FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

TECHNICAL SPECIFICATION
CHANGE REQUEST NOTICE 210

STRIKEOUT/SHADOW PAGES

Technical Specifications

Each change is indicted by a shadow box.

Deletions are indicated by strikeout.

Additional and replacement text are indicated by shading.

Bracketed information provides reference to one of the three parts of the TSCRN.

The shadow box for each change indicates the following:

(1) A change required for the remainder of Cycle 11 only is indicated in the shadow box as 'Cycle 11'.

(2) A permanent change is indicated in the shadow box as 'Permanent'.

(3) A change that may possibly be revised prior to restart of Cycle 12 depending on the Cycle 12 modifications is indicated in the shadow box as 'Reassess'.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable. AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available. [Part 1; Cycle 11] A.2	A.1 Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE. AND ~~A.1~~ Restore train(s) to OPERABLE status.	1 hour [Part 1; Cycle 11] AND 72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in Mode 4.	6 hours 12 hours

3.7 Plant Systems

3.7.5 Emergency Feedwater (EFW) System

LCO 3.7.5 Two EFW trains shall be OPERABLE.

~~NOTE~~

[Part 1; Permanent] ~~Only one EFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 3 with steam generator pressure < 200 psig.~~

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One steam supply to the turbine driven EFW pump inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. ASV-5 inoperable. [Part 1; Cycle 11; New Action]	B.1 Restore ASV-5 to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
C. EFV-12 inoperable. OR EFV-13 inoperable. OR ASV-204 inoperable. [Part 1; Cycle 11; New Action]	C.1 Verify the following are OPERABLE: 1. Train "B" Emergency Diesel Generator, 2. Train "B" AC Electrical Power Distribution Subsystem, and 3. Train "B" AC Vital Bus Subsystem. AND	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued) [Part 1; Cycle 11; New Action]	C.2 Restore affected equipment to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
D. Turbine driven EFW pump or associated flow path inoperable for reasons other than Condition A. [Part 1; Cycle 11; New Action]	D.1 Verify the following are OPERABLE: 1. SWP-1B, 2. Train "B" of the Nuclear Services Seawater System, 3. CHHE-1B, and 4. CHP-1B. AND	1 hour
	D.2 Verify both trains of the following are OPERABLE: 1. ECCS, 2. Decay Heat Closed Cycle Cooling, 3. Decay Heat Seawater, 4. Emergency Diesel Generators, 5. AC Electrical Power Distribution Subsystems, and 6. AC Vital Bus Subsystems. AND	1 hour
	D.3 Restore Turbine driven EFW pump and associated flow path to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO.

[Part 1; Cycle 11] E. Motor driven EFW pump or associated flow path inoperable.

[Part 1; Cycle 11] E.1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ~~One EFW train inoperable for reasons other than Condition A.~~ [Part 1; Cycle 11] F	B.1 Restore ~~EFW train~~ to OPERABLE status. [Part 1; Cycle 11] motor driven EFW pump and associated flow path	72 hours AND 10 days from discovery of failure to meet the LCO
C. Required Action and associated Completion Time of Condition ~~A or B~~ not met. [Part 1; Cycle 11] A, B, C, D or E	~~C.1~~ Be in Mode 3. [Part 1; Cycle 11] F.1 AND ~~C.2~~ Be in Mode 4. [Part 1; Cycle 11] F.2	6 hours 12 hours
D. Two EFW trains inoperable. [Part 1; Cycle 11] G	~~D.1~~ Initiate action to restore one EFW train to OPERABLE status. [Part 1; Cycle 11] G.1	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.5.1 Verify each EFW manual, power operated, and automatic valve in each water flow path and in both steam supply flow paths to the turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	45 days
SR 3.7.5.2 ----------NOTE---------- Not required to be performed for the turbine driven EFW pump, until 24 hours after ~~reaching 200 psig in the steam generators~~. ---------- Verify the developed head of each EFW pump at the flow test point is greater than or equal to the required developed head.	[Part 1; Permanent] entering MODE 3 — 45 days on a STAGGERED TEST BASIS

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.5.3 ----------NOTE---------- Not required to be performed until 24 hours after ~~reaching 200 psig in the steam generators~~. ---------- Verify each EFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months
SR 3.7.5.4 ----------NOTE---------- Not required to be performed until 24 hours after ~~reaching 200 psig in the steam generators~~. ---------- Verify each EFW pump starts automatically on an actual or simulated actuation signal.	24 months
SR 3.7.5.5 Verify proper alignment of the EFW flow paths by verifying flow from the EFW tank to each steam generator.	Prior to entering MODE 2 whenever plant has been in MODE 5 or 6 for > 30 days

[Part 1; Permanent] entering MODE 3

[Part 1; Permanent] entering MODE 3

3.7 Plant Systems

3.7.7 Nuclear Services Closed Cycle Cooling Water (SW) System

LCO 3.7.7 The SW System shall be OPERABLE with:

a. Two OPERABLE emergency SW pumps; and

b. Three OPERABLE SW heat exchangers.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SWP-1B inoperable. [Part 1; Cycle 11; New ACTION]	A.1 -------NOTE -------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
[Part 1; Cycle 11] B. SWP-1A	A.2 Restore SWP-1B to OPERABLE status.	72 hours
A. ~~One emergency SW pump~~ inoperable. OR One required SW heat exchanger inoperable.	~~A.1~~ Restore ~~SW System~~ to OPERABLE status. [Part 1; Cycle 11] B.1	72 hours [Part 1; Cycle 11] SWP-1A and SW heat exchanger

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~. Required Action and associated Completion Time not met. [Part 1; Cycle 11] C	~~B.1~~ Be in MODE 3. [Part 1; Cycle 11] C.1 AND ~~B.2~~ Be in MODE 5. [Part 1; Cycle 11] C.2	6 hours 36 hours

3.7 Plant Systems

3.7.8 Decay Heat Closed Cycle Cooling Water (DC) System

LCO 3.7.8 Two DC trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC train inoperable.	A.1 -------NOTE -------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour [Part 1; Cycle 11]
	AND	
[Part 1; Cycle 11] A.2	~~A.1~~ --------NOTE ------- Enter applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops-MODE 4," for required decay heat removal loops made inoperable by DC train inoperability. ---------- Restore DC train to OPERABLE status.	72 hours

(continued)

3.7 Plant Systems

3.7.9 Nuclear Services Seawater System

LCO 3.7.9 Two Nuclear Services Seawater System trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Train "B" of the Nuclear Services Seawater System inoperable. [Part 1; Cycle 11; New ACTION]	A.1 -------NOTE -------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
[Part 1; Cycle 11] B. Train "A" of the Nuclear Services Seawater System	A.2 Restore Train "B" of the Nuclear Services Seawater System to OPERABLE status.	72 hours
~~A. One Nuclear Services Seawater System train~~ inoperable.	~~A.1~~ Restore ~~Nuclear Services Seawater System train~~ to OPERABLE status.	72 hours

[Part 1; Cycle 11] B.1

(continued)

[Part 1; Cycle 11] Train "A" of the Nuclear Services Seawater System

B. Required Action and associated Completion Time not met. [Part 1; Cycle 11] C	~~B.1~~ [Part 1; Cycle 11] C.1	Be in Mode 3.	6 hours
	AND		
	~~B.2~~ [Part 1; Cycle 11] C.2	Be in Mode 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.9.1	---------- NOTE ---------- Isolation of Nuclear Services Seawater System flow to individual components does not render the Nuclear Services Seawater System inoperable. ----------	
	Verify each Nuclear Services Seawater System manual valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.9.2	---------- NOTE ---------- Not applicable in MODE 4. ----------	
	Verify each Emergency Nuclear Services Seawater System pump starts automatically on an actual or simulated actuation signal.	24 months

3.7 Plant Systems

3.7.10 Decay Heat Seawater System

LCO 3.7.10 Two Decay Heat Seawater System trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Decay Heat Seawater System train inoperable.	A.1 -------NOTE -------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour [Part 1; Cycle 11]
	AND	
	~~A.1~~ --------NOTE ------- Enter applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops-MODE 4," for required decay heat removal loops made inoperable by Decay Heat Seawater System train inoperability. ---------- Restore Decay Heat Seawater System train to OPERABLE status.	72 hours

[Part 1; Cycle 11] A.2

(continued)

[Part 1; Permanent; new specification]

3.7 Plant Systems

3.7.18 Control Complex Cooling System

LCO 3.7.18 Control Complex Cooling System shall be OPERABLE with:

a. 2 OPERABLE chillers and associated pumps; and

b. 2 heat exchangers.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CHHE-1B inoperable OR CHP-1B inoperable. [Part 1; Cycle 11]	A.1 -------NOTE -------- This Action is not applicable in MODE 4. ----------	
	Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
	A.2 Restore CHHE-1B and CHP-1B to OPERABLE status.	30 days

[Part 1: Permanent; new

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. CHHE-1A inoperable. OR CHP-1A inoperable. OR One required Control Complex Cooling heat exchanger inoperable.	B.1 Restore CHHE-1A, CHP-1A and Control Complex Cooling heat exchanger to OPERABLE status. [Part 1; Cycle 11]	30 days
C. Required Action and associated Completion Time not met.	C.1 Be in Mode 3. AND C.2 Be in Mode 5.	6 hours 36 hours
D. Any combination of components rendering the Control Complex Cooling System inoperable.	D.1 Enter LCO 3.0.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify each chilled water pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.18.2	Verify the redundant capability of the Control Complex Cooling System to remove the assumed heat load.	24 months

ACTIONS (continued)

CONDITION		REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3	Restore required offsite circuit to OPERABLE status.	72 hours AND 6 days from discovery of failure to meet LCO
B. ~~One~~ EDG inoperable. [Part 1; Cycle 11] Train "A"	B.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND		
[Part 1; Cycle 11]	B.2	-------NOTE -------- This Action is not applicable in MODE 4. ----------	[Part 1; Cycle 11]
		Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND		
[Part 1; Cycle 11] B.3	~~B.2~~	Declare required feature(s), supported by the inoperable EDG, inoperable when its redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued) [Part 1; Cycle 11] B.4.1	~~B.3.1~~	Determine OPERABLE EDG is not inoperable due to common cause failure.	24 hours
	OR		
[Part 1; Cycle 11] B.4.2	~~B.3.2~~	Perform SR 3.8.1.2 for OPERABLE EDG.	24 hours
	AND		
[Part 1; Cycle 11] B.5	~~B.4~~	Restore EDG to OPERABLE status.	72 hours AND 6 days from discovery of failure to meet LCO

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Train "B" EDG inoperable. [Part 1; Cycle 11; New Action]	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	C.2 -------- NOTE -------- This Action is not applicable in MODE 4. ----------	
	Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204 3. EFV-12, and 4. EFV-13	1 hour
	AND	
	C.3 Declare required feature(s), supported by the inoperable EDG, inoperable when its redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND	(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued) [Part 1; Cycle 11; New Action (continued)]	C.4.1 Determine OPERABLE EDG is not inoperable due to common cause failure. OR C.4.2 Perform SR 3.8.1.2 for OPERABLE EDG. AND C.5 Restore EDG to OPERABLE status.	24 hours 24 hours 72 hours AND 6 days from discovery of failure to meet LCO
[Part 1; Cycle 11] D.	[Part 1; Cycle 11] D.1	
~~C.~~ Two required offsite circuits inoperable.	~~C.1~~ Declare required feature(s) inoperable when its redundant required feature(s) are inoperable. AND ~~C.2~~ Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition ~~C~~ concurrent with inoperability of redundant required feature(s) 24 hours
[Part 1; Cycle 11] D.2		[Part 1; Cycle 11] D.

(continued)

[Part 1; Cycle 11] E.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D.~~ One required offsite circuit inoperable. AND ~~One~~ EDG inoperable. [Part 1; Cycle 11] Train "A"	---------- NOTE ---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems Operating," when Condition ~~D~~ is entered with no AC power source to one train. ---------- E.1 -------NOTE -------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE. AND	[Part 1; Cycle 11] E [Part 1; Cycle 11] 1 hour
[Part 1; Cycle 11]	~~D.1~~ Restore required offsite circuit to OPERABLE status. OR ~~D.2~~ Restore EDG to OPERABLE status.	12 hours 12 hours

[Part 1; Cycle 11] E.2

[Part 1; Cycle 11] E.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One required offsite circuit inoperable. AND Train "B" EDG inoperable. [Part 1; Cycle 11; New Action]	----------- NOTE ----------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems Operating," when Condition F is entered with no AC power source to one train. ----------------------------	
	F.1 -------NOTE-------- This Action is not applicable in MODE 4. -------------------- Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204 3. EFV-12, and 4. EFV-13	1 hour
	AND	
	F.2 Restore required offsite circuit to OPERABLE status.	12 hours
	OR	
	F.3 Restore EDG to OPERABLE status.	12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E.~~ Two EDGs inoperable. [Part 1; Cycle 11] G.	~~E.1~~ Restore one EDG to OPERABLE status. [Part 1; Cycle 11] G.1	2 hours
[Part 1; Cycle 11] H. ~~F.~~ Required Action and associated Completion Time of ~~Condition A, B, C, D, or E~~ not met. [Part 1; Cycle 11] Condition A, B, C, D, E, F, or G	~~F.1~~ Be in MODE 3. [Part 1; Cycle 11] H.1 AND ~~F.2~~ Be in MODE 5. [Part 1; Cycle 11] H.2	12 hours 36 hours
~~G.~~ Three or more required AC sources inoperable. [Part 1; Cycle 11] I.	~~G.1~~ Enter LCO 3.0.3. [Part 1; Cycle 11] I.1	Immediately

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	---------- NOTES ---------- 1. EDG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one EDG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.6. ---------- Verify each EDG operates for ≥ 60 minutes at a load ≥ 2600 kW and ≤ 2850 kW.	31 days
SR 3.8.1.4	Verify each day tank contains ≥ ~~247~~ gal of fuel oil. → [Part 2; Reassess] 280	31 days
SR 3.8.1.5	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to the day tank.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. Momentary transients outside the load range do not invalidate this test. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each EDG operates for ≥ 60 minutes at a load ≥ ~~3100~~ kW and ≤ ~~3250~~ kW.	24 months [Part 2; Reassess] 3400 [Part 2; Reassess] 3300

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required emergency diesel generator (EDG).

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

---------- NOTES ----------

1. Separate Condition entry is allowed for each EDG.

2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EDG with stored fuel oil level < 22,917 gal and >19,643 gal in storage tank.	A.1 Verify combined stored fuel oil level > 45,834 gal.	1 hour
A. One or more EDGs with stored fuel oil level < ~~18,589 gal and > 15,933~~ gal in storage tank. AND Combined stored fuel oil level < ~~37,177~~ gal.	~~A.1~~ Restore fuel oil level to within limits.	48 hours
B. ~~One or more EDGs with stored~~ lube oil inventory < ~~233 gal and > 200~~ gal.	~~B.1~~ Restore lube oil inventory to within limits.	48 hours OR Declare both EDGs inoperable.

