deenergize the associated power range NMS power supply ~~from service~~ [feeder circuit].

b. With both [power range NMS] electric power monitoring channels for an inservice power range NMS power supply inoperable, restore at least one electric power monitoring channel to OPERABLE status within 30 minutes or ~~remove~~ deenergize the associated power range NMS power supply ~~from service~~ [feeder circuit].

SURVEILLANCE REQUIREMENTS

4.8.4.7 The above specified [power range NMS] electric power monitoring channels shall be determined OPERABLE:

a. At least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST, and

b. At least once per 18 months by demonstrating the OPERABILITY of over-voltage, under-voltage, and under-frequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic and output circuit breakers and verifying the following setpoints.

1. Over-voltage ≤ 132 VAC* (BUS A), 132 VAC* (BUS B)
2. Under-voltage ≥ 108 VAC* (BUS A), 108 VAC* (BUS B)
3. Under-frequency ≥ 57 Hz, -0, +2%

* Final setpoints to be confirmed by field measurements.

SER Technical Specification Issue No. 29 (SER Section 7.6.2.2)
Nonsafety - related equipment operability

The applicant stated that the assumptions of performance of the nonsafety-related equipment listed in Table 7.1 are based on extensive failure-rate data for other equipment with similar design and quality requirements. In addition, the Hope Creek Technical Specifications will include appropriate provisions regarding availability, setpoints, and surveillance testing that are presecribed by the NRC's Standard Technical Specifications for all of these systems/components except the recirculation runback feature.

The staff will verify that the Technical Specifications include limiting conditions for operation and surveillance requirements for the nonsafety-related systems/components (except for the recirculation runback feature) discussed in this section of the SER.

Response

The HCGS Draft Technical Specification Sections identified below provide the required limiting conditions for operation and surveillance requirements for the nonsafety-related equipment listed in SER Table 7.1.

Nonsafety-Related Equipment	HCGS Draft Technical Specification Section
(1) Vessel level 8 turbine trip	3/4.3.9 Feedwater/ Main Turbine Trip Systems
(2) Vessel level 8 feedwater trip instrument channel	3/4.3.9 Feedwater/ Main Turbine Trip Systems
(3) Turbine bypass system	3/4.7.10 Main Turbine Bypass System, and Table 3.3.1-1, Note J
(4) Rod sequence control system	3.1.4.2 Rod Sequence Control System

SER Technical Specification Issue No. 29 (SER Section 7.6.2.2)
Nonsafety - related equipment operability (Continued)

Nonsafety-Related Equipment	HCGS Draft Technical Specification Section
(5) Rod block monitor	3/4.3.6 Control Rod Block Instrumentation, and 3.1.4.3 Rod Block Monitor Channels
(6) Instrumentation, control, electrical, and mechanical equipment associated with the relief function of the safety/relief valves	3/4.4.2 Safety Relief Valves, and 4.0.5

SER Technical Specification Issue No. 33 (SER Section 8.3.3.3.5)
Testing of breaker time-overcurrent trip characteristics

Periodic testing of the breaker's time-overcurrent trip characteristics will be included in the plant Technical Specifications.

Response

HCGS Draft Technical Specification Sections 3/4.8.4.5 and 3/4.8.4.6, Class 1E Isolation Breaker Overcurrent Protective Devices, have been developed to provide the above testing requirements.

CLASS 1E ISOLATION BREAKER

ELECTRICAL POWER SYSTEMS

~~PRIMARY CONTAINMENT PENETRATION CONDUCTOR~~ OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION

5 3.8.4.2 All ~~primary containment penetration conductor~~ overcurrent protective devices shown in Table 3.8.4.~~2~~-1 shall be OPERABLE.

Class 1E isolation breaker (tripped by a LOCA signal)

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

isolation breaker

1. For ~~66.0 or~~ 4.16~~3~~ kV circuit breakers, de-energize the ~~66.0 or~~ 4.16~~3~~ 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 racking out the breaker~~ within 72 hours and verify the inoperable breaker(s) to be ~~racked out~~ disconnected 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 ~~66.0 or~~ 4.16~~3~~ kV circuits which have their redundant circuit ~~breakers tripped or~~ to 480 volt circuits which have the inoperable circuit breaker ~~racked out~~ disconnected.

SURVEILLANCE REQUIREMENTS

4.8.4.~~2~~ Each of the ~~primary containment penetration conductor~~ Class 1E isolation breaker 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 ~~(4.15 kV)~~ 4.16 kV circuit breakers are OPERABLE by selecting, on a rotating basis, at least ~~10%~~ 25% 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.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

and the long time delay trip elements

4.8.2.1.2 b. 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 between 300% ~~of the pickup of the long time 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 band-width 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.

For circuit breakers equipped with solid state trip devices, the functional testing may be performed with use of portable instruments designed to verify the time-current characteristics and pickup calibration of the trip elements.

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 3.8.4.5-1

CLASS 1E ISOLATION BREAKER OVERCURRENT PROTECTIVE DEVICES (BREAKER TRIPPED BY A LOCA SIGNAL)

480 VAC POWER CIRCUIT BREAKERS

1. TYPE AKR-5A-30

Class 1E Circuit Breaker No.	Class 1E Bus	Non-Class 1E Load Description
52-41011	10B410	Reactor Auxiliaries Cooling System Pump 1AP209
52-41014	10B410	Radwaste and Service Area MCC 10B313
52-41024	10B410	Reactor Building Supply Air Handling Unit 1BVH300
52-42011	10B420	Reactor Auxiliaries Cooling System Pump 1BP209
52-42014	10B420	Radwaste and Service Area MCC 10B323
52-42024	10B420	Reactor Building Exhaust Fan 1BV301
52-43024	10B430	Reactor Building Supply Air Handling Unit 1CVH300
52-43014	10B430	Control Rod Drive Pump 1AP207
52-44014	10B440	Control Rod Drive Pump 1BP207
52-44024	10B440	Reactor Building Supply Air Handling Unit 1AVH300
52-44034	10B440	Radwaste Area Supply Fan OBV316
52-45011	10B450	Reactor Area MCC 10B252
52-45014	10B450	Radwaste Area Exhaust Fan OAV305
52-45024	10B450	Emergency Instrument Air Compressor 10K100
52-45034	10B450	Reactor Building Exhaust Fan 1CV301
52-46011	10B460	Reactor Area MCC 10B262

TABLE 3.8.4.5-1

CLASS 1E ISOLATION BREAKER OVERCURRENT PROTECTIVE DEVICES

1. Continued

Class 1E Circuit Breaker No.	Class 1E Bus	Non-Class 1E Load Description
52-46014	10B460	Radwaste Area Exhaust Fan 0BV305
52-47011	10B470	Reactor Area MCC 10B272
52-47014	10B470	Radwaste Area Exhaust Fan 0CV305
52-47024	10B470	Radwaste Area Supply Fan 0AV316
52-47031	10B470	Technical Support Center MCC 00B474
52-48011	10B480	Reactor Area MCC 10B282
52-48024	10B480	Reactor Building Exhaust Fan 1AV301

480 VAC MOLDED CASE CIRCUIT BREAKERS

1. TYPE HFB150

Class 1E Circuit Breaker NO.	Class 1E Bus	Non-Class 1E Load Description
52-451023	10B451	Public Address System Inverter 10D496
52-471023	10B471	Security System Inverter 0AD495
52-441043	10B441	NSSS Computer Inverter 10D485

CLASS 1E ISOLATION BREAKER

ELECTRICAL POWER SYSTEMS

~~PRIMARY CONTAINMENT PENETRATION CONDUCTOR~~ OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION (CONTINUED)

6 3.8.4 ~~All primary containment penetration conductor~~ overcurrent protective devices shown in Table 3.8.4 ~~-~~1 shall be OPERABLE.

Class 1E isolation breaker primary and backup

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3. 6

ACTION:

a. With one or more of the ~~primary containment penetration conductor~~ overcurrent protective devices shown in Table 3.8.4 ~~-~~1 inoperable, declare the affected system or component inoperable and apply the appropriate ACTION statement for the affected system, and 6

1. For ~~6.9 or~~ 4.16 kV circuit breakers, de-energize the ~~6.9 or~~ 4.16 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 (racking out the breaker)~~ within 72 hours and verify the inoperable breaker(s) to be ~~(racked out)~~ disconnected 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 or 4.16~~ kV circuits which have their redundant circuit ~~breakers tripped or to~~ 480 volt circuits which have the inoperable circuit breaker ~~(racked out)~~ disconnected.

SURVEILLANCE REQUIREMENTS

4.8.4. ~~Each~~ Each of the ~~primary containment penetration conductor~~ Class 1E isolation breaker overcurrent protective devices shown in Table 3.8.4 ~~-~~1 shall be demonstrated OPERABLE 6

a. At least once per 18 months; 4.16 kV 25

1. By verifying that the medium voltage ~~(4.16 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.

per Surveillance Requirements 4.8.4.5.

TABLE 3.8.4.6-1

CLASS 1E ISOLATION BREAKER OVERCURRENT PROTECTIVE DEVICES (PRIMARY AND BACKUP CIRCUIT BREAKERS)