(continued)

[Part 2; Reassess; New ACTION]

[Part 2; Permanent] B.1

[Part 2; Reassess] 22,917 gal and > 19,643

[Part 2; Reassess] 45,834

[Part 2; Permanent]

[Part 2; Permanent] C.1

[Part 2; Permanent] C. With stored EDG

[Part 2, Reassess] 280 gal and > 240

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C.~~ One or more EDGs with stored fuel oil total particulates not within limit. [Part 2, Permanent] D	~~C.1~~ Restore fuel oil total particulates to within limits. [Part 2, Permanent] D.1	7 days
~~D.~~ One or more EDGs with new fuel oil properties not within limits. [Part 2, Permanent] E	~~D.1~~ Restore stored fuel oil properties to within limits. [Part 2, Permanent] E.1	30 days
~~E.~~ One or more EDGs with starting air receiver pressure < 225 psig and > 160 psig. [Part 2, Permanent] F	~~E.1~~ Restore starting air receiver pressure to within limits. [Part 2, Permanent] F.1	48 hours
~~F.~~ Required Action and associated Completion Time not met. [Part 2, Permanent] G OR One or more EDGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition ~~A, B, C, D, or E.~~	~~F.1~~ Declare associated EDG inoperable. [Part 2, Permanent] G.1 [Part 2, Permanent] A, B, C, D, E, or F	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each fuel oil storage tank contains ≥ ~~18,589~~ [Part 2; Reassess] 22,917 gal of fuel and combined fuel oil storage level ≥ ~~37,177~~ [Part 2; Reassess] 45,834 gal.	31 days
SR 3.8.3.2 Verify each EDG lube oil inventory is ≥ ~~233~~ [Part 2; Reassess] 280 gal.	31 days
SR 3.8.3.3 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4 Verify each EDG air start receiver pressure is ≥ 225 psig.	31 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS [Part 1, Cycle 11] Train "A"

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~One~~ AC electrical power distribution subsystem inoperable. [Part 1; Cycle 11]	A.1 ---------- NOTE ---------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	[Part 1; Cycle 11] 1 hour
	AND	
[Part 1; Cycle 11] A.2	~~A.1~~ Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Train "B" AC electrical power distribution subsystem inoperable.	B.1 ---------- NOTE ---------- This Action is not applicable in MODE 4. ----------	
[Part 1; Cycle 11] New Action	Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204 3. EFV-12, and 4. EFV-13.	1 hour
	AND	
	B.2 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
[Part 1, Cycle 11] C. Train "A"		
~~B. One~~ AC vital bus subsystem inoperable.	C.1 ---------- NOTE ---------- This Action is not applicable in MODE 4. ----------	
[Part 1; Cycle 11]	Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
[Part 1; Cycle 11] C.2	~~B.1~~ Restore AC vital bus subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO

ACTIONS (continued)

D. Train "B" AC vital bus subsystem inoperable. [Part 1, Cycle 11] New Action	D.1 ---------- NOTE ---------- This Action is not applicable in MODE 4. ---------- Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204 3. EFV-12, and 4. EFV-13.	1 hour
	AND	
[Part 1, Cycle 11] E	D.2 Restore AC vital bus subsystem to OPERABLE status. [Part 1, Cycle 11] E.1	8 hours AND 16 hours from discovery of failure to meet LCO
E. One DC electrical power distribution subsystem inoperable.	~~E.1~~ Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D~~. Required Action and associated Completion Time not met. [Part 1; Cycle 11] F	~~D.1~~ Be in MODE 3. [Part 1; Cycle 11] F.1 AND ~~D.2~~ Be in MODE 5 [Part 1; Cycle 11] F.2	6 hours 36 hours
~~E~~. Two trains with inoperable distribution subsystems that result in a loss of function. [Part 1; Cycle 11] G	~~E.1~~ Enter LCO 3.0.3 [Part 1; Cycle 11] G.1	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	7 days

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B 3.3 INSTRUMENTATION

B 3.3.5 Engineered Safeguards Actuation System (ESAS) Instrumentation

BASES

BACKGROUND

The ESAS initiates Engineered Safeguards (ES) Systems, based on the values of selected plant parameters, to protect core design and reactor coolant pressure boundary limits and to mitigate accidents.

ESAS actuates the following:

a. High Pressure Injection (HPI);

b. Low Pressure Injection (LPI);

c. Reactor Building (RB) Isolation and Cooling;

d. RB Spray;

e. Emergency Diesel Generator (EDG) Start; and

f. Control complex normal recirculation.

ESAS also provides two signals to the Emergency Feedwater Initiation and Control (EFIC) System. One signal initiates emergency feedwater (EFW) when an actuation of HPI Channel A and HPI Channel B is present. The other functions to trip the motor driven emergency feedwater pump when an RCS Pressure-Low Low initiation coincident with a loss of offsite power is present.

[Part 1; Cycle 11]

This trip signal may be manually defeated in certain small break LOCA scenarios. Assuming the single failure of the turbine driven feedwater pump or associated flow path in such circumstances, defeating this trip signal would maintain steam generator cooling with the motor driven emergency feedwater pump. Prior to defeating the trip signal, sufficient capability on the emergency diesel generators to power the required loads would be established as discussed in the BASES for Technical Specification 3.7.5.

(continued)

BASES

LCO

18. Core Exit Temperature (Backup) (continued)

following a steam generator tube rupture or small break LOCA. Operator actions to maintain a controlled cooldown, such as adjusting OTSG level or pressure, would be prompted by this indication. In addition, the core exit thermocouples provide input to the subcooling margin monitor, which is a Type A variable.

The subcooling margin monitor takes the average of the five highest CETs for each of the ICCM trains. Two channels ensure that a single failure will not disable the ability to determine the representative core exit temperature.

19. Emergency Feedwater Flow

EFW Flow instrumentation is provided to monitor operation of decay heat removal via the OTSGs. The EFW injection flow to each OTSG (2 channels per OTSG, one associated with each EFW injection line) is determined from a differential pressure measurement calibrated to a span of 0 gpm to 1000 gpm. Each differential pressure transmitter provides an input to a control room indicator and the plant computer.

EFW Flow is used by the operator to determine the need to throttle flow during accident or transient conditions to prevent ~~the EFW pumps from operating in runout conditions or from causing~~ excessive RCS cooldown rates when low decay heat levels are present. EFW Flow is also used by the operator to verify that the EFW System is delivering the correct flow to each OTSG. However, the primary indication of this function is provided by OTSG level.

[Part 1; Permanent]

These instruments are not assumed to provide information required by the operator to take a mitigation action specified in the safety analysis. As such, they are not Type A variables. However, the monitors are deemed risk significant (Category 1) and are included within the LCO based upon this consideration.

(continued)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.2 ECCS - Operating

BASES

BACKGROUND

The function of the ECCS is to provide core cooling to ensure that the reactor core is protected after any of the following accidents:

1. Loss of coolant accident (LOCA);

2. Steam generator tube rupture (SGTR); and

3. Steam line break (SLB).

There are two modes of ECCS operation: injection and recirculation. In the injection phase, all injection is initially added to the Reactor Coolant System (RCS) from the borated water storage tank (BWST). This injection flow is added via the RCS cold legs and core flood nozzles to the reactor vessel. After the BWST has been depleted to $\leq$ 15 feet but > 7 feet, the ECCS recirculation phase is entered as the ECCS suction is manually transferred to the reactor building emergency sump.

Two redundant, 100% capacity trains are provided. Each train consists of high pressure injection (HPI) and low pressure injection (LPI) subsystems. In MODES 1, 2, and 3, both trains must be OPERABLE. This ensures that 100% of the core cooling requirements can be provided even in the event of a single active failure.

[Part 1; Cycle 11]

Certain size small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B, and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystem, and AC Vital Bus Subsystems are required OPERABLE (Ref 5).

A suction header supplies water from the BWST or the reactor building emergency sump to the ECCS pumps. Separate piping

(continued)

BASES

ACTIONS

A.1

With one or more ECCS trains inoperable and at least 100% of the flow equivalent to a single OPERABLE ECCS train available, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. If the turbine driven emergency feedwater pump or associated flow path is not OPERABLE, then the capability to remove sufficient core decay heat cannot be assured and Condition B is applicable. Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

[Part 1; Cycle 11]

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

~~A.1~~

[Part 1; Cycle 11] A.2

With one or more ECCS trains inoperable and at least 100% of the flow equivalent to a single OPERABLE ECCS train available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on NRC recommendations (Ref. 3) that are based on a risk evaluation and is a reasonable time for many repairs.

An ECCS train is inoperable if it is not capable of delivering the design flow to the RCS.

(continued)

BASES

ACTIONS

~~A.1~~ (continued)

[Part 1; Cycle 11]
A.2

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the ECCS incapable of performing its function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the ECCS. The intent of this Condition is to maintain a combination of equipment such that the safety injection (SI) flow equivalent to 100% of a single train remains available. This allows increased flexibility in plant operations under circumstances when components in opposite trains are inoperable.

An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 3) has shown the risk of having one full ECCS train inoperable to be sufficiently low to justify continued operation for 72 hours.

With one or more components inoperable such that the flow equivalent to a single OPERABLE ECCS train is not available, the facility is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be immediately entered.

This Condition does not apply to HPI subsystem components which are deactivated for the purposes of complying with Low Temperature Overpressure Protection (LTOP) administrative control commitments. With these components deactivated, the HPI subsystem is still considered OPERABLE based upon guidance in NRC Generic Letter 91-18. This guidance allows substitution of manual operator action for otherwise

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.5

This Surveillance ensures that these valves are in the proper position to prevent the HPI pump from exceeding its runout limit. This 24 month Frequency is acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

SR 3.5.2.6

This Surveillance ensures that the flow controllers for the LPI throttle valves will automatically control the LPI train flow rate in the desired range and prevent LPI pump runout as RCS pressure decreases after a LOCA. The 24 month Frequency is acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

SR 3.5.2.7

Periodic inspections of the reactor building emergency sump suction inlet ensure that it is unrestricted and stays in proper operating condition. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and to preserve access to the location. This Frequency has been found to be sufficient to detect abnormal degradation and has been confirmed by operating experience.

REFERENCES

1. 10 CFR 50.46.

2. FSAR, Section 6.1.

3. NRC Memorandum to V. Stello, Jr., from R.L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

4. American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, Inservice Inspection, Article IWP-3000.

[Part 1; Cycle 11]

5. FTI 51-1266138-01, Safety Analysis Input to Startup Team Safety Assessment.

(continued)

B 3.7 PLANT SYSTEMS

B 3.7.5 Emergency Feedwater (EFW) System

BASES

BACKGROUND

The Emergency Feedwater (EFW) System is designed to provide adequate flow to one or both steam generators (OTSGs) for decay heat removal with the generators at the maximum operating pressure of 1050 psig plus suitable margin for post-accident pressure increase (Ref. 1, 2). The principal function of the EFW system is to remove decay heat from the Reactor Coolant System upon the unavailability of normal feedwater supply. This is accomplished by supplying water from the emergency feedwater tank (EFT-2) to the OTSG secondary side via the high nozzles. Steam produced in the OTSGs is condensed in the main condenser via the turbine bypass valves or, if the atmospheric dump valves (ADVs) or main steam safety valves (MSSVs) have actuated, discharged directly to the atmosphere.

The EFW System consists of one motor driven EFW pump and one steam turbine driven EFW pump, each having a nominal 100% capacity (Ref. 3). The motor driven EFW pump is powered from the 4160 volt ES bus 3A. The turbine driven EFW pump receives steam from one main steam line per OTSG via connections upstream of the associated main steam isolation valve. An alternative source of steam is available from the fossil units, Crystal River Unit 1 and 2 (Ref. 1), but cannot be relied upon to consider the EFW train OPERABLE. The diverse motive power of the two trains enhances both system availability and reliability. The preferred water source for both EFW pump trains is the Seismic Class I, missile protected dedicated EFW tank. Backup supplies of emergency feedwater are provided by the condensate storage tank and the main condenser hotwell. The pumps tie into common discharge headers providing the capability to feed either or both of the OTSGs.

The pumps and OTSGs are protected from excessively high flow induced problems by cavitating venturis (EF-62-FO and EF-63-FO) in the pump discharge lines, designed to limit EFW flow to the steam generators regardless of steam generator pressure (Ref. 7).

[Part 1; Permanent]

(continued)

BASES

BACKGROUND (continued)

DC powered block and control valves are actuated to feed the appropriate steam generator by the Emergency Feedwater Initiation and Control (EFIC) System. The capacity of either EFW pump is sufficient to remove decay heat and cool the plant until the Reactor Coolant System (RCS) pressure and temperature are low enough to place the Decay Heat Removal (DHR) System in ~~service~~.

[Part 1; Cycle 11] service or until core decay heat can be removed solely by ECCS.

For certain small break LOCA scenarios also involving a loss of offsite power, securing the motor driven EFW pump would provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads (Ref 6).

[Part 1; Cycle 11]

(continued)

BASES

BACKGROUND (continued)

Automatic actuation of the EFW System occurs on the following:

1. Trip of both main feedwater pumps with reactor power greater than 20% or the NI/RPS not in shutdown bypass;

2. Low level in either OTSG;

3. Low pressure in either OTSG;

4. Trip of all four reactor coolant pumps;

5. High pressure injection (HPI) actuation on both Channel A and B Engineered Safeguards Actuation System (ESAS) channels; and

6. AMSAC actuation.

The EFIC is a "smart" system which will feed either or both OTSGs with indications of low levels, but will isolate EFW to a faulted steam generator having a significantly lower steam pressure than the other.

The EFW System is designed to ANSI B 31.1 ES Seismic Class I and in accordance with General Design Criteria 2, 4, 5, 19, 44, 45, and 46 (Ref. 3, 4).

APPLICABLE SAFETY ANALYSIS

The EFW System is sized to provide sufficient decay heat removal capability to cooldown the RCS to the temperature and pressure at which the DHR System can be placed in service for any of the following events:

[Part 1; Cycle 11] or at which core decay heat can be removed solely by ECCS for

- loss of main feedwater (LMFW);
- LMFW with loss of offsite power;
- main feedwater line break;
- main steam line break; and
- small break loss of coolant accident (LOCA).

The EFW System is designed to remain functional following the maximum hypothetical earthquake. It will also remain

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

functional following a single failure in addition to any of the above events with the exception of the loss of all AC power (Ref. 3). No single failure prevents EFW from being supplied to the intact OTSG nor allows EFW to be supplied to the faulted OTSG. Note that in most cases of a main feedwater break or a steam line break, the depressurization of the affected OTSG would cause the automatic initiation of EFW. However, there will be some small break sizes for which automatic detection will not be possible. For these small breaks, the operator will have sufficient time in which to take appropriate action to terminate the event (Ref. 1).

The EFW System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two independent emergency feedwater pumps and their associated flow paths are required to be OPERABLE. The OPERABILITY of the EFW pumps requires that each be capable of developing its required discharge pressure and flow. ~~Additionally, the OPERABILITY of the turbine driven pump requires that it be capable of being powered from an OPERABLE steam supply through ASV-5. ASV-204 was installed to improve EFW reliability and is not required for OPERABILITY. The motive power for the turbine driven pump~~ The OPERABILITY of ASV-5 is addressed by CONDITION B. The OPERABILITY of ASV-204 is a portion of EFP-2 OPERABILITY and is addressed by Condition C.

[Part 1; Cycle 11]

The motive power for the turbine driven pump is steam supplied from either OTSG from a main steam header upstream of the main steam isolation valves so that their closure does not isolate the steam supply to the turbine. Both steam ~~supply flow~~ paths to the turbine driven pump are required to be OPERABLE. The OPERABILITY of the associated EFW flow paths requires all valves be in their correct positions or be capable of actuating to their correct positions on a valid actuation signal.

[Part 1; Permanent] paths through MSV-55 and MSV-56 (Condition A)

(continued)

BASES

LCO (continued)

In certain small break LOCA scenarios, assuming the single failure as the loss of "B" train Class 1E direct current power, manual operator action would be taken to maintain steam generator cooling by feeding the steam generators using the turbine driven EFW pump. In this circumstance, manual operator action would be taken to close the "B" train EFW isolation valves, and open the crosstie valve, EFV-12 (Condition C), and feed the steam generators via the "A" train flow path.

[Part 1; Permanent]

Inoperability of the EFW System may result in inadequate decay heat removal following a transient or accident during which main feedwater is not available. The resulting RCS heatup and pressure increase can potentially result in significant loss of coolant through the pressurizer code safety valves or the PORV.

[Part 1; Permanent]

~~The LCO is modified by a Note indicating that only one EFW train, which includes a motor driven EFW pump, is required in MODE 3 with OTSG secondary side pressure < 200 psig. At less than 200 psig, the turbine driven EFW pump is not capable of producing the accident analysis flow rate. Under these conditions, the flow rate produced by the pump may well be adequate to perform the heat removal function. However, this has not been analytically demonstrated. Thus, the allowance to not have this pump OPERABLE is acceptable based upon tne reduced heat removal requirement and the short duration of this condition. Similar to the concept employed in LCO 3.5.2 "ECCS Systems - Operating," cross-connecting portions of both trains to produce a single OPERABLE train, is acceptable in this plant condition.~~

APPLICABILITY

In MODES 1, 2, and 3, the EFW System is required to be OPERABLE and to function in the event that main feedwater is lost. In addition, the EFW System is required to supply enough makeup water to replace the secondary side inventory lost as the plant cools to MODE 4 conditions.

In MODES 4, 5, and 6, the OTSG need not be used to cooldown the RCS. Therefore, the EFW System is not required to be OPERABLE in these MODES.