480 VAC Molded Case Circuit Breakers

Type HFB150

Class 1E Circuit Breaker No.	Location	Trip Type*	SYSTEM EQUIPMENT POWERED
52-212043	10B212	TM TM	208/120 VAC Distribution Panel 10Y201
52-222043	10B222	TM TM	208/120 VAC Distribution Panel 10Y202
52-232043	10B232	TM TM	208/120 VAC Distribution Panel 10Y203
52-242043	10B242	TM TM	208/120 VAC Distribution Panel 10Y204
52-232021	10B232	IM	Steam Header Downstream Drain
52-232101	10B232	TM	Isolation Valve 1AB-HV-F071
52-232131	10B232	IM	MSIV Outboard Seal Gas Supply
52-232102	10B232	TM	Valve 1KP-HV-5829B
52-232132	10B232	IM	Main Steam Line A MSIV Outboard
52-232191	10B232	TM	Seal Gas Supply Valve 1KP-HV-5834B
52-232133	10B232	IM	Main Steam Line B MSIV Outboard
52-232192	10B232	TM	Seal Gas Supply Valve 1KP-HV-5835B
52-232141	10B232	IM	Main Steam Line C MSIV Outboard
52-232194	10B232	TM	Seal Gas Supply Valve 1KP-HV-5836B
52-232143	10B232	IM	Main Steam Line D MSIV Outboard
52-232195	10B232	TM	Seal Gas Supply Valve 1KP-HV-5837B
62-242111	10B242	IM	MSIV Inboard Seal Gas Supply
52-242023	10B242	TM	Valve 1KP-HV-5829A
52-242132	10B242	IM	Main Steam Line A MSIV Inboard
52-242024	10B242	TM	Seal Gas Supply Valve 1KP-HV-5834A
52-242133	10B242	IM	Main Steam Line B MSIV Inboard
52-242064	10B242	TM	Seal Gas Supply Valve 1KP-HV-5835A
52-242141	10B242	IM	Main Steam Line C MSIV Inboard
52-242113	10B242	TM	Seal Gas Supply Valve 1KP-HV-5836A

TABLE 3.8.4.6-1

CLASS 1E ISOLATION BREAKER

OVERCURRENT PROTECTIVE DEVICES

CONTINUED

52-242143	10B242	IM	Main Steam Line D MSIV Inboard
52-242114	10B242	TM	Seal Gas Supply Valve 1KP-HV-5837A
52-242161	10B242	IM	RWCU Discharge To Feedwater
52-242214	10B242	TM	Valve 1AE-HV-F039
52-232054	10B232	IM	Feedwater Line Cross Tie Isolation
52-232171	10B232	TM	Valve 1AE-HV-4144

* IM denotes instantaneous magnetic
TM denotes thermal magnetic

SER Technical Specification Issue No. 42 (SER Section 9.3.1, 9.3.6)
Air quality testing

The service and instrument air systems will initially meet the requirements of American National Standards Institute (ANSI) Std. MC11.1-1976, using non-oil-lubricated air compressors. The applicant has committed to perform periodic air quality testing of the air systems to ensure compliance with the requirements of ANSI Std. MC11.1-1976. This should be incorporated into the plant Technical Specifications.

The applicant has committed to have the PCIG and instrument air systems meet the requirements of ANSI Std. MC11.1-1976, using non-oil-lubricated air compressors as part of the preoperational startup tests. The applicant has committed to perform air quality testing in accordance with ANSI Std. MC11.1-1976. The applicant stated that the maximum particle size after the filter will be 3.0 microns. The filters will be inspected quarterly with the system testing to ANSI Std. MC11.1-1976 every refueling. On failure to meet acceptable air quality, branch lines are to be tested to determine the extent of problems and corrective action needed. This should be incorporated into the plant Technical Specifications.

Response

The instrument air system is not included in the Standard Technical Specifications nor is it included in the Technical Specifications for other BWR plants (e.g., Limerick, Susquehanna). The requirement for testing the air quality has no limiting condition for operation of the plant. The periodic testing of the air quality is included in the plant operating procedures.

SER Technical Specification Issue No. 47 (SER Section 15.2)
Turbine bypass system and level 8 high-water trip performance

In analyzing anticipated operational transients, the applicant has taken credit for plant operating equipment that is not normally reviewed by the staff because it is not considered essential for safety. The staff has discussed the application of this equipment generically with General Electric. On the basis of these discussions, it is the staff's understanding that the most limiting transient that takes credit for this equipment is the excess feedwater event. Further, it is the staff's understanding that the only plant operating equipment that plays a significant role in mitigating this event (excess feedwater) is the turbine bypass system and the level 8 high water level trip (close turbine stop valves). To ensure an acceptable level of performance for Hope Creek, the Staff's position is that this equipment be identified in the plant Technical Specifications with regard to availability, setpoints, and surveillance testing.

Response

HCGS Draft Technical Specification Sections 3/4.7.10 Main Turbine Bypass System and 3/4.3.9 Feedwater/Main Turbine Trip Systems provide the required availability, setpoints, and surveillance requirements for the turbine bypass system and the level 8 high water level trip.

SER Technical Specification Issue No. 48 (SER Section 15.4.9)
Scram speed

The analysis of the rod drop accident has been performed on a generic basis by the General Electric Company and is reported in NEDO-10527, "Rod Drop Accident Analysis for Large Boiling Water Reactors," and Supplements 1 & 2 to that report. The calculation is performed under the following conservative assumptions:

(1) No thermal-hydraulic feedback is assumed.

(2) The least negative Doppler coefficient anticipated is used.

(3) The rod drop speed is assumed to be that measured for the rod design plus three standard deviations.

(4) The scram speed is the Technical Specification value.

Response

HCGS Draft Technical Specification Section 3/4.1.3.3 requires an average scram insertion time of 3.49 seconds. The rod drop accident analysis referenced above used a value of 5.00 seconds. Therefore the Technical Specification requirement of 3.49 seconds is conservative based on the rod drop accident analysis.

SER Technical Specification Issue No. 49 (SER Section 15.6.4)
Primary Coolant Activity

A guillotine break of one of the four main steamlines is postulated to occur outside the primary containment, downstream of the outermost isolation valve, resulting in mass loss from both ends of the break. The primary coolant loss is assumed to be limited by steamline flow limiters to a maximum release rate of 200% of rated steam flow, and by Technical Specifications which ensure the maximum closure time of the main steam isolation valves (MSIVs) is 5.5 sec. Mass loss from the broken steamline terminates when the MSIVs are fully closed. The applicant has calculated that 99,400 lb. of water and steam would be released to the atmosphere before the MSIVs would close following such an accident. The staff followed the recommendation of SRP Section 15.6.4 (NUREG-0800) and conservatively assumed 140,000 lbs. of coolant would be released.

As specified in SRP Section 15.6.4, doses were calculated for a long-term (Case I) and short-term (Case II) primary coolant Technical Specification limits on iodine activity as given NUREG-0123, "Standard Technical Specifications for General Electric Boiling Water Reactors." The staff's calculated doses are listed in Table 15.1. The atmospheric dispersion values (x/Q) used in accident evaluations are in Table 15.3. The assumptions used in the staff analysis are listed in Table 15.4. The resultant doses for the short-term limits are within the guideline values of 10 CFR 100, and for the long-term limit are less than a small fraction of the guideline values of 10 CFR 100. These results meet the acceptance criteria of SRP Section 15.6.4.

To provide suitable limitations on the offsite radiological consequences of this accident, the staff will require that the BWR Standard Technical Specifications on primary coolant activity be incorporated into the Hope Creek Technical Specifications.

Response

The primary coolant activity limits are given in HCGS Draft Technical Specification Section 3/4.4.5, Specific Activity. The limits are consistent with the limits in the Standard Technical Specifications.

SER Technical Specification Issue No. 52 (SER Section 15.9.3)
Automatic depressurization system logic

By FSAR Amendment 5, the applicant adopted the results of the BWROG report ("NUREG-0737, Item II.K.3.18 - Modification of Automatic Depressurization Systems (ADS) Logic--Feasibility for Increased Diversity for Some Events" dated October 28, 1982) on TMI Action Plan Item II.K.3.18. The applicant has committed to modify the ADS logic to bypass the high drywell pressure trip after a sustained lower water level signal and to add a manual switch that may be used to inhibit ADS actuation if necessary. This is consistent with Option 4 of the BWROG study and is acceptable to the staff with the following conditions:

Technical Specifications must be provided for the bypass timer and manual inhibit switch.

Response

HCGS Draft Technical Specification Section 3/4.3.3 ECCS Actuation Instrumentation, Tables 3.3.3-1, 3.3.3-2, and 4.3.3.1-1 have been revised to provide the required technical specifications for the bypass timer and manual inhibit switch.

~~HOPE CREEK~~ ~~GE-STS (BWR/4)~~

TABLE 3.3.3-1 (Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION(a)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
4. AUTOMATIC DEPRESSURIZATION SYSTEM#			
a. Reactor Vessel Water Level - Low Low Low, Level 1	~~(2)~~ 4	1, 2, 3	30
b. Drywell Pressure - High	~~(2)~~ 4	1, 2, 3	30
c. ADS Timer	~~(1)~~ 2	1, 2, 3	31
d. Core Spray Pump Discharge Pressure - High (Permissive)	~~1/loop~~ 2/pump	1, 2, 3	31
e. RHR LPCI Mode Pump Discharge Pressure - High (Permissive)	~~1/loop~~ 2/pump	1, 2, 3	31
f. Reactor Vessel Water Level - Low, Level 3 (Permissive)	~~(1)~~ 2	1, 2, 3	31
g. Manual Initiation	~~4(1)/(valve)~~ 4	1, 2, 3	34
h. ADS Drywell Pressure Bypass Timer	2	1, 2, 3	31
i. ADS Manual Inhibit Switch	2	1, 2, 3	31

TRIP FUNCTION	TOTAL NO. OF CHANNELS(e)	CHANNELS TO TRIP(e)	MINIMUM CHANNELS OPERABLE(e)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
5. LOSS OF POWER					
1. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	~~4~~ ~~1~~/bus	~~2~~ ~~1~~/bus	~~3~~ ~~1~~/bus	1, 2, 3, 4**, 5**	~~37~~ 38
2. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	~~3/bus~~ 2/source/bus	~~2/bus~~ 2/source/bus	~~2/bus~~ 2/source/bus	1, 2, 3, 4**, 5**	38

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(a) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.
(b) Also actuates the associated emergency diesel generators.
(c) One trip system. Provides signal to HPCI pump suction valves only.
(d) ~~On 2 out of 2 logic,~~ provides a signal to ~~(close)~~ trip HPCI pump ~~(discharge valve)~~ (turbine) only.
* When the system is required to be OPERABLE per Specification 3.5.2.
# Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 100 psig.
** Required when ESF equipment is required to be OPERABLE.
(e) In divisions 1 and 2, the two sensors are associated with each pump and valve combination. In divisions 3 and 4, the two sensors are associated with each pump only.
(f) Divisions 1 and 2 only.