(continued)

BASES

ACTIONS

A.1

With one of the two steam supplies to the turbine driven EFW pump inoperable, action must be taken to restore the steam supply to OPERABLE status within 7 days. Allowing 7 days in this Condition is reasonable, based on the redundant OPERABLE steam supply to the pump and the low probability of an event occurring that would require the inoperable steam supply to the turbine driven EFW pumps.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which ~~Conditions A and B~~ are entered concurrently. The 'AND' connector between 7 days and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

[Part 1; Cycle 11] other Conditions

B.1

If ASV-5 is inoperable, prompt action must be taken to restore ASV-5 to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

[Part 1; Cycle 11; New ACTION]

The second Completion Time for Required Action B.1 established a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

(continued)

ACTIONS
(continued)

C.1

If ASV-204, EFV-12, or EFV-13 is inoperable, prompt action must be taken within 1 hour to ensure the following are OPERABLE:

[Part 1; Cycle 11; New ACTION]

- Train "B" Emergency Diesel Generator (TS 3.8.1)
- Train "B: AC Electrical Power Distribution Subsystem (TS 3.8.9), and
- Train "B" AC Vital Bus Subsystem (TS 3.8.9)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

If the above Train "B" equipment is not OPERABLE with ASV-204, EFV-12, or EFV-13 inoperable, the capability to remove sufficient core decay heat cannot be assured and Condition F is applicable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the above Train "B" equipment is OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

C.2

[Part 1; Cycle 11; New ACTION]

If ASV-204, EFV-12 or EFV-13 is inoperable, prompt action must be taken to restore the valves to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

(continued)

ACTIONS

C.2 (continued)

The second Completion Time for Required Action C.2 established a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

D.1

If the turbine driven EFW pump or associated flow path is inoperable, prompt action must be taken within 1 hour to ensure the following "B" train systems are OPERABLE:

- SWP-1B (TS 3.7.7),
- Train "B" of the Nuclear Services Seawater System (TS 3.7.9),
- CHHE-1B and CHP-1B (TS 3.7.18)

[Part 1; Cycle 11]

Ccnsistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

If the above listed "B" train components are not OPERABLE with the turbine driven EFW pump or associated flow path inoperable, the capability for EDG load management to improve small break LOCA mitigation cannot be assured and Condition F is applicable.

(continued)

ACTIONS

D.1 (continued)

[Part 1; Cycle 11; New ACTION]

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the above listed "B" train components as OPERABLE ensures that prompt action will be taken to confirm EDG load management. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

D.2

[Part 1; Cycle 11; New ACTION]

If the turbine driven EFW pump or associated flow path is inoperable, prompt action must be taken within 1 hour to ensure both trains of the following are OPERABLE:

- ECCS (TS 3.5.2),
- Decay Heat Closed Cycle Cooling Water (TS 3.7.8),
- Decay Heat Seawater (TS 3.7.10)
- Emergency Diesel Generators (TS 3.8.1)
- AC Electrical Power Distribution Subsystems (TS 3.8.9), and
- AC Vital Bus Subsystems (TS 3.8.9)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

If both trains of the above equipment are not OPERABLE with the turbine driven EFW pump or associated flow path inoperable, the capability to remove sufficient core decay heat cannot be assured and Condition F is applicable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify both trains of the above equipment as OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

(continued)

ACTIONS D.3

[Part 1; Cycle 11; New ACTION]

If the turbine driven EFW pump or associated flow path is inoperable, action must be taken to restore the required equipment to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the motor driven EFW pump, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action D.3 establishes a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

[Part 1; Cycle 11] E.1

~~B.1~~

[Part 1; Cycle 11]

~~If one of the EFW trains is inoperable, action must be taken to restore the train to OPERABLE status within 72 hours.~~
If the motor driven EFW pump or associated flow path is inoperable, action must be taken to restore the required equipment to OPERABLE status within 72 hours.
The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW pump, time needed for repairs, and the low probability of a DBA occurring during this time period. ~~This Condition includes the loss of two steam supply lines to the turbine driven EFW pump.~~

[Part 1; Cycle 11]

The second Completion Time for Required Action ~~B.1~~ establishes a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which ~~Conditions A and B~~ are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

[Part 1; Cycle 11] E.1

[Part 1; Cycle 11] other Conditions

(continued)

BASES

[Part 1; Cycle 11] F.1 and F.2

[Part 1; Cycle 11] Required Actions A.1, B.1, C.1, C.2, D.1, D.2, D.3, or E.1

ACTIONS (continued)

~~C.1 and C.2~~

If ~~Required Action A.1 or Required Action B.1~~ cannot be completed within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

~~D.1~~

[Part 1; Cycle 11] G.1

With both EFW trains inoperable, the plant is in a seriously degraded condition with no safety related means for conducting a cooldown. In such a condition, plant operation should not be perturbed by a forced action, including a power change, that might result in a trip. For this reason,

(continued)

ACTIONS

~~D.1~~ (continued)

[Part 1; Cycle 11] G.1

the Technical Specifications do not mandate a plant shutdown. Rather the ACTIONS allow the plant to dictate the most prudent course of action (including plant shutdown) for the situation. The seriousness of this condition requires that action be initiated immediately to restore at least one EFW train to OPERABLE status.

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the EFW water and steam supply flow paths provides assurance that the proper flow paths exist for EFW operation. The valves verified by this SR include valves in the main flow paths and the first normally closed valve in a branch line. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since those valves are verified to be in the correct position prior to locking, sealing, or securing. There are several other exceptions for valve position verification due to the low potential for these types of valves to be mispositioned. The valve types which are not verified as part of this SR include vent or drain valves outside the RB, relief valves outside the RB, and instrumentation valves (both inside and outside the RB). This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves.

This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. The 45 day Frequency is based on engineering judgment and is consistent with the Frequency established for SR 3.7.5.2. SR 3.7.5.2 requires extensive EFW valve manipulation in order to perform the pump flow rate verification, such that a flow path verification is necessary following each performance.

SR 3.7.5.2

This SR verifies that the EFW pumps develop sufficient discharge pressure to deliver the required flow at the full open pressure of the MSSVs. Because it is undesirable to

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.5.5 (continued)

of EFW flow paths must be demonstrated before sufficient core heat is generated that would require the operation of the EFW System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgment, in view of other administrative controls to ensure that the flow paths are OPERABLE. To further ensure EFW System alignment, flow path OPERABILITY is verified, following extended outages to determine no misalignment of valves has occurred. This SR ensures that the flow path from the EFW tank to the OTSGs is properly aligned. This requirement is based upon the recommendation of NUREG 0737. The Frequency was modified slightly during ITS development (prior to entering MODE 2) to provide an SR 3.0.4 type exception. As written, the SR allows the plant to achieve and maintain MODE 3 conditions in order to perform the verification.

REFERENCES

1. Enhanced Design Basis Document for the Emergency Feedwater and Emergency Feedwater Initiation and Control System, Revision 1, dated September 27, 1991 with Temporary Changes 156, 230, 247, and 249.

2. BAW-10043, "Overpressure Protection for B&W Reactors", dated May 1972.

3. FSAR, Section 10.5.

4. 10 CFR 50, Appendix A.

5. ASME, Boiler and Pressure Vessel Code, Section XI, Inservice Inspection, Subsection IWP.

[Part 1; Cycle 11]

6. FTI 51-1266138-01, Safety Analysis Input to Startup Team Safety Assessment.

[Part 1; Permanent]

7. FPC calculation I87-0008, Rev. 5

(continued)

BASES

BACKGROUND (continued)

For certain small break LOCAs with a concurrent loss of offsite power, securing SWP-1A and RWP-2A provides capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads. These pumps would be manually secured and locked out to preclude automatic reinitiation. In these situations, SWP-1B and RWP-2B are relied upon to provide continued flow for the SW and Nuclear Services Seawater systems.

[Part 1; Cycle 11]

(continued)

BASES

APPLICABILITY (continued)

Three of the four heat exchangers must be OPERABLE to accommodate the design system heat load requirements.

In MODES 5 and 6, the SW System is not required to be OPERABLE due to the limitations on RCS temperature and pressure in these MODES. Additionally, there are no other Technical Specification LCOs supported by SW which are applicable during these plant conditions.

ACTIONS

A.1 and A.2

[Part 1; Cycle 11; New ACTION]

With SWP-1B inoperable, prompt action must be taken within 1 hour to ensure that sufficient capability is available on "A" train emergency diesel generator for SWP-1A in certain small break LOCA scenarios. In such circumstances, the motor driven emergency feedwater pump would be secured and the turbine driven emergency feedwater pump and associated flow path would be required OPERABLE to provide steam generator cooling. If the turbine driven emergency feedwater pump is not OPERABLE to permit securing motor driven emergency feedwater pump, the capability for EDG load management to improve small break LOCA mitigation cannot be assured and Condition C is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm EDG load management capability for small break LOCA mitigation improvement. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions. The 72 hour Completion Time for restoring SWP-1B OPERABILITY is consistent with other ECCS Specifications for a loss of redundancy Condition and, has been shown to maintain a suitable limit on risk. As such, this Completion Time is based on engineering judgment and is consistent with industry-accepted practice.

(continued)

BASES

[Part 1; Cycle 11] B.1

~~A.1~~

[Part 1; Cycle 11] SWP-1A

With ~~one of the emergency SW pumps~~ and/or one of the required heat exchangers inoperable, the heat removal capacity of the SW System is degraded. In this Condition, adequate cooling of the containment and ES equipment served by SW cannot be assured following an accident coincident with a worst-case single active failure. Therefore, action must be taken to restore the affected component(s) to OPERABLE status. The 72 hour Completion Time for restoring full SW System OPERABILITY is consistent with other ECCS Specifications for a loss of redundancy Condition and, has been shown to maintain a suitable limit on risk. As such, this Completion Time is based on engineering judgment and is consistent with industry-accepted practice.

[Part 1; Cycle 11] C.1 and C.2

~~B.1 and B.2~~

If the inoperable SW component(s) cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR is modified by a Note indicating that the isolation of the SW flow to individual components may render those components inoperable, but does not affect the OPERABILITY of the SW System.

(continued)

B 3.7 PLANT SYSTEMS

B 3.7.8 Decay Heat Closed Cycle Cooling Water System

BASES

BACKGROUND

The Decay Heat Closed Cycle Cooling Water (DC) System facilitates the removal of decay heat from the reactor core. The system also removes process and operating heat from safety related components associated with decay heat removal during normal plant cooldown and following a transient or accident. During plant cooldown below approximately 250°F the DC system provides core heat removal by transferring heat from the Decay Heat Removal (DHR) System to the Decay Heat Seawater System. The system is divided into two independent and redundant trains, each capable of supplying 100 percent of the required normal and post-accident cooling. Each train contains a pump, a surge tank pressurized with nitrogen for volume and pressure control, and a heat exchanger which removes heat from the DHR system and rejects it to the Decay Heat Seawater System.

The design and operation of the DC system, along with a list of the components served, can be found in FSAR Section 9.5.2.2 (Ref. 1). For normal operation the DC pumps are started manually. However, in an emergency both DC pumps start automatically upon receipt of an Engineered Safeguards Actuation System (ESAS). The DC system supports long-term reactor decay heat removal following a loss of coolant accident (LOCA) when the Emergency Core Cooling System (ECCS) is recirculating water from the RB sump to the reactor core through the DH heat exchanger. The DC System also supports post-accident containment cooling by supplying cooling water to the reactor building spray pump motor coolers and bearings. Other loads supplied by this system are the DHR (LPI) pumps and motors, DC and decay heat seawater pump motors and two of the three make-up and purification (HPI) pump motors. The DC System supplies cooling to these pump motor heat exchangers, lube oil coolers, gear lube oil coolers, bearings, or air handling units to prevent overheating of the associated components (Ref. 3).

[Part 1; Cycle 11]

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path

(continued)

BASE

BACKGROUND (continued)

inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B, and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE.

[Part 1; Cycle 11]

As a closed system, the DC System also serves as an intermediate barrier to radioactivity releases to the environment from potential leaks in interfacing systems.

APPLICABLE SAFETY ANALYSIS

The DC system provides cooling for components essential to the mitigation of plant transients and accidents. An ESAS initiation signal will start both DC pumps. This ensures that the required cooling capacity is provided to the essential equipment following a steam line break, steam generator tube rupture, makeup system letdown line failure, or LOCA. The running pumps (100 percent capacity each), in conjunction with an associated DC heat exchanger, reject heat to the Decay Heat Seawater System to ensure the necessary cooling flow to components required for reactor decay heat removal. By cooling the RB spray pumps and pump motors following a LOCA or SLB, the DC system supports the RB Spray System by ensuring the pressure and temperature in containment are maintained within acceptable limits. The OPERABILITY of the RB Spray System is addressed in LCO 3.6.6, "Reactor Building Spray and Containment Cooling Systems".

During normal and post-accident cooldown operations, when RCS temperature and pressure are reduced to allow the alignment of the DHR System to the RCS, DC System operation facilitates core heat removal by transferring heat from the DHR System to the Decay Heat Seawater System.

The Decay Heat Closed Cycle Cooling Water System satisfies Criterion 3 of the NRC Policy Statement.

LCO

The requirement for two DC trains to be OPERABLE assures adequate normal and post-accident heat removal from the reactor core and essential components, considering a worst case single active failure. One of the OPERABILITY considerations regarding these independent and redundant trains is that each valve in the flow path be in the correct post-accident position. Additionally, each DC pump must be

(continued)

BASE

APPLICABILITY

In MODES 1, 2, and 3 the DC System is not a normally operating system, but must be capable of performing its post-accident safety functions, which include providing cooling water to components required for RCS and containment heat removal. Two independent 100 percent capacity DC trains must be OPERABLE to accommodate the design system heat load requirements and satisfy reliability considerations assuming a single failure.

In MODE 4, although RCS temperature and pressure are reduced, there remains sufficient stored energy that the occurrence of an accident would necessitate the post-accident cooling functions of the DC System. When temperature and pressure have been reduced sufficiently to allow alignment of the DHR System to the RCS, the DC System is no longer required for post-accident component cooling, but must continue to provide cooling to the DHR heat exchangers. Therefore, two trains of the DC System must remain OPERABLE throughout MODE 4 to ensure emergency preparedness and/or decay heat removal, assuming a single active failure.

In MODES 5 and 6 the DC System is in operation performing its normal safety function of RCS decay heat removal. The various means of removing reactor decay heat in MODES 5 and 6 are addressed in LCO 3.4.6, "RCS Loops - MODE 5, Loops Filled"; LCO 3.4.7, "RCS Loops - MODE 5, Loops Not Filled"; LCO 3.9.4, "DHR and Coolant Circulation - High Water Level"; and LCO 3.9.5, "DHR and Coolant Circulation - Low Water Level". In other words, the OPERABILITY requirements for the DC System are determined by the systems it supports. Therefore, this LCO is not applicable in MODES 5 and 6.

ACTIONS

~~A.1~~

[Part 1; Cycle 11] A.1 and A.2

With one DC train inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not available, the capability for core decay heat removal has not been assured and Condition B is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

[Part 1; Cycle 11]

(continued)

[Part 1; Cycle 11] A.1 and A.2

BASE

ACTIONS

~~A.1~~ (continued)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

[Part 1; Cycle 11]

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

[Part 1; Cycle 11] A.2

Required Action ~~A.1~~ is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.5, "~~RCS Loops~~ - MODE 4," be entered if an inoperable DC train results in an inoperable required DHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for an inoperability of a required DHR loop.

With one DC train inoperable, action must be taken to restore the train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE DC train is adequate to perform the heat removal function. The 72 hour Completion Time for restoring full DC System OPERABILITY is the same as that for the ECCS Systems, whose safety functions are supported by the DC System. This Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train and the low probability of a DBA occurring during this period.

B.1 and B.2

If the inoperable DC train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

BACKGROUND (continued)

The Nuclear Services Seawater System is designed to seismic category I requirements, except for the standpipe drain line. The design and operation of the Nuclear Services Seawater System along with a list of components served by SW during normal and emergency conditions, can be found in FSAR Section 9.5 (Ref. 2). Following an Engineered Safeguards Actuation System (ESAS) actuation, SW System flow paths are realigned to provide a reliable source of cooling to essential safeguards equipment which may be supplied by non-safety cooling water systems during normal operations. To ensure these additional heat loads can be accommodated, both emergency pumps are started simultaneously by an ESAS signal to provide adequate cooling in the event of a single active failure which disables one emergency pump.

[Part 1; Cycle 11]

For certain small break LOCAs with a concurrent loss of offsite power, securing SWP-1A and RWP-2A would provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads. These pumps would be manually secured and locked out to preclude automatic reinitiation. In these situations, SWP-1B and RWP-2B are relied upon to provide continued flow to the SW and Nuclear Services Seawater systems.

APPLICABLE SAFETY ANALYSES

The Nuclear Services Seawater System supports the SW System in providing cooling for components essential to the mitigation of plant transients and accidents. The system has two separate 100 percent capacity underground intake conduits, independent emergency pumps, and underground discharge conduits to allow for a single failure while still providing the required flow. An ESAS signal will start both emergency pumps. This ensures the required cooling capacity is provided to the SW System following a steam line break, steam generator tube rupture, makeup system letdown line failure, or loss of coolant accident.

The Nuclear Services Seawater System satisfies Criterion 3 of the NRC Policy Statement.

LCO

The requirement for the OPERABILITY of the Nuclear Services Seawater System including two emergency nuclear services seawater pumps provides redundancy necessary to ensure the system will provide adequate post-accident heat removal in the event of a coincident single failure.

(continued)

[Part 1; Permanent] OPERABILITY of the associated flow paths requires that each

BASES

LCO (continued)

Emergency nuclear services seawater pump OPERABILITY requires that each be capable of being powered from separate OPERABLE emergency buses. ~~Each~~ valve in the flow path must be aligned to permit sea water flow from the intake canal to the SW heat exchangers, and subsequently to the discharge canal. The OPERABILITY of the SW heat exchangers, required to ensure proper heat removal capability, is addressed in LCO 3.7.7, "Nuclear Services Closed Cycle Cooling Water System".