INSERT A

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
4. AUTOMATIC DEPRESSURIZATION SYSTEM		
a. Reactor Water Level - Low Low Low, Level 1	≥ -129‡ inches*	≥ ‡-136‡ inches
b. Drywell Pressure - High	≤ ‡1.68‡ psig	≤ ‡1.88‡ psig
c. ADS Timer	≤ ‡105‡ seconds	≤ ‡117‡ seconds
d. Core Spray Pump Discharge Pressure - High	≥ ‡145‡ psig, (increasing)	≥ ~~(135)~~ 125 psig, (increasing), ~~Subsystem A → (155) psig, (increasing), Subsystem B~~ ≥ ‡115‡ psig, (increasing) ~~Subsystem A → (135) psig, (increasing), Subsystem B~~
e. RHR LPCI Mode Pump Discharge Pressure-High	≥ 125 ~~(146)~~ psig, increasing	
f. Reactor Vessel Water Level-Low, Level 3	> 12.5 ~~(12)~~ inches	> ~~(11.5)~~ inches
g. Manual Initiation	NA	NA 11.0
h. ADS Drywell Pressure Bypass Timer	≤ 5.0 minutes	≤ 5.5 minutes
i. ADS Manual Inhibit Switch	NA	NA
5. LOSS OF POWER		
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage ~~(###)~~)	a. 4.16 kv Basis - 2975 ~~(2940)~~ 30 + ~~(101)~~ volts	2975 63 ~~(2940)~~ ± ~~(315)~~ volts
	b. 120 v Basis - 85 ~~(84)~~ + ~~(4.6)~~ 0.85 volts	85 1.68 ~~(84)~~ ± ~~(9)~~ volts
	c. ≤ ~~(10)~~ 0.07 sec. time delay	≤ ~~(10)~~ 0.07 sec. time delay
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage‡ (**))	a. 4.16 kv Basis - 3815 ~~(3727)~~ + ~~(9)~~ 114 volts	3815 140 ~~(3727)~~ ± ~~(21)~~ volts
	b. 120 v Basis - 109 ~~(106.5)~~ + ~~(0.25)~~ 3.3 volts	109 4.28 ~~(106.5)~~ ± ~~(0.60)~~ volts
	c. ~~(10)~~ + ~~(0.5)~~ sec. time delay >18.4	~~(10)~~ ± ~~(1.0)~~ sec. time delay >18.4

* See Bases Figure B 3/4 3-1.

(** This is an inverse time delay voltage relay. The voltages shown are the maximum that will not result in a trip. Some voltage conditions will result in decreased trip times.)

‡# X is value that ensures adequate NPSH and precludes air entry due to vortexing.‡

‡## Y is ~~(5) inches above normal water level.~~ suppression pool high water level ‡

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TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
4. AUTOMATIC DEPRESSURIZATION SYSTEM#				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R(a)	1, 2, 3
b. Drywell Pressure - High	S	M	R(a)(g)	1, 2, 3
c. ADS Timer	NA	M	Q	1, 2, 3
d. Core Spray Pump Discharge Pressure - High	S	M	R	1, 2, 3
e. RHR LPCI Mode Pump Discharge Pressure - High	S	M	R	1, 2, 3
f. Reactor Vessel Water Level - Low, Level 3	S	M	R(a)(g)	1, 2, 3
g. Manual Initiation	NA	R(f)	NA	1, 2, 3
h. ADS Drywell Pressure Bypass Timer	NA	M	Q	1, 2, 3
i. ADS Manual Inhibit Switch	NA	R	NA	1, 2, 3
5. LOSS OF POWER				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	NA	NA	R	1, 2, 3, 4**, 5**
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	S	M	R	1, 2, 3, 4**, 5**

(f) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 day as part of circuitry required to be tested for automatic system actuation.

* When the system is required to be OPERABLE per Specification 3.5.2.

** Required OPERABLE when ESF equipment is required to be OPERABLE.

Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 100 psig.

(a) Calibrate trip unit at least once per 31 days.

Hope Creek Unit 1 Rev. 4

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ATTACHMENT 4

Revision 4 HCGS Draft Technical
Specification Pages

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DRAFT TECHNICAL SPECIFICATIONS

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DRAFT TECHNICAL SPECIFICATIONS

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

HOPE CREEK
~~DC-515 (BNR/4)~~

TABLE 3.3.3-1 (Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION(a)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
4. AUTOMATIC DEPRESSURIZATION SYSTEM#			
a. Reactor Vessel Water Level - Low Low Low, Level 1	~~(2)~~ 4	1, 2, 3	30
b. Drywell Pressure - High	~~(2)~~ 4	1, 2, 3	30
c. ADS Timer	~~(1)~~ 2	1, 2, 3	31
d. Core Spray Pump Discharge Pressure - High (Permissive)	~~1/loop~~ 2/pump	1, 2, 3	31
e. RHR LPCI Mode Pump Discharge Pressure - High (Permissive)	~~1/loop~~ 2/pump	1, 2, 3	31
f. Reactor Vessel Water Level - Low, Level 3 (Permissive)	~~(1)~~ 2	1, 2, 3	31
g. Manual Initiation	~~4 (1)/(valve)~~ 4	1, 2, 3	34
h. ADS Drywell Pressure Bypass Timer	2	1, 2, 3	31
i. ADS Manual Inhibit Switch	2	1, 2, 3	31

TRIP FUNCTION	TOTAL NO. OF CHANNELS(e)	CHANNELS TO TRIP(e)	MINIMUM CHANNELS OPERABLE(e)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
5. LOSS OF POWER					
1. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	~~4~~ 1/bus	~~2~~ 1/bus	~~3~~ 1/bus	1, 2, 3, 4**, 5**	~~37~~ 38
2. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	~~3/bus~~ 2/source/bus	~~2/bus~~ 2/source/bus	~~2/bus~~ 2/source/bus	1, 2, 3, 4**, 5**	38

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(a) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.
(b) Also actuates the associated emergency diesel generators.
(c) One trip system. Provides signal to HPCI pump suction valves only.
(d) ~~On 3 out of 2 logic,~~ provides a signal to ~~(close)~~ [trip] HPCI pump ~~(discharge valve)~~ [turbine] only.
* When the system is required to be OPERABLE per Specification 3.5.2.
# Not required to be OPERABLE when reactor steam dome pressure is less than or equal to [100] psig.
** Required when ESF equipment is required to be OPERABLE.
(e) In divisions 1 and 2, the two sensors are associated with each pump and valve combination. In divisions 3 and 4, the two sensors are associated with each pump only.
(f) Divisions 1 and 2 only.

INSERT A

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
4. AUTOMATIC DEPRESSURIZATION SYSTEM		
a. Reactor Water Level - Low Low Low, Level 1	>-129 inches*	>-136 inches
b. Drywell Pressure - High	≤ 1.68 psig	≤ 1.88 psig
c. ADS Timer	≤ 105 seconds	≤ 117 seconds
d. Core Spray Pump Discharge Pressure - High	≥ 145 psig, (increasing)	≥ ~~(135)~~ 125 psig, (increasing), ~~Subsystem A~~ ~~≥ (155) psig, (increasing),~~ ~~Subcystem B~~
e. RHR LPCI Mode Pump Discharge Pressure-High	≥ ~~(146)~~ 125 psig, increasing	≥ 115 psig, (increasing) ~~Subsystem A ≥ (135) psig, (increasing), Subsystem B~~
f. Reactor Vessel Water Level-Low, Level 3	> ~~(12)~~ 12.5 inches	> ~~(11.5)~~ inches
g. Manual Initiation	NA	NA 11.0
h. ADS Drywell Pressure Bypass Timer	≤ 5.0 minutes	≤ 5.5 minutes
i. ADS Manual Inhibit Switch	NA	NA
5. LOSS OF POWER		
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage ~~(***)~~)	a. 4.16 kv Basis - ~~(2940)+(161)~~ 2975 volts	~~(2940)~~ 2975 ± ~~(315)~~ 63 volts
	b. 120 v Basis - ~~(84)+(4.6)~~ 85 0.85 volts	~~(84)~~ 85 ± ~~(9)~~ 18 volts
	c. ≤ ~~(10)~~ 0.07 sec. time delay	≤ ~~(10)~~ 0.07 sec. time delay
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage‡ (**))	a. 4.16 kv Basis - ~~(3727)+(9)~~ 3815 114 volts	~~(3727)~~ 3815 ± ~~(21)~~ 140 volts
	b. 120 v Basis - ~~(106.5)+(0.25)~~ 109 3.3 volts	~~(106.5)~~ 109 ± ~~(0.50)~~ 4.0 volts
	c. ~~(10)+(0.5)~~ sec. time delay >18.4	~~(10)+(1.0)~~ >18.4 sec. time delay

* See Bases Figure B 3/4 3-1.

(** This is an inverse time delay voltage relay. The voltages shown are the maximum that will not result in a trip. Some voltage conditions will result in decreased trip times.)

‡# X is value that ensures adequate NPSH and precludes air entry due to vortexing.

‡## Y is ~~(5) inches above normal water level.~~ suppression pool high water level

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TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
4. AUTOMATIC DEPRESSURIZATION SYSTEM[#]				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R[a](#)[9]	1, 2, 3
b. Drywell Pressure - High	S	M	R[a](#)[9]	1, 2, 3
c. ADS Timer	NA	M	Q	1, 2, 3
d. Core Spray Pump Discharge Pressure - High	S	M	R	1, 2, 3
e. RHR LPCI Mode Pump Discharge Pressure - High	S	M	R	1, 2, 3
f. Reactor Vessel Water Level - Low, Level 3	S	M	R[a](#)[9]	1, 2, 3
g. Manual Initiation	NA	R (R)	NA	1, 2, 3
h. ADS Drywell Pressure Bypass Timer	NA	M	Q	1, 2, 3
i. ADS Manual Inhibit Switch	NA	R	NA	1, 2, 3
5. LOSS OF POWER				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	NA	NA	R	1, 2, 3, 4**, 5**
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	S	M	R	1, 2, 3, 4**, 5**

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(#) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 day as part of circuitry required to be tested for automatic system actuation.