APPLICABILITY

In MODES 1 through 4 the SW and Nuclear Services Seawater Systems are normally operating systems which must be prepared to provide post-accident cooling for components required for RCS and containment heat removal, equipment essential in providing the capability to safely shutdown the plant, and equipment required for adequate spent fuel pool cooling. The Nuclear Services Seawater System must be capable of providing its post-accident cooling assuming a single active failure. Therefore, both emergency pumps are required to be OPERABLE during these MODES.

In MODES 5 and 6, the Nuclear Services Seawater System is not required to be OPERABLE due to the limitations on RCS temperature and pressure in these MODES. Additionally, there are no other Technical Specification LCOs supported by the system which are applicable during these plant conditions.

ACTIONS

A.1 and A.2

[Part 1; Cycle 11]

With train "B" of the Nuclear Services Seawater System inoperable, prompt action must be taken within 1 hour to ensure that sufficient capability is available on "A" train of emergency diesel generator for RWP-2A in certain small break LOCA scenarios. In such circumstances, the motor driven emergency feedwater pump would be secured and the turbine driven emergency feedwater pump would be required OPERABLE to provide steam generator cooling. If the turbine driven emergency feedwater pump is not OPERABLE to permit securing motor driven emergency feedwater pump, the capability for EDG load management to improve small break LOCA mitigation cannot be assured and Condition C is applicable. The operability of the turbine driven emergency feedwater pump is not required in Mode 4.

(continued)

BASES

ACTIONS A.1 and A.2 (continued)

[Part 1; Cycle 11]

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm EDG load management capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions. The 72 hour Completion Time for restoring full Nuclear Services Seawater System OPERABILITY is consistent with that for ECCS Systems, whose safety functions are supported by the system. This Completion Time is based on engineering judgment and is consistent with industry-accepted practice.

[Part 1; Cycle 11] train "B" of the Nuclear Services Seawater System

~~A.1~~

[Part 1; Cycle 11] B.1

With ~~one of the emergency nuclear services seawater pumps~~ inoperable, action must be taken to restore the pump to OPERABLE status within 72 hours. The 72 hour Completion Time for restoring full Nuclear Services Seawater System OPERABILITY is consistent with that for ECCS Systems, whose safety functions are supported by the system. This Completion Time is based on engineering judgement and is consistent with accepted industry-accepted practice.

~~B.1 and B.2~~

[Part 1; Cycle 11] C.1 and C.2

If the inoperable emergency nuclear services seawater pump cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant

(continued)

BASES

BACKGROUND (continued)

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump and associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE.

APPLICABLE SAFETY ANALYSIS

The Decay Heat Seawater System supports the DC System in providing cooling for components essential to the mitigation of plant transients and accidents. The system has two separate 100 percent capacity underground intake conduits, independent pumps, and underground discharge conduits to provide for a single failure while still providing required flow. An ESAS initiation signal will start both decay heat seawater pumps upon low Reactor Coolant System (RCS) pressure and/or high containment pressure. This ensures that the required cooling capacity is provided to the DC System for cooling of components required for reactor heat removal following a steam line break, steam generator tube rupture, makeup system letdown line failure, or loss of coolant accident.

During normal and post-accident cooldown operations, when RCS temperature and pressure are reduced to allow the alignment of the DHR System to the RCS, the Decay Heat Seawater System is placed in service to support decay heat removal.

The Decay Heat Seawater System satisfies Criterion 3 of the NRC Policy Statement.

LCOs

The requirement for OPERABILITY of both decay heat seawater trains provides redundancy necessary to ensure the system will provide adequate post-accident heat removal in the event of a coincident single failure.

The OPERABILITY of the decay heat seawater pumps requires that they each be capable of being powered from an OPERABLE emergency bus. Each valve in the flow path must be in its correct position for permitting sea water flow from the intake canal to the DC heat exchangers, and subsequently to the discharge canal. The OPERABILITY of the DC System,

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3 the DC and Decay Heat Seawater Systems may not be operating, but must be prepared to perform post-accident safety functions, which include providing cooling water to components required for RCS and containment heat removal. The Decay Heat Seawater System must be capable of providing its post-accident cooling assuming a single failure. Therefore, both pumps are required to be OPERABLE during these MODES.

In MODE 4, although RCS temperature and pressure are reduced, there remains sufficient stored energy that the occurrence of an accident would necessitate the post-accident cooling functions of the DC and Decay Heat Seawater Systems. When temperature and pressure have been reduced sufficiently to allow alignment of the DHR System to the RCS, the Decay Heat Seawater System is no longer needed for post-accident component cooling, but must provide cooling to the DC heat exchangers for cooldown and holding operations. Therefore, two trains of the Decay Heat Seawater System must remain OPERABLE throughout MODE 4 to ensure emergency preparedness and/or decay heat removal, assuming a single failure.

In MODES 5 and 6 the DHR, DC, and Decay Heat Seawater Systems are in operation performing their normal safety function of RCS decay heat removal. The various means of removing reactor decay heat in MODES 5 and 6 are addressed in LCO 3.4.6, "RCS Loops - MODE 5, Loops Filled"; LCO 3.4.7, "RCS Loops - MODE 5, Loops Not Filled"; LCO 3.9.4, "DHR and Coolant Circulation - High Water Level"; and LCO 3.9.5, "DHR and Coolant Circulation - Low Water Level". In other words, the OPERABILITY requirements for the DC System are determined by the systems it supports. Therefore, this particular LCO is not applicable in MODES 5 and 6.

ACTIONS

~~A.1~~

[Part 1; Cycle 11] A.1 and A.2

With one Decay Heat Seawater train inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not OPERABLE, the capability to remove core decay heat cannot be assured and Condition B is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

[Part 1; Cycle 11]

(continued)

BASES (continued)

ACTIONS

[Part 1; Cycle 11] A.1 and A.2

~~A.1~~ (continued)

[Part 1; Cycle 11]

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

[Part 1; Cycle 11] A.2

Required Action ~~A.1~~ is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops - MODE 4," should be entered if an inoperable decay heat seawater train results in an inoperable required DHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for an inoperability of a required DHR loop.

If one of the decay heat seawater trains is inoperable, action must be taken to restore the train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE train is adequate to perform the heat removal function. The 72 hour Completion Time for restoring full Decay Heat Seawater System OPERABILITY is the same as that for the ECCS Systems, whose safety functions are supported by the Decay Heat Seawater System. This Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train and the low probability of a DBA occurring during this period.

B.1 and B.2

If the inoperable decay heat seawater train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES (continued)

LCO (continued)

c. ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

[Part 1; Permanent] addressed in Technical Specification 3.7.18

The ability to maintain temperature in the Control Complex is ~~not addressed in this Technical Specification. It is addressed administratively outside of Technical Specifications~~.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CREVS must be OPERABLE to ensure that the control complex will remain habitable during and following a postulated DBA. During movement of irradiated fuel assemblies, the CREVS must be OPERABLE to cope with a release due to a fuel handling accident.

ACTIONS

A.1

With one CREVS train inoperable, action must be taken to restore the train to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train is adequate to perform the control room radiation protection function. However, the overall reliability is reduced because a failure in the OPERABLE CREVS train could result in loss of CREVS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

B.1 and B.2

In MODE 1, 2, 3, or 4, if the inoperable CREVS train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

B 3.7.18 PLANT SYSTEMS

B.3.7.18 Control Complex Cooling System

[Part 1; Permanent; new specification]

BASES

BACKGROUND

The Control Complex Cooling System provides temperature control for the control room and other portions of the Control Complex containing safety related equipment.

The Control Complex Cooling System consists of two redundant chillers and associated chilled water pumps that provide cooling of recirculated control complex air. Redundant chillers and chilled water pumps are provided for suitable temperature conditions in the control complex for operating personnel and safety related control equipment. Dampers and two pairs of heat exchangers also form part of the system. The Control Complex Cooling System maintains the nominal temperature between 70°F and 80°F.

A single chiller and associated chilled water pump will provide the required temperature control for either heat exchangers. The Control Complex Cooling System operation to maintain control complex temperature is discussed in the FSAR, Section 9.7 (Ref. 1).

[Part 1; Cycle 11]

For certain small break LOCAs with a concurrent loss of offsite power, it is necessary to provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads. In these situations, CHHE-1B and CHP-1B would be relied upon to provide required cooling.

APPLICABLE SAFETY ANALYSES

The Control Complex Cooling System consists of redundant, safety related components, with some common piping. The Control Complex Cooling System maintains the temperature between 70°F and 80°F. A single active failure of a Control Complex Cooling System component does not impair the ability of the system to perform as designed. The Control Complex Cooling System is designed in accordance with Seismic Category I requirements. The Control Complex Cooling System is capable of removing heat loads from the control room and other portions of the Control Complex

(continued)

[Part 1; Permanent; new specification]

BASES

APPLICABLE SAFETY ANALYSES (continued)

containing safety related equipment, including consideration of equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY.

The Control Complex Cooling System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two redundant heat exchangers and two redundant chillers and associated pumps of the Control Complex Cooling System are required to be OPERABLE to ensure that at least one of each is available, assuming a single failure disables one redundant component. Total system failure could result in the equipment operating temperature exceeding limits.

The Control Complex Cooling System is considered OPERABLE when the individual redundant components that are necessary to maintain control complex temperature are OPERABLE. These components include the cooling coils, water cooled condensing units, and associated temperature control instrumentation. In addition, the Control Complex Cooling System must be OPERABLE to the extent that air circulation can be maintained (See Specification 3.7.12).

APPLICABILITY

In MODES 1, 2, 3, and 4, the Control Complex Cooling System must be OPERABLE to ensure that the control complex temperature will not exceed equipment OPERABILITY requirements.

ACTIONS

A.1 and A.2

[Part 1; Cycle 11; New ACTION]

With the CHHE-1B or CHP-1B inoperable, prompt action must be taken within 1 hour to verify the turbine driven emergency feedwater pump and associated flowpath is OPERABLE to provide steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not OPERABLE, the capability to provide EDG load management for small break LOCA mitigation improvement cannot be assured and Condition C is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

(continued)

[Part 1; Permanent;New specification]

BASES

ACTIONS

A.1 and A.2 (continued)

[Part 1; Cycle 11; New ACTION]

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to provide the capability for EDG load management for small break LOCA mitigation improvement. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

With CHHE-1B or CHP-1B inoperable, action must be taken to restore its OPERABLE status within 30 days. In this Condition, the remaining OPERABLE Control Complex Cooling System redundant components are adequate to maintain the control complex temperature within limits. However, the overall reliability is reduced because a failure in the OPERABLE Control Complex Cooling System components could result in a loss of Control Complex Cooling System function. The 30 day Completion Time is based on the low probability of an event occurring requiring the Control Complex Cooling System and the consideration that the remaining redundant components can provide the required capabilities.

B.1

With CHHE-1A, CHP-1A or one Control Complex Cooling heat exchanger inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE Control Complex Cooling System equipment is adequate to maintain the control complex temperature within limits. However, the overall reliability is reduced because a failure in the OPERABLE Control Complex Cooling System redundant components could result in a loss of Control Complex Cooling System function. The 30 day Completion Time is based on the low probability of an event occurring requiring the Control Complex Cooling System and the consideration that the remaining components can provide the required capabilities.

(continued)

[Part 1; Permanent; new specification]

BASES

ACTIONS (continued)

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable Control Complex Cooling System component cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner without challenging unit systems.

D.1

If any combination of components that would render the Control Complex Cooling System not capable of performing the intended function, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.7.18.1

Verifying that each Control Complex Cooling chiller's developed head at the flow test point is greater than or equal to the required developed head ensures that chiller's performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 3). This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

(continued)

[Part 1; Permanent; new specification]

BASES

SURVEILLANCE REQUIREMENT (continued)

SR 3.7.8.2

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. An 24 month Frequency is appropriate, as significant degradation of the system is slow and is not expected over this time period.

REFERENCES

1. FSAR, Section 9.7.
2. FTI 51-1266138-01, Safety Analysis Input to Startup Team Safety Assessment.
3. ASME, Boiler and Pressure Vessel Code, Section XI.

(continued)

BASES [Part 1; Cycle 11]

BACKGROUND (continued)

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE. With ASV-204, EFV-12, or EFV-13 inoperable, Train "B" Emergency Diesel Generators, Train "B" AC Electrical Power Distribution Subsystems, and Train "B" AC Vital Bus Subsystems are required OPERABLE.

(continued)

BASES

BACKGROUND

Provided an ES signal is present, certain required ES loads are returned to service in a predetermined sequence in order to prevent overloading the EDG in the process. Within 35 seconds after the initiating signal is received, all loads needed to recover the plant or maintain it in a safe condition are returned to service.

The service ratings of the EDG are:

- 0 to 2850 kw on a continuous basis

[Part 2; Reassess] 3200

- 2851 to ~~3000~~ kw on a cumulative 2000 hour basis

[Part 2; Reassess] 3201 to 3400

- ~~3001 to 3250~~ kw on a cumulative 200 hour basis

- ~~3251~~ to 3500 kw on a cumulative 30 minute basis.

[Part 2; Reassess] 3401

Loads powered from the 4160 V ES buses are listed in Reference 2.

[Part 3; Permanent]

Steady state load does not include loads imposed by the starting of motors such as during block loading, and short duration loads such as motor operated valves, battery charger surges, and short duration pump surge flows. Loads imposed by the starting of motors are not included in the service ratings and are less than the EDG manufacturer limits of 3910 kW for such loading.

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the FSAR, Chapter 6 (Ref. 4) and Chapter 14 (Ref. 5), assume ES systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that the fuel, RCS, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

(continued)

BASES

ACTIONS

A.3 (continued)

additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently.

As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition A was entered.

B.1

To ensure a highly reliable power source in the event one EDG is inoperable, it is necessary to verify the availability of the OPERABLE offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met (Condition F). However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

[Part 1; Cycle 11; New ACTION]

B.2

With Train "A" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

(continued)

BASES

ACTIONS B.2 (continued)

[Part 1; Cycle 11; New ACTION]

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

~~B.2~~ → [Part 1; Cycle 11] B.3

Required Action ~~B.2~~ is intended to provide assurance that a loss of offsite power, during the period that a EDG is inoperable, does not result in a complete loss of safety function of critical redundant required features. These features are designed with redundant safety related trains. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable EDG. Single train systems (from an electrical perspective), such as the turbine driven emergency feedwater pump, are not included.

[Part 1; Cycle 11] B.3

The Completion Time for Required Action ~~B.2~~ is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An EDG is inoperable; and

b. A required feature on the other train is inoperable.

If at any time during the existence of this Condition (one EDG inoperable) a required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Declaring the required features inoperable within four hours from the discovery of items 'a' and 'b' existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the plant to transients associated with shutdown.

(continued)

BASES

ACTIONS

~~B.2~~ (continued)

[Part 1; Cycle 11] B.3

In this Condition, the remaining OPERABLE EDG and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system. Thus, on a component basis, single-failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

~~B.3.1 and B.3.2~~ [Part 1; Cycle 11] B.4.1

[Part 1; Cycle 11] B.4.1 and B.4.2

Required Action ~~B.3.1~~ provides an option to testing the OPERABLE EDG in order to avoid unnecessary testing. If it can be determined that the cause of the inoperable EDG does not exist on the OPERABLE EDG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on the other EDG, the other EDG would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered. If the common cause failure evaluation is indeterminate (the cause of the initial inoperable EDG cannot be confirmed not to exist on the remaining EDG), performance of SR 3.8.1.2 is adequate to provide assurance of continued OPERABILITY of that EDG.

The Completion Time of 24 hours is reasonable to confirm that the OPERABLE EDG is not affected by the same problem as the inoperable EDG and is based on the recommendations of Generic Letter 84-15 (Ref. 7).

~~B.4~~

[Part 1; Cycle 11] B.5

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with one EDG inoperable should be limited to a period not to exceed 72 hours.

In Condition B, the remaining OPERABLE EDG and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system. The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

(continued)

BASES [Part 1; Cycle 11] B.5

ACTIONS (continued)

~~B.4~~ (continued) [Part 1; Cycle 11] B.5

The second Completion Time for Required Action ~~B.4~~ establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failure to meet the LCO. Refer to the Bases for Required Action A.3 for additional information on this Completion Time.

[Part 1; Cycle 11; New Action]

C.1 , C.2, C.3, C.4, and C.5

Refer to the Bases for Actions B.1, B.3, B.4, and B.5 for the discussion for the corresponding Bases of Required Action C.