* When the system is required to be OPERABLE per Specification 3.5.2.

** Required OPERABLE when ESF equipment is required to be OPERABLE.

Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 100 psig.

a (#) Calibrate trip unit at least once per 31 days.

CLASS 1E ISOLATION BREAKER

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. (Class 1E isolation breaker (tripped by a LOCA signal))

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 or~~ 4.16 kV circuit breakers, de-energize the ~~6.9 or~~ 4.16 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 ~~(racking out the breaker)~~ within 72 hours and verify the inoperable breaker(s) to be ~~(racked out)~~ disconnected 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 or~~ 4.16 kV circuits which have their redundant circuit ~~breakers tripped or to~~ 480 volt circuits which have the inoperable circuit breaker ~~(racked out)~~ disconnected.

SURVEILLANCE REQUIREMENTS

4.8.4.2 Each of the ~~primary containment penetration conductor~~ Class 1E isolation breaker 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 ~~(4.16 kV)~~ 4.16 kV circuit breakers are OPERABLE by selecting, on a rotating basis, at least ~~one~~ 25% 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.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

and the long time delay trip elements

4. 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 long time 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 band-width 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.

For circuit breakers equipped with solid state trip devices, the functional testing may be performed with use of portable instruments designed to verify the time-current characteristics and pickup calibration of the trip elements.

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 nondestructive 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 3.8.4.5-1

CLASS 1E ISOLATION BREAKER OVERCURRENT PROTECTIVE DEVICES (BREAKER TRIPPED BY A LOCA SIGNAL)

480 VAC POWER CIRCUIT BREAKERS

1. TYPE AKR-5A-30

Class 1E Circuit Breaker No.	Class 1E Bus	Non-Class 1E Load Description
52-41011	10B410	Reactor Auxiliaries Cooling System Pump 1AP209
52-41014	10B410	Radwaste and Service Area MCC 10B313
52-41024	10B410	Reactor Building Supply Air Handling Unit 1BVH300
52-42011	10B420	Reactor Auxiliaries Cooling System Pump 1BP209
52-42014	10B420	Radwaste and Service Area MCC 10B323
52-42024	10B420	Reactor Building Exhaust Fan 1BV301
52-43024	10B430	Reactor Building Supply Air Handling Unit 1CVH300
52-43014	10B430	Control Rod Drive Pump 1AP207
52-44014	10B440	Control Rod Drive Pump 1BP207
52-44024	10B440	Reactor Building Supply Air Handling Unit 1AVH300
52-44034	10B440	Radwaste Area Supply Fan 0BV316
52-45011	10B450	Reactor Area MCC 10B252
52-45014	10B450	Radwaste Area Exhaust Fan 0AV305
52-45024	10B450	Emergency Instrument Air Compressor 10K100
52-45034	10B450	Reactor Building Exhaust Fan 1CV301
52-46011	10B460	Reactor Area MCC 10B262

TABLE 3.8.4.5-1

CLASS 1E ISOLATION BREAKER

OVERCURRENT PROTECTIVE DEVICES

1. Continued

Class 1E Circuit Breaker No.	Class 1E Bus	Non-Class 1E Load Description
52-46014	10B460	Radwaste Area Exhaust Fan 0BV305
52-47011	10B470	Reactor Area MCC 10B272
52-47014	10B470	Radwaste Area Exhaust Fan 0CV305
52-47024	10B470	Radwaste Area Supply Fan 0AV316
52-47031	10B470	Technical Support Center MCC 00B474
52-48011	10B480	Reactor Area MCC 10B282
52-48024	10B480	Reactor Building Exhaust Fan 1AV301

480 VAC MOLDED CASE CIRCUIT BREAKERS

1. TYPE HFB150

Class 1E Circuit Breaker No.	Class 1E Bus	Non-Class 1E Load Description
52-451023	10B451	Public Address System Inverter 10D496
52-471023	10B471	Security System Inverter 0AD495
52-441043	10B441	NSSS Computer Inverter 10D485

CLASS 1E ISOLATION BREAKER

ELECTRICAL POWER SYSTEMS

~~PRIMARY CONTAINMENT PENETRATION CONDUCTOR~~ OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION (CONTINUED)

3.8.4.[6] ~~All primary containment penetration conductor~~ overcurrent protective devices shown in Table 3.8.4.[6]-1 shall be OPERABLE. Class 1E isolation breaker primary and backup

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.[6]

ACTION:

a. With one or more of the ~~primary containment penetration conductor~~ overcurrent protective devices shown in Table 3.8.4.[6]-1 inoperable, declare the affected system or component inoperable and apply the appropriate ACTION statement for the affected system, and

1. For ~~6.9 or~~ 4.16[5] kV circuit breakers, de-energize the ~~6.9 or~~ 4.16[5] 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 (racking out the breaker)~~ within 72 hours and verify the inoperable breaker(s) to be ~~(racked out)~~ disconnected 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 or 4.16[5] kV circuits which have their redundant circuit breakers tripped or~~ to 480 volt circuits which have the inoperable circuit breaker ~~(racked out)~~ disconnected.