For Action C.2, with Train "B" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump, associated flow path, ASV-204, EFV-12, and EFV-13 are available for steam generator cooling. If the required equipment is not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

(continued)

BASES

[Part 1; Cycle 11] D.1 and D.2

ACTIONS (continued)

~~C.1 and C.2~~

[Part 1; Cycle 11] D.1

Required Action ~~C.1~~, which applies when both required offsite circuits are inoperable, is intended to provide assurance that a DBA, coincident with a worst-case single failure, will not result in a complete loss of redundant required safety functions. The Completion Time for declaring the redundant required features inoperable is 12 hours; reduced from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is no longer valid, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. Single train features (from an electrical perspective), such as the turbine driven emergency feedwater pump, are not included.

[Part 1; Cycle 11] D.1

The Completion Time for Required Action ~~C.1~~ is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. All required offsite circuits are inoperable; and

b. A required feature is inoperable.

If at any time during the existence of Condition ~~E~~ (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked.

(continued)

[Part 1; Cycle 11]
D.1 and D.2

BASES

ACTIONS (continued)

~~C.1 and C.2~~ (continued)

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with two required offsite circuits inoperable should be limited to a period not to exceed 24 hours. In this condition, the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more EDGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, the simultaneous loss of offsite AC sources coincident with a LOCA, and a worst-case single failure were postulated as a part of the original licensing basis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

If one required offsite source is restored within 24 hours, power operation may continue in accordance with the required Actions of Condition A.

(continued)

BASES

[Part 1; Cycle 11; New ACTION]

E.1

With Train "A" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

[Part 1; Cycle 11] E.2 and E.3

~~D.1 and D.2~~

[Part 1; Cycle 11] E

Pursuant to LCO 3.0.6, the distribution system ACTIONS would not be entered if the de-energization of the busses was due to all AC sources to them being inoperable. Therefore, the Required Actions of Condition ~~D~~ are modified by a Note indicating that when Condition ~~D~~ is entered with no AC sources to one train, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems Operating," must be immediately entered. This allows Condition ~~D~~ to provide requirements for the loss of one offsite circuit and one EDG whether or not a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.

(continued)

BASES

[Part 1; Cycle 11]

ACTIONS (continued)

E.2 and E.3 (continued)

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with one onsite and one offsite circuit inoperable should be limited to a period not to exceed 12 hours.

[Part 1; Cycle 11] E

In Condition ~~D~~ E, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. However, since power system redundancy is provided by two diverse sources of power it may appear the ~~reliability of the~~ power systems in this Condition is higher than that in Condition ~~E~~ F (loss of both required offsite circuits). This is not necessarily the case since this difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

[Part 1; Cycle 11; New ACTION]

F.1

With Train "B" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump, associated flow path, ASV-204, EFV-12, and EFV-13 are not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

(continued)

BASES

ACTIONS (continued)

[Part 1; Cycle 11; New ACTION]

F.2 and F.3

Refer to the Bases for Actions E.2 and E.3 for the discussion for the corresponding Bases of Required Actions F.2 and F.3.

[Part 1; Cycle 11] G.1

~~E.1~~

With the Train A and Train B EDGs inoperable, there are no qualified onsite standby AC sources. Thus, with an assumed loss of offsite electrical power, there would not be sufficient standby AC sources available to power the minimum required ES systems. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time is balanced with that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). However, since any inadvertent generator trip could also result in a total loss of offsite AC power, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

The 2 hour Completion Time is consistent with the recommendations of Reference 6.

[Part 1; Cycle 11] H.1 and H.2

~~F.1 and F.2~~

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging plant systems.

(continued)

[Part 1; Cycle 11] I.1

BASES

ACTIONS (continued)

~~G.1~~ [Part 1; Cycle 11] I

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any subsequent failures in the AC electrical power system will cause a loss of function condition, and potentially, a station blackout. Therefore, the unit is required to enter LCO 3.0.3 immediately and prepare for a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function. This is consistent with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during outages (under simulated accident conditions). Where the SRs for this LCO specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 3933 V is 94.5% of the nominal 4160 V output voltage. This value allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is usually specified as 85% to 90% of name plate rating. The specified maximum steady state output voltage of 4400 V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the EDG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). Regulatory Guide 1.9 requirements are satisfied by monitoring EDG output.

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.4

[Part 2, Permanent] useable volume

This SR provides verification that the level of fuel oil in the day tank is adequate. The level is expressed as an equivalent ~~volume~~ in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of EDG operation at ~~full load plus 10%.~~

[Part 2; Permanent] a loading which bounds the postulated worst case accident.

The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and an automatic level control system is included ~~in~~ the design.

SR 3.8.1.5

This Surveillance demonstrates that each required fuel oil transfer pump operates automatically to transfer fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of the EDG. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer are OPERABLE.

The design of fuel transfer systems is such that pumps will operate automatically in order to maintain an adequate volume of fuel oil in the day tanks during or following EDG operation. The 31 day Frequency is based upon engineering judgement and has been shown to be acceptable by operating experience.

SR 3.8.1.6

See SR 3.8.1.2.

SR 3.8.1.7

Transfer of each 4160 V ES bus power supply from the normal offsite circuit to the required alternate offsite circuit demonstrates the capability of the alternate circuit distribution network to power the shutdown loads. The

(continued)

BASES

SURVEILLANCE

SR 3.8.1.7 (continued)

24 month Frequency is based on engineering judgment, taking into consideration plant conditions needed to perform the Surveillance. Operating experience has shown the 24 month Frequency to be adequate. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.1.8

Each EDG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the EDG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. For the CR-3 EDGs, the largest single load is ~~616 kW (HPI pump)~~. According to IEEE-308 (Ref. 13), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. For CR-3, the acceptance criteria of 66.75 Hz is based on 75% of the difference between synchronous speed and the overspeed trip setpoint. The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified for voltage is equal to 60% the 5 second load sequence interval associated with sequencing of the largest load. Four seconds for frequency is likewise based on Regulatory Guide 1.9 recommendations. SR 3.8.1.8.a corresponds to the maximum frequency excursion, while SR 3.8.1.8.b and SR 3.8.1.8.c are Regulatory Guide 1.9 specific voltage and frequency values to which the system must recover to following load rejection. Regulatory Guide 1.9 specifies nominal voltage and frequency values which are 4160V and 60 Hz respectively. The 24 month Frequency takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths.

[Part 3; Permanent] less than 750 kW. The surveillance test will have a minimum rejected load of 750 kW.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

This SR is modified by three Notes. The reason for Note 1 is to minimize wear and tear on the EDGs during testing. For the purpose of this testing, the EDGs may be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for EDGs. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and potentially challenge safety systems. However, Note 2 acknowledges that should an unplanned event occur in MODES 1, 2 or 3, following verification that the acceptance criteria of the SR are met, the event can be credited as a successful performance of this SR. Note 3 is an SR 3.0.4 type allowance to place the plant in MODE 4 for the purposes of performing this Surveillance. This is necessary in order to establish the pre-requisite plant configuration needed to perform the SR.

SR 3.8.1.11

[Part 2; Permanent]

~~This Surveillance demonstrates the EDGs are capable of synchronizing and accepting a load greater than or equal to the expected accident load. The minimum load of 3100 kW provides margin above the predicted worst-case automatically connected accident load at one minute and the maximum load of 3250 kW is the upper limit of the EDG's 200 hour rating.~~

[Part 2; Reassess]

This Surveillance demonstrates the EDGs are capable of synchronizing and accepting a load greater than or equal to the maximum expected steady state accident loads, which are the automatically connected accident loads and required manually applied accident loads. However, the upper limit of the 200 hour service rating is still available for flexibility in post accident EDG load management, including short duration loads. The test load band is provided to avoid routine overloading of the EDGs. Routine overloading may result in more frequent teardown inspections, in accordance with vendor recommendations, in order to maintain EDG OPERABILITY.

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

BASES

BACKGROUND

Each emergency diesel generator (EDG) is provided with a fuel oil storage tank. The combined fuel oil capacity of both storage tanks is sufficient to operate one diesel for a period of 7 days while the EDG is supplying the ~~continuous load rating~~ (Ref. 1). The fuel oil supply is calculated using the assumption that one EDG is available to supply sufficient post accident loads. This onsite fuel oil capacity ensures adequate time is available to replenish the onsite supply from outside sources prior to the diesel running out of fuel.

[Part 2; Reassess] upper limit of its 200-hour rating

[Part 1; Cycle 11] In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation.

Fuel oil is transferred from the storage tank to the day tank by either of two transfer pumps associated with each EDG. The pumps and piping are redundant to preclude failure of one pump, or the rupture of any pipe, valve or tank resulting in the loss of more than one EDG. All outside tanks and piping are located underground to preclude consideration of the effects of missiles in their design.

For proper operation of the EDGs, it is necessary to ensure the proper quality of the fuel oil. CR-3 has a Diesel Fuel Oil (DFO) Testing Program which is an overall effort to ensure the quality of the fuel oil. The program includes purchasing, on-site receipt acceptance testing of new fuel, offsite analysis of new fuel accepted, and periodic testing (both onsite and offsite) of the stored fuel oil. Additionally, the program includes water removal and biocide addition to control bacteriological growth, and performance checks of the cathodic protection system for underground storage tanks. CR-3 is not committed to Regulatory Guide 1.137 or ANS 59.51 (ANSI N195), however, these standards were utilized as guidance in the development of the DFO Testing Program.

The EDG lube oil subsystem is designed to provide sufficient lubrication to permit proper operation of its associated EDG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during

(continued)

[Part 1; Cycle 11] In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation.

BASES

BACKGROUND (continued)

operation. The onsite lube oil storage, in addition to that contained in the engine sump, is sufficient to ensure 7 days of ~~continuous operation~~. This supply ensures adequate time is available to replenish lube oil from outside sources prior to the EDG running out of lube oil.

[Part 2; Reassess] one EDG supplying the upper limit of its 200-hour rating

Each EDG has an air start system with adequate capacity for six successive start attempts on the EDG without recharging the air start receivers. A single EDG start is assured with air receiver pressure $\geq$ 150 psig. Additional evaluations have been performed which indicate there is substantial margin included in the single start receiver pressure limit (Ref. 9).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 6 (Ref. 4) and Chapter 14 (Ref. 5), assume Engineered Safeguard (ES) systems are OPERABLE. The EDGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, lube oil, and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Policy Statement.

LCO

A sufficient combined stored diesel fuel oil supply is required to be available to ensure the capability to operate a single EDG at the ~~continuous load rating~~ for 7 days. During an event that requires 7 days operation before replacement fuel oil is obtained, manual reconfiguration of ~~loads and~~ transferring the stored fuel oil supply from one tank to the other may be needed to support operation of the EDG. Diesel fuel oil is also required to meet specific quality standards.

[Part 2; Reassess] upper limit of its 200-hour rating

[Part 1; Cycle 11] In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation.

(continued)

[Part 1; Cycle 11] In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation.

BASES

LCO (continued)

A sufficient lube oil supply must be available to ensure the capability to operate ~~at the continuous load rating~~ for 7 days. EDG lube oil sump level, in conjunction with the on-site supply and the ability to obtain replacement supplies within the required timeframe, supports the availability of EDGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. EDG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown."

[Part 2; Reassess] a single EDG at the upper limit of its 200-hour rating

The starting air system is required to have a minimum capacity for six successive EDG start attempts without recharging the air start receivers. As such, the air start compressors are not addressed as a part of this (or any other) LCO.

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required in order to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support EDG OPERABILITY, these features are required to be within limits whenever the associated EDG is required to be OPERABLE.

ACTIONS

The ACTIONS are modified by two Notes. Note 1 indicates separate Condition entry is allowed for each EDG. This is acceptable based upon the fact each EDG is treated as an independent entity for this Specification. Note 2 indicates LCO 3.0.4 is not applicable and MODE changes while in the ACTIONS of this Specification are permitted. It could be argued this Note is not required since this Specification allows indefinite operation. However, to avoid any future confusion on the allowance, LCO 3.0.4 has been specifically excepted. This is considered acceptable since operation in accordance with this Specification still means the EDG is OPERABLE.

(continued)

BASES

ACTIONS (continued)

A.1

[Part 2; Reassess; New ACTION]

With usable fuel oil volume in one or more storage tanks < 22,917 gallons, prompt action must be taken within 1 hour to verify that the combined fuel oil supply > 45,834 gallons. However, the Condition is restricted to fuel oil level reductions that maintain at least a combined 7 day supply. In this Condition, a period of 1 hour is allowed to ensure that sufficient fuel oil supply for 7 days of EDG operation at its upper 200-hour rating is available. In order to maintain the ability to treat the EDG as independent entities for the ACTIONS (from a fuel oil perspective), an artificial lower limit on stored fuel oil has been established. The minimum usable volume specified for each tank is equivalent to 3 days operation and was set to ensure a minimum combined 6 day supply.

The limit on combined supply recognizes that while one tank may contain less than 3.5 day supply, the usable volume in the other tank could be such that 7 day capacity still exists.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

[Part 2; Permanent] B.1

A.1

[Part 2; Reassess] operation at its upper 200-hour rating

[Part 2; Reassess] 45,834

[Part 2; Reassess] 22,917

[Part 2; Permanent] usable fuel

With ~~fuel~~ oil volume in one or more storage tanks < ~~18,589~~ gallons and combined fuel oil supply < ~~37,177~~ gallons, sufficient fuel oil supply for 7 days of EDG ~~operation~~ is not available. However, the Condition is restricted to fuel oil level reductions, that maintain at least a combined 6 day supply. In this Condition, a period of 48 hours is allowed prior to declaring the associated EDG inoperable. In order to maintain the ability to treat the EDG as independent entities for the ACTIONS (from a fuel oil perspective), an artificial lower limit on stored fuel oil has been established. The minimum ~~volume~~ specified for each tank is equivalent to 3 days operation and was set to ensure a minimum combined 6 day supply.

[Part 2; Permanent] usable volume

(continued)

BASES

ACTIONS

~~A.1~~ (continued)

[Part 1; Permanent] ~~B.1~~

[Part 2; Permanent] usable volume

The limit on combined supply recognizes that while one tank may contain less than 3.5 day supply, the ~~volume~~ in the other tank could be such that 7 day capacity still exists.

The 48 hour Completion Time allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. This period is acceptable based on the remaining capacity (> 6 days), the fact that action will be initiated to obtain replenishment, and the low probability of an event occurring during this brief period.

[Part 2; Permanent] ~~C.1~~

~~B.1~~

[Part 2; Reassess] 280

With lube oil inventory < ~~233~~ gallons, there is not sufficient lube oil to support 7 days continuous operation of one EDG at ~~full load conditions~~. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. In this Condition, a period of 48 hours is considered adequate to restore the required volume prior to declaring the ~~associated EDG inoperable. In order to maintain the ability to treat the EDG as independent entities for the ACTIONS (from a lube oil perspective), an artificial lower limit on stored lube oil has been established.~~ The volume specified includes the lube oil contained in the sump as well as the lube oil stored onsite (off-engine).

[Part 2; Reassess] the upper limit of its 200-hour rating

[Part 2; Permanent] EDGs inoperable.

[Part 2; Permanent] If the required stored volume cannot be restored, both EDGs must be declared inoperable since this volume is common to both EDGs.

(continued)

BASES

ACTIONS

~~B.1~~ (continued) [Part 2; Permanent] ~~C.1~~

The 48 hour Completion Time is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that actions will be initiated to obtain replenishment, and the low probability of an event occurring during this brief period.

~~C.1~~ [Part 2; Permanent] D.1

This Condition is entered as a result of a failure to meet the acceptance criterion for EDG fuel oil particulates. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. However, poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean the fuel oil will not burn properly and given that proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period of time prior to declaring the associated EDG inoperable. The 7 day Completion Time allows for further evaluation, re-sampling, and re-analysis of the EDG fuel oil.

[Part 2; Permanent] E.1

~~D.1~~

With the new fuel oil properties defined in the Bases for SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties prior to declaring the associated EDG inoperable. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed, filtering, or combinations of these procedures. Even if an EDG start and load was required during this time and the fuel oil properties were outside limits, there is a high likelihood that the EDG would still be capable of performing its intended function.

(continued)

BASES

ACTIONS (continued)

~~E.1~~ → [Part 2; Permanent] F.1

With starting air receiver pressure < 225 psig, sufficient capacity for six successive EDG start attempts does not exist. However, as long as the receiver pressure is > 150 psig, there is adequate capacity for at least one start attempt, and the EDG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the associated EDG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most EDG starts are accomplished on the first attempt, and the low probability of an event occurring during this brief period.

~~F.1~~ → [Part 2; Permanent] G.1

With a Required Action and associated Completion Time not met, or one or more EDGs with fuel oil, lube oil, or starting air subsystems not within limits for reasons other than addressed by ~~Conditions A through E~~, the associated EDG must be immediately declared inoperable. In this case, the ACTIONS of Specification 3.8.1 or 3.8.2, as applicable, are entered.