SURVEILLANCE REQUIREMENTS

4.8.4.[6] Each of the Class 1E isolation breaker ~~primary containment penetration conductor~~ overcurrent protective devices shown in Table 3.8.4.[6]-1 shall be demonstrated OPERABLE:

a. At least once per 18 months;

1. By verifying that the medium voltage ~~(4-15 KV)~~ 4.16 kV circuit breakers are OPERABLE by selecting, on a rotating basis, at least ~~10%~~ 25% 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.

per Surveillance Requirements 4.8.4.5.

TABLE 3.8.4.6-1

CLASS 1E ISOLATION BREAKER OVERCURRENT PROTECTIVE DEVICES (PRIMARY AND BACKUP CIRCUIT BREAKERS)

480 VAC Molded Case Circuit Breakers

Type HFB150

Class 1E Circuit Breaker No.	Location	Trip Type*	SYSTEM EQUIPMENT POWERED
52-212043	10B212	TM TM	208/120 VAC Distribution Panel 10Y201
52-222043	10B222	TM TM	208/120 VAC Distribution Panel 10Y202
52-232043	10B232	TM TM	208/120 VAC Distribution Panel 10Y203
52-242043	10B242	TM TM	208/120 VAC Distribution Panel 10Y204
52-232021 52-232101	10B232 10B232	IM TM	Steam Header Downstream Drain Isolation Valve 1AB-HV-F071
52-232131 52-232102	10B232 10B232	IM TM	MSIV Outboard Seal Gas Supply Valve 1KP-HV-5829B
52-232132 52-232191	10B232 10B232	IM TM	Main Steam Line A MSIV Outboard Seal Gas Supply Valve 1KP-HV-5834B
52-232133 52-232192	10B232 10B232	IM TM	Main Steam Line B MSIV Outboard Seal Gas Supply Valve 1KP-HV-5835B
52-232141 52-232194	10B232 10B232	IM TM	Main Steam Line C MSIV Outboard Seal Gas Supply Valve 1KP-HV-5836B
52-232143 52-232195	10B232 10B232	IM TM	Main Steam Line D MSIV Outboard Seal Gas Supply Valve 1KP-HV-5837B
52-242111 52-242023	10B242 10B242	IM TM	MSIV Inboard Seal Gas Supply Valve 1KP-HV-5829A
52-242132 52-242024	10B242 10B242	IM TM	Main Steam Line A MSIV Inboard Seal Gas Supply Valve 1KP-HV-5834A
52-242133 52-242064	10B242 10B242	IM TM	Main Steam Line B MSIV Inboard Seal Gas Supply Valve 1KP-HV-5835A
52-242141 52-242113	10B242 10B242	IM TM	Main Steam Line C MSIV Inboard Seal Gas Supply Valve 1KP-HV-5836A

TABLE 3.8.4.6-1

CLASS 1E ISOLATION BREAKER

OVERCURRENT PROTECTIVE DEVICES

CONTINUED

52-242143	10B242	IM	Main Steam Line D MSIV Inboard
52-242114	10B242	TM	Seal Gas Supply Valve 1KP-HV-5837A
52-242161	10B242	IM	RWCU Discharge To Feedwater
52-242214	10B242	TM	Valve 1AE-HV-F039
52-232054	10B232	IM	Feedwater Line Cross Tie Isolation
52-232171	10B232	TM	Valve 1AE-HV-4144

* IM denotes instantaneous magnetic
TM denotes thermal magnetic

ELECTRICAL POWER SYSTEMS

POWER RANGE NEUTRON MONITORING SYSTEM ELECTRICAL POWER MONITORING

LIMITING CONDITION FOR OPERATION

3.8.4.7 The [power range neutron monitoring system (NMS)] electric power monitoring channels for each inservice power [range NMS] power supply shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

a. With one [power range NMS] electric power monitoring channel for an inservice power [range NMS] power supply inoperable, restore the inoperable power monitoring channel to OPERABLE status within 72 hours or ~~remove the~~ deenergize associated [power range NMS] power supply ~~from service.~~ [feeder circuit].

b. With both [power range NMS] electric power monitoring channels for an inservice power [range NMS] power supply inoperable, restore at least one electric power monitoring channel to OPERABLE status within 30 minutes or ~~remove~~ deenergize the associated [power range NMS] power supply ~~from service~~ [feeder circuit].

SURVEILLANCE REQUIREMENTS

4.8.4.7 The above specified [power range NMS] electric power monitoring channels shall be determined OPERABLE:

a. At least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST, and

b. At least once per 18 months by demonstrating the OPERABILITY of over-voltage, under-voltage, and under-frequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic and output circuit breakers and verifying the following setpoints.

1. Over-voltage ≤ 132 VAC* (BUS A), 132 VAC* (BUS B)
2. Under-voltage ≥ 108 VAC* (BUS A), 108 VAC* (BUS B)
3. Under-frequency ≥ 57 Hz, -0, +2%.

* Final setpoints to be confirmed by field measurements.