[Part 2 Permanent] Conditions A through F

[Part 2; Permanent] In the case of stored EDG lube oil, both EDGs must be declared inoperable since the stored lube oil volume is common to both EDGs.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

[Part 2; Permanent] adequate usable

This SR provides verification that there is an ~~adequate~~ inventory of fuel oil in each storage tank to support operation of one EDG for 3.5 days at the ~~continuous load rating~~ (assuming no offsite power). The SR also verifies combined capacity of the two tanks to be > 7 days fuel supply. The 3.5 day period (7 day capacity provided by the combined inventory of both tanks) is sufficient time to place the plant in a safe shutdown condition, cross connect fuel storage tanks, if necessary, and to bring in replenishment fuel from an offsite location.

[Part 2; Reassess] upper limit of its 200-hour rating

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and the likelihood any large uses of fuel oil during this period would be detected.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

[Part 2; Reassess] operation of a single EDG at the upper limit of its 200-hour rating

SR 3.8.3.2

[Part 2; Reassess] 280

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of ~~full load operation for each EDG~~. The ~~233~~ gallon requirement is based on the EDG manufacturer consumption values for the run time of the EDG. The specified volume includes the lube oil contained in the sump as well as the onsite stored stock. As such, implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the EDG. When determining compliance with this requirement, both EDGs may take credit for the same volume of onsite stored lube oil.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since EDG starts and run time are closely monitored by the plant staff.

SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

a. Sample the new fuel oil in accordance with ASTM D4057-88, (Ref. 6);

b. Verify in accordance with the tests specified in ASTM D975-74, (Ref. 6) that the sample has a maximum of 0.05% by volume water and sediment (using ASTM D2709-82), a Saybolt viscosity at 100°F of $\geq$ 32.6 SUS and $\leq$ 40.1 SUS, and a flash point of $\geq$ 125°F;

c. Verify in accordance with the test specified in ASTM D287-82 that new fuel has an API specific gravity of 28 (min); and

(continued)

BASES (continued) → [Part 1; Cycle 11]

BACKGROUND (continued)

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE. With ASV-204, EFV-12, or EFV-13 inoperable, Train "B" Emergency Diesel Generators, Train "B" AC Electrical Power Distribution Subsystems, and Train "B" AC Vital Bus Subsystems are required OPERABLE.

(continued)

BASES

ACTIONS ~~A.1~~ → [Part 1; Cycle 11] A.1, A.2, B.1, and B.2

[Part 1; Cycle 11]

With Train "A" AC electrical power distribution subsystem inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. With Train "B" AC electrical power distribution subsystem inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path as well as ASV-204, EFV-12, and EFV-13 are OPERABLE for steam generator cooling. If the required equipment is not OPERABLE, the capability to remove core decay heat cannot be assured and Condition F is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

[Part 1; Cycle 11]

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

With one AC electrical power distribution subsystem inoperable, the remaining AC electrical power distribution subsystem in the other train is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. However, the overall reliability is reduced

(continued)

BASES

ACTIONS

~~A.1~~ (continued)

because a single failure in the remaining power distribution subsystems could result in the minimum required ES functions not being met. Therefore, the required AC buses, load centers, MCCs, and distribution panels must be restored to OPERABLE status within 8 hours.

[Part 1; Cycle 11] A.1, A.2, B.1, and B.2

[Part 1, Cycle 11] Conditions A and B

The most severe scenario addressed by ~~Condition A~~ is an entire train without AC power (i.e., no offsite power to the train and the associated EDG inoperable). In this condition, the plant has an increased vulnerability to a complete loss of AC power. It is, therefore, imperative that the operator's attention be focused on minimizing the potential for loss of power to the remaining train by stabilizing the plant, and on restoring power to the affected train. The 8 hour time limit for restoration, prior to requiring a plant shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train to the actions associated with shutting down the plant within this time limit; and

b. The low probability of an event occurring coincident with a single failure of a redundant component in the train with AC power.

[Part 1, Cycle 11] Condition A or B

[Part 1; Cycle 11] A.2 and B.2

The second Completion Time for Required Action ~~A.1~~ establishes a limit on the maximum time allowed for any ~~combination of required~~ distribution subsystems to be inoperable during any ~~single~~ contiguous occurrence of failure to meet the LCO. ~~If Condition A~~ is entered while, for instance, a DC bus is inoperable and subsequently restored to OPERABLE status, LCO 3.8.9 may already have been not met for up to 2 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time, a DC circuit could again become inoperable, and AC distribution restored to OPERABLE status. This could continue indefinitely.

(continued)

BASES

ACTIONS

[Part 1; Cycle 11] A.1, A.2, B.1 and B.2

~~A.1~~ (continued)

The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

[Part 1; Cycle 11] C.1, C.2, D.1, and D.2

~~B.1~~

With Train "A" AC vital bus inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. With Train "B" AC vital bus inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path as well as ASV-204, EFV-12, and EFV-13 are OPERABLE for steam generator cooling. If the required equipment is not OPERABLE, the capability to remove core decay heat cannot be assured and Condition F is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

[Part 1; Cycle 11]

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

(continued)

BASES

ACTIONS

~~B.1~~ (continued)

[Part 1; Cycle 11] C.1, C.2, D.1, and D.2

With one AC vital bus inoperable, the remaining OPERABLE AC vital buses are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ES functions not being supported. Therefore, the AC vital bus must be restored to OPERABLE status within 8 hours.

Condition B represents a condition in which potentially both the DC source and the associated AC source are nonfunctional. In this situation the plant is significantly more vulnerable to a complete loss of all non-interruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining vital buses and restoring power to the affected vital bus.

The 8 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without adequate AC vital power. However, there are certain affected features Completion Times of shorter duration. The intent of the Improved Technical Specifications is to remain within this Specification only and not take the ACTIONS for inoperable supported systems. Taking this exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than 8 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue;

(continued)

BASES

ACTIONS

[Part 1; Cycle 11] C.1, C.2, D.1, and D.2

~~B.1~~ (continued)

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and

c. The low probability of an event occurring coincident with a single failure of a redundant component.

The 8 hour Completion Time takes into account the importance of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action ~~B.1~~ establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failure. Refer to the Bases for Required ~~Action A.1~~ for further discussion of this Completion Time.

[Part 1; Cycle 11] C.2 and D.2

[Part 1; Cycle 11] Actions A.2 and B.2

[Part 1; Cycle 11] E.1

~~C.1~~

With DC bus(es) in DC electrical power distribution train inoperable, the remaining train is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution train could result in the minimum required ES functions not being met. Therefore, the DC buses must be restored to OPERABLE status within 2 hours.

(continued)

BASES

ACTIONS

[Part 1, Cycle 11] E.1

~~C.1~~ (continued)

[Part 1, Cycle 11] Condition E

~~Condition C~~ represents a condition in which one train is without adequate DC power; potentially both with the battery significantly degraded and the associated charger inoperable. In this situation, the plant is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

The 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without adequate AC vital power. However, there are certain affected features with Completion Times of shorter duration. The intent of the Improved Technical Specifications is to remain within this Specification only and not take the ACTIONS for inoperable supported systems. Taking this exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than 2 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in plant conditions (i.e., requiring a shutdown) while allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected train; and

c. The low probability of an event occurring coincident with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with the recommendations of Regulatory Guide 1.93 (Ref. 3).

(continued)

BASES

ACTIONS

~~C.1~~ (continued) → [Part 1, Cycle 11] E.1

[Part1, Cycle 11] Actions A.2 and B.2

The second Completion Time for Required Action ~~C.1~~ establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failure to meet the LCO. Refer to the Bases for Required ~~Action A.1~~ for further discussion of this Completion Time.

~~D.1 and D.2~~ → [Part 1, Cycle 11] F.1 and F.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging plant systems.

~~E.1~~ → [Part 1, Cycle 11] G.1

[Part 1, Cycle 11] Condition G

~~Condition E~~ corresponds to a level of degradation in which redundant safety-related trains have lost power to one or more busses. At this severely degraded level, the plant's ability to respond to an event may be significantly reduced. Therefore, if it is determined that redundant trains of a necessary function are concurrently inoperable, no additional time is justified for continued operation. The plant is required to immediately enter LCO 3.0.3 and begin preparations for a controlled shutdown.

(continued)

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

TECHNICAL SPECIFICATION
CHANGE REQUEST NOTICE 210

REVISION BAR PAGES

Technical Specifications

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS—Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more trains inoperable. AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	A.1	Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour AND
	AND A.2	Restore train(s) to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND B.2	Be in MODE 4.	12 hours

3.7 PLANT SYSTEMS

3.7.5 Emergency Feedwater (EFW) System

LCO 3.7.5 Two EFW trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One steam supply to the turbine driven EFW pump inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. ASV-5 inoperable.	B.1 Restore ASV-5 to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. EFV-12 inoperable OR EFV-13 inoperable. OR ASV-204 inoperable.	C.1	Verify the following are OPERABLE: 1. Train "B" Emergency Diesel Generator, 2. Train "B" AC Electrical Power Distribution Subsystem, and 3. Train "B" AC Vital Bus Subsystem	1 hour
	AND		
	C.2	Restore affected equipment to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Turbine drive EFW pump or associated flow path inoperable for reasons other than Condition A.	D.1	Verify the following are OPERABLE: 1. SWP-1B, 2. Train "B" of the Nuclear Services Seawater System, 3. CHHE-1B, and 4. CHP-1B.	1 hour
	AND		
	D.2	Verify both trains of the following are OPERABLE: 1. ECCS, 2. Decay Heat Closed Cycle Cooling, 3. Decay Heat Seawater, 4. Emergency Diesel Generators, 5. AC Electrical Power Distribution Subsystems, and 6. AC Vital Bus Subsystems.	1 hour
	AND		
	D.3	Restore Turbine driven EFW pump and associated flow path to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Motor driven EFW pump or associated flow path inoperable.	E.1	Restore motor driven EFW pump and associated flow path to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1 AND F.2	Be in Mode 3. Be in Mode 4.	6 hours 12 hours
G. Two EFW trains inoperable.	G.1	Initiate action to restore one EFW train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each EFW manual, power operated, and automatic valve in each water flow path and in both steam supply flow paths to the turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	45 days
SR 3.7.5.2	----------NOTE---------- Not required to be performed for the turbine driven EFW pump, until 24 hours after entering MODE 3. ---------- Verify the developed head of each EFW pump at the flow test point is greater than or equal to the required developed head.	 45 days on a STAGGERED TEST BASIS

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.7.5.3	----------NOTE---------- Not required to be performed until 24 hours after entering MODE 3. ---------- Verify each EFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months
SR 3.7.5.4	----------NOTE---------- Not required to be performed until 24 hours after entering MODE 3. ---------- Verify each EFW pump starts automatically on an actual or simulated actuation signal.	24 months
SR 3.7.5.5	Verify proper alignment of the EFW flow paths by verifying flow from the EFW tank to each steam generator.	Prior to entering MODE 2 whenever plant has been in MODE 5 or 6 for > 30 days

3.7 PLANT SYSTEMS

3.7.7 Nuclear Services Closed Cycle Cooling Water (SW) System

LCO 3.7.7 The SW System shall be OPERABLE with:

a. Two OPERABLE emergency SW pumps; and

b. Three OPERABLE SW heat exchangers.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. SWP-1B inoperable.	A.1	--------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND		
	A.2	Restore SWP-1B to OPERABLE status	72 hours
B. SWP-1A inoperable. OR One required SW heat exchanger inoperable	B.1	Restore SWP-1A and SW heater exchanger to OPERABle status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	----------NOTE---------- Isolation of SW flow to individual components does not render the SW System inoperable. ----------	
	Verify each SW manual, power operated, and automatic valve in the flow path servicing essential equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.7.2	----------NOTE---------- Not applicable in MODE 4. ----------	
	Verify each SW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months
SR 3.7.7.3	----------NOTE---------- Not applicable in MODE 4. ----------	
	Verify each SW pump starts automatically on an actual or simulated actuation signal.	24 months

3.7 PLANT SYSTEMS

3.7.8 Decay Heat Closed Cycle Cooling Water (DC) System

LCO 3.7.8 Two DC trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC train inoperable.	A.1 ---------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
	A.2 --------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops-MODE 4," for required decay heat removal loops made inoperable by DC train inoperability. ---------- Restore DC train to OPERABLE status.	72 hours

(continued)

3.7 PLANT SYSTEMS

3.7.9 Nuclear Services Seawater System

LCO 3.7.9 Two Nuclear Services Seawater System trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Train "B" of the Nuclear Services Seawater System inoperable.	A.1 --------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE. AND A.2 Restore Train "B" of the Nuclear Services Seawater System to OPERABLE status.	1 hour 72 hours
B. Train "A" of the Nuclear Services Seawater System inoperable.	B.1 Restore Train "A" of the Nuclear Services Seawater System to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Be in Mode 3 AND C.2 Be in Mode 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	----------NOTE---------- Isolation of Nuclear Services Seawater System flow to individual components does not render the Nuclear Services Seawater System inoperable. ---------- Verify each Nuclear Services Seawater System manual valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.9.2	----------NOTE---------- Not applicable in MODE 4. ---------- Verify each Emergency Nuclear Services Seawater System pump starts automatically on an actual or simulated actuation signal.	24 months

3.7 PLANT SYSTEMS

3.7.10 Decay Heat Seawater System

LCO 3.7.10 Two Decay Heat Seawater System trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Decay Heat Seawater System train inoperable.	A.1 --------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
	A.2 --------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops-MODE 4," for required decay heat removal loops made inoperable by Decay Heat Seawater System train inoperability. ---------- Restore Decay Heat Seawater System train to OPERABLE status.	72 hours

(continued)

3.7 PLANT SYSTEMS

3.7.18 Control Complex Cooling System

LCO 3.7.18 Control Complex Cooling System shall be OPERABLE with:

a. 2 OPERABLE chillers and associated pumps; and

b. 2 heat exchangers.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CHHE-1B inoperable OR CHP-1B inoperable.	A.1	--------NOTE--------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND		
	A.2	Restore CHHE-1B and CHP-1B to OPERABLE status.	30 days
B. CHHE-1A inoperable. OR CHP-1A inoperable. OR One required Control Complex Cooling heat exchanger inoperable.	B.1	Restore CHHE-1A, CHP-1A and Control Complex Cooling heat exchanger to OPERABLE status.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Be in Mode 3 AND C.2 Be in Mode 5.	6 hours 36 hours
D. Any combination of components rendering the Control Complex Cooling System inoperable.	D.1 Enter LCO 3.0.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify each chilled water pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.18.2	Verify the redundant capability of the Control Complex Cooling System to remove the assumed heat load.	24 months

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.3	Restore required offsite circuit to OPERABLE status	72 hours AND 6 days from discovery of failure to meet LCO
B. Train "A" EDG inoperable.	B.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND		
	B.2	--------NOTE-------- This Action is not applicable in MODE 4. ----------	
		Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND		
	B.3	Declare required feature(s), supported by the inoperable EDG, inoperable when its redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.4.1	Determine OPERABLE EDG is not inoperable due to common cause failure.	24 hours I
	OR		
	B.4.2	Perform SR 3.8.1.2 for OPERABLE EDG.	24 hours I
	AND		
	B.5	Restore EDG to OPERABLE status	72 hours I AND 6 days from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Train "B" EDG inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	C.2 ---------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204, 3. EFV-12, and 4. EFV-13	1 hour
	AND	
	C.3 Declare required feature(s), supported by the inoperable EDG, inoperable when its redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND	(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.4.1 Determine OPERABLE EDG is not inoperable due to common cause failure. OR	24 hours
	C.4.2 Perform SR 3.8.1.2 for OPERABLE EDG. AND	24 hours
	C.5 Restore EDG to OPERABLE status.	72 hours AND 6 days from discovery of failure to meet LCO
D. Two required offsite circuits inoperable.	D.1 Declare required feature(s) inoperable when its redundant required feature(s) are inoperable. AND	12 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	D.2 Restore one required offsite circuit to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One required offsite circuit inoperable. AND Train "A" EDG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems Operating," when Condition E is entered with no AC power source to one train. ----------	
	E.1 --------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND	
	E.2 Restore required offsite circuit to OPERABLE status.	12 hours
	OR	
	E.3 Restore EDG to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One required offsite circuit inoperable. AND Train "B" EDG inoperable.	-------------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems Operating," when Condition F is entered with no AC power source to one train. ---------------------------	
	F.1 ---------NOTE-------- This Action is not applicable in MODE 4. -------------------- Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204, 3. EFV-12, and 4. EFV-13	1 hour
	AND	
	F.2 Restore required offsite circuit to OPERABLE status.	12 hours
	OR	
	F.3 Restore EDG to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Two EDGs inoperable.	G.1	Restore one EDG to OPERABLE status.	2 hours
H. Required Action and associated Completion Time of Condition A, B, C, D, E, F, or G not met.	H.1	Be in MODE 3.	12 hours
	AND		
	H.2	Be in MODE 5.	36 hours
I. Three or more required AC sources inoperable.	I.1	Enter LCO 3.0.3	Immediately

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	----------NOTES---------- 1. EDG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one EDG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.6. ---------- Verify each EDG operates for ≥ 60 minutes at a load ≥ 2600 kW and ≤ 2850 kW.	31 days
SR 3.8.1.4	Verify each day tank contains ≥ 280 gal of fuel oil	31 days
SR 3.8.1.5	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to the day tank.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. Momentary transients outside the load range do not invalidate this test. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each EDG operates for $\geq$ 60 minutes at a load $\geq$ 3300 kW and $\leq$ 3400 kW.	24 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required emergency diesel generator (EDG).

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

----------NOTES----------

1. Separate Condition entry is allowed for each EDG.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EDG with stored fuel oil level < 22,917 gal and > 19,643 gal in storage tank.	A.1 Verify combined stored fuel oil level > 45,834 gal.	1 hour
B. One or more EDGs with stored fuel oil level < 22,917 gal and > 19,643 gal in storage tank. AND Combined stored fuel oil level < 45,834 gal.	B.1 Restore fuel oil level to within limits.	48 hours
C. With stored EDG lube oil inventory < 280 gal and > 240 gal.	C.1 Restore lube oil inventory to within limits.	48 hours OR Declare both EDGs inoperable.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more EDGs with stored fuel oil total particulates not within limit.	D.1 Restore fuel oil total particulates to within limits.	7 days
E. One or more EDGs with new fuel oil properties not within limits.	E.1 Restore stored fuel oil properties to within limits.	30 days
F. One or more EDGs with starting air receiver pressure < 225 psig and ≥ 160 psig.	F.1 Restore starting air receiver pressure to within limits.	48 hours
G. Required Action and associated Completion Time not met. OR One or more EDGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, E, or F.	G.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ 22,917 gal of fuel and combined fuel oil storage level ≥ 45,834 gal.	31 days
SR 3.8.3.2	Verify each EDG lube oil inventory is ≥ 280 gal.	31 days
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each EDG air start receiver pressure is ≥ 225 psig.	31 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems—Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Train "A" AC electrical power distribution subsystem inoperable.	A.1	--------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND		
	A.2	Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Train "B" AC electrical power distribution subsystem inoperable.	B.1 --------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204, 3. EFV-12, path 4. EFV-13,	1 hour
	AND	
	B.2 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Train "A" AC vital bus subsystem inoperable	C.1	--------NOTE-------- This Action is not applicable in MODE 4. ---------- Verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE.	1 hour
	AND		
	C.2	Restore AC vital bus subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Train "B" AC Vital Bus subsystem inoperable.	D.1	--------NOTE-------- This Action is not applicable in MODE 4. ----------	
		Verify the following are OPERABLE: 1. Turbine driven emergency feedwater pump and associated flow path, 2. ASV-204, 3. EFV-12, and 4. EFV-13	1 hour
	AND		
	D.2	Restore AC vital bus subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
E. One DC electrical power distribution subsystem inoperable.	E.1	Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
F. Required Action and associated Completion Time not met.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE 5.	36 hours
G. Two trains with inoperable distribution subsystems that result in a loss of function.	G.1	Enter LCO 3.0.3	Immediately

(continued)

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

TECHNICAL SPECIFICATION
CHANGE REQUEST NOTICE 210

REVISION BAR PAGES

Bases

B 3.3 INSTRUMENTATION

B 3.3.5 Engineered Safeguards Actuation System (ESAS) Instrumentation

BASES

BACKGROUND

The ESAS initiates Engineered Safeguards (ES) Systems, based on the values of selected plant parameters, to protect core design and reactor coolant pressure boundary limits and to mitigate accidents.

ESAS actuates the following:

a. High Pressure Injection (HPI);

b. Low Pressure Injection (LPI);

c. Reactor Building (RB) Isolation and Cooling;

d. RB Spray;

e. Emergency Diesel Generator (EDG) Start; and

f. Control complex normal recirculation.

ESAS also provides two signals to the Emergency Feedwater Initiation and Control (EFIC) System. One signal initiates emergency feedwater (EFW) when an actuation of HPI Channel A and HPI Channel B is present. The other functions to trip the motor driven emergency feedwater pump when an RCS Pressure-Low Low initiation coincident with a loss of offsite power is present.

This trip signal may be manually defeated in certain small break LOCA scenarios. Assuming the single failure of the turbine driven feedwater pump or associated flow path in such circumstances, defeating this trip signal would maintain steam generator cooling with the motor driven emergency feedwater pump. Prior to defeating the trip signal, sufficient capability on the emergency diesel generators to power the required loads would be established as discussed in the BASES for Technical Specification 3.7.5.

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BASES

LCO

18. Core Exit Temperature (Backup) (continued)

following a steam generator tube rupture or small break LOCA. Operator actions to maintain a controlled cooldown, such as adjusting OTSG level or pressure, would be prompted by this indication. In addition, the core exit thermocouples provide input to the subcooling margin monitor, which is a Type A variable.

The subcooling margin monitor takes the average of the five highest CETs for each of the ICCM trains. Two channels ensure that a single failure will not disable the ability to determine the representative core exit temperature.

19. Emergency Feedwater Flow

EFW Flow instrumentation is provided to monitor operation of decay heat removal via the OTSGs. The EFW injection flow to each OTSG (2 channels per OTSG, one associated with each EFW injection line) is determined from a differential pressure measurement calibrated to a span of 0 gpm to 1000 gpm. Each differential pressure transmitter provides an input to a control room indicator and the plant computer.

EFW Flow is used by the operator to determine the need to throttle flow during accident or transient conditions to prevent excessive RCS cooldown rates when low decay heat levels are present. EFW Flow is also used by the operator to verify that the EFW System is delivering the correct flow to each OTSG. However, the primary indication of this function is provided by OTSG level.

These instruments are not assumed to provide information required by the operator to take a mitigation action specified in the safety analysis. As such, they are not Type A variables. However, the monitors are deemed risk significant (Category 1) and are included within the LCO based upon this consideration.

(continued)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.2 ECCS—Operating

BASES

BACKGROUND

The function of the ECCS is to provide core cooling to ensure that the reactor core is protected after any of the following accidents:

1. Loss of coolant accident (LOCA);

2. Steam generator tube rupture (SGTR); and

3. Steam line break (SLB).

There are two modes of ECCS operation: injection and recirculation. In the injection phase, all injection is initially added to the Reactor Coolant System (RCS) from the borated water storage tank (BWST). This injection flow is added via the RCS cold legs and core flood nozzles to the reactor vessel. After the BWST has been depleted to $\leq$ 15 feet but > 7 feet, the ECCS recirculation phase is entered as the ECCS suction is manually transferred to the reactor building emergency sump.

Two redundant, 100% capacity trains are provided. Each train consists of high pressure injection (HPI) and low pressure injection (LPI) subsystems. In MODES 1, 2, and 3, both trains must be OPERABLE. This ensures that 100% of the core cooling requirements can be provided even in the event of a single active failure.

Certain size small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B, and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystem, and AC Vital Bus Subsystems are required OPERABLE (Ref 5).

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BASES

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BASES (continued)

ACTIONS

A.1

With one or more ECCS trains inoperable and at least 100% of the flow equivalent to a single OPERABLE ECCS train available, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. If the turbine driven emergency feedwater pump or associated flow path is not OPERABLE, then the capability to remove sufficient core decay heat can not be assured and Condition B is applicable. Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

A.2

With one or more ECCS trains inoperable and at least 100% of the flow equivalent to a single OPERABLE ECCS train available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on NRC recommendations (Ref. 3) that are based on a risk evaluation and is a reasonable time for many repairs.

An ECCS train is inoperable if it is not capable of delivering the design flow to the RCS.

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the ECCS incapable of performing its function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the ECCS. The intent of this Condition is to maintain a combination of equipment

(continued)

BASES

ACTIONS

A.2 (continued)

such that the safety injection (SI) flow equivalent to 100% of a single train remains available. This allows increased flexibility in plant operations under circumstances when components in opposite trains are inoperable.

An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 3) has shown the risk of having one full ECCS train inoperable to be sufficiently low to justify continued operation for 72 hours.

With one or more components inoperable such that the flow equivalent to a single OPERABLE ECCS train is not available, the facility is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be immediately entered.

This Condition does not apply to HPI subsystem components which are deactivated for the purposes of complying with Low Temperature Overpressure Protection (LTOP) administrative control commitments. With these components deactivated, the HPI subsystem is still considered OPERABLE based upon guidance in NRC Generic Letter 91-18. This guidance allows substitution of manual operator action for otherwise

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.5

This Surveillance ensures that these valves are in the proper position to prevent the HPI pump from exceeding its runout limit. This 24 month Frequency is acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

SR 3.5.2.6

This Surveillance ensures that the flow controllers for the LPI throttle valves will automatically control the LPI train flow rate in the desired range and prevent LPI pump runout as RCS pressure decreases after a LOCA. The 24 month Frequency is acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

SR 3.5.2.7

Periodic inspections of the reactor building emergency sump suction inlet ensure that it is unrestricted and stays in proper operating condition. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and to preserve access to the location. This Frequency has been found to be sufficient to detect abnormal degradation and has been confirmed by operating experience.

REFERENCES

1. 10 CFR 50.46.

2. FSAR, Section 6.1.

3. NRC Memorandum to V. Stello, Jr., from R.L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

4. American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, Inservice Inspection, Article IWP-3000.

5. FTI 51-1266138-01, Safety Analysis Input to Startup Team Safety Assessment.

B 3.7 PLANT SYSTEMS

B 3.7.5 Emergency Feedwater (EFW) System

BASES

BACKGROUND

The Emergency Feedwater (EFW) System is designed to provide adequate flow to one or both steam generators (OTSGs) for decay heat removal with the generators at the maximum operating pressure of 1050 psig plus suitable margin for post-accident pressure increase (Ref. 1, 2). The principal function of the EFW system is to remove decay heat from the Reactor Coolant System upon the unavailability of normal feedwater supply. This is accomplished by supplying water from the emergency feedwater tank (EFT-2) to the OTSG secondary side via the high nozzles. Steam produced in the OTSGs is condensed in the main condenser via the turbine bypass valves or, if the atmospheric dump valves (ADVs) or main steam safety valves (MSSVs) have actuated, discharged directly to the atmosphere.

The EFW System consists of one motor driven EFW pump and one steam turbine driven EFW pump, each having a nominal 100% capacity (Ref. 3). The motor driven EFW pump is powered from the 4160 volt ES bus 3A. The turbine driven EFW pump receives steam from one main steam line per OTSG via connections upstream of the associated main steam isolation valve. An alternative source of steam is available from the fossil units, Crystal River Unit 1 and 2 (Ref. 1), but cannot be relied upon to consider the EFW train OPERABLE. The diverse motive power of the two trains enhances both system availability and reliability. The preferred water source for both EFW pump trains is the Seismic Class I, missile protected dedicated EFW tank. Backup supplies of emergency feedwater are provided by the condensate storage tank and the main condenser hotwell. The pumps tie into common discharge headers providing the capability to feed either or both of the OTSGs.

The pumps and OTSGs are protected from excessively high flow induced problems by cavitating venturis (EF-62-FO and EF-63-FO) in the pump discharge lines, designed to limit EFW flow to the steam generators regardless of steam generator pressure (Ref. 7).

(continued)

BASES

BACKGROUND (continued)

DC powered block and control valves are actuated to feed the appropriate steam generator by the Emergency Feedwater Initiation and Control (EFIC) System. The capacity of either EFW pump is sufficient to remove decay heat and cool the plant until the Reactor Coolant System (RCS) pressure and temperature are low enough to place the Decay Heat Removal (DHR) System in service or until core decay heat can be removed solely by ECCS.

For certain small break LOCA scenarios also involving a loss of offsite power, securing the motor driven EFW pump would provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads (Ref 6).

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BASES

BACKGROUND (continued)

Automatic actuation of the EFW System occurs on the following:

1. Trip of both main feedwater pumps with reactor power greater than 20% or the NI/RPS not in shutdown bypass;
2. Low level in either OTSG;
3. Low pressure in either OTSG;
4. Trip of all four reactor coolant pumps;
5. High pressure injection (HPI) actuation on both Channel A and B Engineered Safeguards Actuation System (ESAS) channels; and
6. AMSAC actuation.

The EFIC is a "smart" system which will feed either or both OTSGs with indications of low levels, but will isolate EFW to a faulted steam generator having a significantly lower steam pressure than the other.

The EFW System is designed to ANSI B 31.1 ES Seismic Class I and in accordance with General Design Criteria 2, 4, 5, 19, 44, 45, and 46 (Ref. 3, 4).

APPLICABLE SAFETY ANALYSIS

The EFW System is sized to provide sufficient decay heat removal capability to cooldown the RCS to the temperature and pressure at which the DHR System can be placed in service or at which core decay heat can be removed solely by ECCS for any of the following events:

- loss of main feedwater (LMFW);
- LMFW with loss of offsite power;
- main feedwater line break;
- main steam line break; and
- small break loss of coolant accident (LOCA).

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The EFW System is designed to remain functional following the maximum hypothetical earthquake. It will also remain functional following a single failure in addition to any of the above events with the exception of the loss of all AC power (Ref. 3). No single failure prevents EFW from being supplied to the intact OTSG nor allows EFW to be supplied to the faulted OTSG. Note that in most cases of a main feedwater break or a steam line break, the depressurization of the affected OTSG would cause the automatic initiation of EFW. However, there will be some small break sizes for which automatic detection will not be possible. For these small breaks, the operator will have sufficient time in which to take appropriate action to terminate the event (Ref. 1).

The EFW System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two independent emergency feedwater pumps and their associated flow paths are required to be OPERABLE. The OPERABILITY of the EFW pumps requires that each be capable of developing its required discharge pressure and flow. The OPERABILITY OF ASV-5 is addressed by Condition B. The OPERABILITY of ASV-204 is a portion of EFP-2 OPERABILITY and is addressed as by Condition D.

The motive power for the turbine driven pump is steam supplied from either OTSG from a main steam header upstream of the main steam isolation valves so that their closure does not isolate the steam supply to the turbine. Both steam supply flow paths through MSV-55 and MSV-56 (Condition A) to the turbine driven pump are required to be OPERABLE. The OPERABILITY of the associated EFW flow paths requires all valves be in their correct positions or be capable of actuating to their correct positions on a valid actuation signal.

(continued)

BASES

LCO (continued)

In certain small break LOCA scenarios, assuming the single failure as the loss of "B" train Class 1E direct current power, manual operator action would be taken to maintain steam generator cooling by feeding the steam generators using the turbine driven EFW pump. In this circumstance, manual operator action would be taken to close the "B" train EFW isolation valves, and open the crosstie valve, EFV-12 (Condition C), and feed the steam generators via the "A" train flow path.

Inoperability of the EFW System may result in inadequate decay heat removal following a transient or accident during which main feedwater is not available. The resulting RCS heatup and pressure increase can potentially result in significant loss of coolant through the pressurizer code safety valves or the PORV.

APPLICABILITY

In MODES 1, 2, and 3, the EFW System is required to be OPERABLE and to function in the event that main feedwater is lost. In addition, the EFW System is required to supply enough makeup water to replace the secondary side inventory lost as the plant cools to MODE 4 conditions.

In MODES 4, 5, and 6, the OTSG need not be used to cooldown the RCS. Therefore, the EFW System is not required to be OPERABLE in these MODES.

ACTIONS

A.1

With one of the two steam supplies to the turbine driven EFW pump inoperable, action must be taken to restore the steam supply to OPERABLE status within 7 days. Allowing 7 days in this Condition is reasonable, based on the redundant OPERABLE steam supply to the pump and the low probability of an event occurring that would require the inoperable steam supply to the turbine driven EFW pumps.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 7 days and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

(continued)

BASES

ACTIONS (continued)

B.1

If ASV-5 is inoperable, prompt action must be taken to restore ASV-5 to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action B.1 established a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

C.1

If ASV-204, EFV-12, or EFV-13 is inoperable, prompt action must be taken within 1 hour to ensure the following are OPERABLE:

- Train "B" Emergency Diesel Generators (TS 3.8.1)
- Train "B": AC Electrical Power Distribution Subsystem (TS 3.8.9), and
- Train "B" AC Vital Bus Subsystem (TS 3.8.9)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

If the above Train "B" equipment is not OPERABLE with ASV-204, EFV-12, or EFV-13 inoperable, the capability to remove sufficient core decay heat cannot be assured and Condition F is applicable.

(continued)

BASES

ACTIONS

C.1 (continued)

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the above Train "B" equipment as OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

C.2

If ASV-204, EFV-12, or EFV-13 is inoperable, prompt action must be taken to restore the valves to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action C.2 established a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

D.1

If the turbine driven EFW pump or associated flow path is inoperable, prompt action must be taken within 1 hour to ensure the following "B" train systems are OPERABLE:

- SWP-1B (TS 3.7.7),
- Train "B" of the Nuclear Services Seawater System (TS 3.7.9),
- CHHE-1B and CHP-1B (TS 3.7.18)

(continued)

BASES

ACTIONS

D.1 (continued)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

If the above listed "B" train components are not OPERABLE with the turbine driven EFW pump or associated flow path inoperable, the capability for EDG load management to improve small break LOCA mitigation can not be assured and Condition F is applicable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the above listed "B" train components as OPERABLE ensures that prompt action will be taken to confirm EDG load management. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

D.2

If the turbine driven EFW pump or associated flow path is inoperable, prompt action must be taken within 1 hour to ensure both trains of the following are OPERABLE:

- ECCS (TS 3.5.2),
- Decay Heat Closed Cycle Cooling Water (TS 3.7.8),
- Decay Heat Seawater (TS 3.7.10),
- Emergency Diesel Generators (TS 3.8.1),
- AC Electrical Power Distribution Subsystems (TS 3.8.9), and
- AC Vital Bus Subsystems (TS 3.8.9)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

If both trains of the above equipment are not OPERABLE with the turbine driven EFW pump or associated flow path inoperable, the capability to remove sufficient core decay heat can not be assured and Condition F is applicable.

(continued)

BASES

ACTIONS

D.2 (continued)

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify both trains of the above equipment as OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

D.3

If the turbine driven EFW pump or associated flow path is inoperable, action must be taken to restore the required equipment to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the motor driven EFW pump, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action D.3 establishes a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

(continued)

BASES

ACTIONS (continued)

E.1

If the motor driven EFW pump or associated flow path is inoperable, action must be taken to restore the required equipment to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW pump, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action E.1 establishes a limit on the maximum time allowed for any combination of Conditions to be entered during any continuous failure to meet this LCO. The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which other Conditions are entered concurrently. The 'AND' connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

F.1 and F.2

If Required Actions A.1, B.1, C.1, C.2, D.1, D.2, D.3, or E.1 cannot be completed within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1

With both EFW trains inoperable, the plant is in a seriously degraded condition with no safety related means for conducting a cooldown. In such a condition, plant operation should not be perturbed by a forced action, including a power change, that might result in a trip. For this reason, the Technical Specifications do not mandate a plant shutdown. Rather the ACTIONS allow the plant to dictate the most prudent course of action (including plant shutdown) for the situation. The seriousness of this condition requires that action be initiated immediately to restore at least one EFW train to OPERABLE status.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.5 (continued)

of EFW flow paths must be demonstrated before sufficient core heat is generated that would require the operation of the EFW System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgment, in view of other administrative controls to ensure that the flow paths are OPERABLE. To further ensure EFW System alignment, flow path OPERABILITY is verified, following extended outages to determine no misalignment of valves has occurred. This SR ensures that the flow path from the EFW tank to the OTSGs is properly aligned. This requirement is based upon the recommendation of NUREG 0737. The Frequency was modified slightly during ITS development (prior to entering MODE 2) to provide an SR 3.0.4 type exception. As written, the SR allows the plant to achieve and maintain MODE 3 conditions in order to perform the verification.

REFERENCES

1. Enhanced Design Basis Document for the Emergency Feedwater and Emergency Feedwater Initiation and Control System, Revision 1 dated September 27, 1991 with Temporary Changes 156, 230, 247, and 249.

2. BAW-10043, "Overpressure Protection for B&W Reactors", dated May 1972.

3. FSAR, Section 10.5.

4. 10 CFR 50, Appendix A.

5. ASME, Boiler and Pressure Vessel Code, Section XI, Inservice Inspection, Subsection IWP.

6. FTI 51-1266138-01, Safety Analysis Input to Startup Team Safety Assessment.

7. FPC calculation 187-0008, Rev. 5.

BASES

BACKGROUND (continued)

For certain small break LOCAs with a concurrent loss of offsite power, securing SWP-1A and RWP-2A to provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads. These pumps would be manually secured and locked out to preclude automatic reinitiation. In these situations, SWP-1B and RWP-2B are relied upon to provide continued flow for the SW and Nuclear Services Seawater systems.

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(continued)

BASES

APPLICABILITY (continued)

Three of the four heat exchangers must be OPERABLE to accommodate the design system heat load requirements.

In MODES 5 and 6, the SW System is not required to be OPERABLE due to the limitations on RCS temperature and pressure in these MODES. Additionally, there are no other Technical Specification LCOs supported by SW which are applicable during these plant conditions.

ACTIONS

A.1 and A.2

With SWP-1B inoperable, prompt action must be taken within 1 hour to ensure that sufficient capability is available on "A" train emergency diesel generator for SWP-1A in certain small break LOCA scenarios. In such circumstances, the motor driven emergency feedwater pump would be secured and the turbine driven emergency feedwater pump and associated flow path would be required OPERABLE to provide steam generator cooling. If the turbine driven emergency feedwater pump is not OPERABLE to permit securing motor driven emergency feedwater pump, the capability for EDG load management to improve small break LOCA mitigation cannot be assured and Condition C is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm EDG load management capability for small break LOCA mitigation improvement. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions. The 72 hour Completion Time for restoring SWP-1B OPERABILITY is consistent with other ECCS Specifications for a loss of redundancy Condition and, has been shown to maintain a suitable limit on risk. As such, this Completion Time is based on engineering judgment and is consistent with industry-accepted practice.

(continued)

BASES

ACTIONS (continued)

B.1

With SWP-1A and/or one of the required heat exchangers inoperable, the heat removal capacity of the SW System is degraded. In this Condition, adequate cooling of the containment and ES equipment served by SW cannot be assured following an accident coincident with a worst-case single active failure. Therefore, action must be taken to restore the affected component(s) to OPERABLE status. The 72 hour Completion Time for restoring full SW System OPERABILITY is consistent with other ECCS Specifications for a loss of redundancy Condition and, has been shown to maintain a suitable limit on risk. As such, this Completion Time is based on engineering judgment and is consistent with industry-accepted practice.

C.1 and C.2

If the inoperable SW component(s) cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR is modified by a Note indicating that the isolation of the SW flow to individual components may render those components inoperable, but does not affect the OPERABILITY of the SW System.

(continued)

BASES

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(continued)

B 3.7 PLANT SYSTEMS

B 3.7.8 Decay Heat Closed Cycle Cooling Water System

BASES

BACKGROUND

The Decay Heat Closed Cycle Cooling Water (DC) System facilitates the removal of decay heat from the reactor core. The system also removes process and operating heat from safety related components associated with decay heat removal during normal plant cooldown and following a transient or accident. During plant cooldown below approximately 250°F the DC system provides core heat removal by transferring heat from the Decay Heat Removal (DHR) System to the Decay Heat Seawater System. The system is divided into two independent and redundant trains, each capable of supplying 100 percent of the required normal and post-accident cooling. Each train contains a pump, a surge tank pressurized with nitrogen for volume and pressure control, and a heat exchanger which removes heat from the DHR system and rejects it to the Decay Heat Seawater System.

The design and operation of the DC system, along with a list of the components served, can be found in FSAR Section 9.5.2.2 (Ref. 1). For normal operation the DC pumps are started manually. However, in an emergency both DC pumps start automatically upon receipt of an Engineered Safeguards Actuation System (ESAS). The DC system supports long-term reactor decay heat removal following a loss of coolant accident (LOCA) when the Emergency Core Cooling System (ECCS) is recirculating water from the RB sump to the reactor core through the DH heat exchanger. The DC System also supports post-accident containment cooling by supplying cooling water to the reactor building spray pump motor coolers and bearings. Other loads supplied by this system are the DHR (LPI) pumps and motors, DC and decay heat seawater pump motors and two of the three make-up and purification (HPI) pump motors. The DC System supplies cooling to these pump motor heat exchangers, lube oil coolers, gear lube oil coolers, bearings, or air handling units to prevent overheating of the associated components (Ref. 3).

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path

(continued)

BASES

BACKGROUND (continued)

inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B, and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE.

As a closed system, the DC System also serves as an intermediate barrier to radioactivity releases to the environment from potential leaks in interfacing systems.

APPLICABLE SAFETY ANALYSIS

The DC system provides cooling for components essential to the mitigation of plant transients and accidents. An ESAS initiation signal will start both DC pumps. This ensures that the required cooling capacity is provided to the essential equipment following a steam line break, steam generator tube rupture, makeup system letdown line failure, or LOCA. The running pumps (100 percent capacity each), in conjunction with an associated DC heat exchanger, reject heat to the Decay Heat Seawater System to ensure the necessary cooling flow to components required for reactor decay heat removal. By cooling the RB spray pumps and pump motors following a LOCA or SLB, the DC system supports the RB Spray System by ensuring the pressure and temperature in containment are maintained within acceptable limits. The OPERABILITY of the RB Spray System is addressed in LCO 3.6.6, "Reactor Building Spray and Containment Cooling Systems".

During normal and post-accident cooldown operations, when RCS temperature and pressure are reduced to allow the alignment of the DHR System to the RCS, DC System operation facilitates core heat removal by transferring heat from the DHR System to the Decay Heat Seawater System.

The Decay Heat Closed Cycle Cooling Water System satisfies Criterion 3 of the NRC Policy Statement.

LCO

The requirement for two DC trains to be OPERABLE assures adequate normal and post-accident heat removal from the reactor core and essential components, considering a worst case single active failure. One of the OPERABILITY considerations regarding these independent and redundant trains is that each valve in the flow path be in the correct post-accident position. Additionally, each DC pump must be capable of being powered from its emergency power supply and be capable of automatically starting on an ESAS actuation.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, the DC System is not a normally operating system, but must be capable of performing its post-accident safety functions, which include providing cooling water to components required for RCS and containment heat removal. Two independent 100 percent capacity DC trains must be OPERABLE to accommodate the design system heat load requirements and satisfy reliability considerations assuming a single failure.

In MODE 4, although RCS temperature and pressure are reduced, there remains sufficient stored energy that the occurrence of an accident would necessitate the post-accident cooling functions of the DC System. When temperature and pressure have been reduced sufficiently to allow alignment of the DHR System to the RCS, the DC System is no longer required for post-accident component cooling, but must continue to provide cooling to the DHR heat exchangers. Therefore, two trains of the DC System must remain OPERABLE throughout MODE 4 to ensure emergency preparedness and/or decay heat removal, assuming a single active failure.

In MODES 5 and 6, the DC System is in operation performing its normal safety function of RCS decay heat removal. The various means of removing reactor decay heat in MODES 5 and 6 are addressed in LCO 3.4.6, "RCS Loops - MODE 5, Loops Filled"; LCO 3.4.7, "RCS Loops - MODE 5, Loops Not Filled"; LCO 3.9.4, "DHR and Coolant Circulation - High Water Level"; and LCO 3.9.5, "DHR and Coolant Circulation - Low Water Level". In other words, the OPERABILITY requirements for the DC System are determined by the systems it supports. Therefore, this LCO is not applicable in MODES 5 and 6.

ACTIONS

A.1 and A.2

With one DC train inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not available, the capability for core decay heat removal has not been assured and Condition B is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

Required Action A.2 is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops - MODE 4," be entered if an inoperable DC train results in an inoperable required DHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for an inoperability of a required DHR loop.

With one DC train inoperable, action must be taken to restore the train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE DC train is adequate to perform the heat removal function. The 72 hour Completion Time for restoring full DC System OPERABILITY is the same as that for the ECCS Systems, whose safety functions are supported by the DC System. This Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train and the low probability of a DBA occurring during this period.

B.1 and B.2

If the inoperable DC train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

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BASES

BACKGROUND (continued)

The Nuclear Services Seawater System is designed to seismic category I requirements, except for the standpipe drain line. The design and operation of the Nuclear Services Seawater System along with a list of components served by SW during normal and emergency conditions, can be found in FSAR Section 9.5 (Ref. 2). Following an Engineered Safeguards Actuation System (ESAS) actuation, SW System flow paths are realigned to provide a reliable source of cooling to essential safeguards equipment which may be supplied by non-safety cooling water systems during normal operations. To ensure these additional heat loads can be accommodated, both emergency pumps are started simultaneously by an ESAS signal to provide adequate cooling in the event of a single active failure which disables one emergency pump.

For certain small break LOCAs with a concurrent loss of offsite power, securing SWP-1A and RWP-2A would provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads. These pumps would be manually secured and locked out to preclude automatic reinitiation. In these situations, SWP-1B and RWP-2B are relied upon to provide continued flow to the SW and Nuclear Services Seawater systems.

APPLICABLE SAFETY ANALYSES

The Nuclear Services Seawater System supports the SW System in providing cooling for components essential to the mitigation of plant transients and accidents. The system has two separate 100 percent capacity underground intake conduits, independent emergency pumps, and underground discharge conduits to allow for a single failure while still providing the required flow. An ESAS signal will start both emergency pumps. This ensures the required cooling capacity is provided to the SW System following a steam line break, steam generator tube rupture, makeup system letdown line failure, or loss of coolant accident.

The Nuclear Services Seawater System satisfies Criterion 3 of the NRC Policy Statement.

(continued)

BASES (continued)

LCO

The requirement for the OPERABILITY of the Nuclear Services Seawater System including two emergency nuclear services seawater pumps provides redundancy necessary to ensure the system will provide adequate post-accident heat removal in the event of a coincident single failure.

Emergency nuclear services seawater pump OPERABILITY requires that each be capable of being powered from separate OPERABLE emergency buses. OPERABILITY of the associated flow paths requires that each valve in the flow path must be aligned to permit sea water flow from the intake canal to the SW heat exchangers, and subsequently to the discharge canal. The OPERABILITY of the SW heat exchangers, required to ensure proper heat removal capability, is addressed in LCO 3.7.7, "Nuclear Services Closed Cycle Cooling Water System".

APPLICABILITY

In MODES 1 through 4 the SW and Nuclear Services Seawater Systems are normally operating systems which must be prepared to provide post-accident cooling for components required for RCS and containment heat removal, equipment essential in providing the capability to safely shutdown the plant, and equipment required for adequate spent fuel pool cooling. The Nuclear Services Seawater System must be capable of providing its post-accident cooling assuming a single active failure. Therefore, both emergency pumps are required to be OPERABLE during these MODES.

In MODES 5 and 6, the Nuclear Services Seawater System is not required to be OPERABLE due to the limitations on RCS temperature and pressure in these MODES. Additionally, there are no other Technical Specification LCOs supported by the system which are applicable during these plant conditions.

ACTIONS

A.1 and A.2

With train "B" of the Nuclear Services Seawater System inoperable, prompt action must be taken within 1 hour to ensure that sufficient capability is available on "A" train

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

of emergency diesel generator for RWP-2A in certain small break LOCA scenarios. In such circumstances, the motor driven emergency feedwater pump would be secured and the turbine driven emergency feedwater pump would be required OPERABLE to provide steam generator cooling. If the turbine driven emergency feedwater pump is not OPERABLE to permit securing motor driven emergency feedwater pump, the capability for EDG load management to improve small break LOCA mitigation can not be assured and Condition C is applicable. The operability of the turbine driven emergency feedwater pump is not required in Mode 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm EDG load management capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions. The 72 hour Completion Time for restoring full Nuclear Services Seawater System OPERABILITY is consistent with that for ECCS Systems, whose safety functions are supported by the system. This Completion Time is based on engineering judgment and is consistent with accepted industry-accepted practice.

C.1

With train "B" of the Nuclear Services Seawater System inoperable, action must be taken to restore the pump to OPERABLE status within 72 hours. The 72 hour Completion Time for restoring full Nuclear Services Seawater System OPERABILITY is consistent with that for ECCS Systems, whose safety functions are supported by the system. This Completion Time is based on engineering judgement and is consistent with accepted industry-accepted practice.

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BASES

ACTIONS (continued)

C.1 and C.2

If the inoperable emergency nuclear services seawater pump cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

This SR is modified by a Note indicating that the isolation of the seawater flow to individual components may render those components inoperable, but does not affect the OPERABILITY of the Nuclear Services Seawater System.

Verifying the correct alignment for manual valves in the nuclear services seawater flow path provides assurance that the proper flow paths exist to support SW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. The valves verified by this SR include valves in the main flow paths and the first normally closed valve in a branch line. There are several other exceptions for valve position verification due to the low potential for these types of valves to be mispositioned. The valve types which are not verified as part of this SR include vent or drain valves, relief valves, instrumentation valves, and sample line valves. This SR also does not apply to valves which cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in their correct position.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

(continued)

BASES

BACKGROUND (continued)

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump and associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE.

APPLICABLE SAFETY ANALYSIS

The Decay Heat Seawater System supports the DC System in providing cooling for components essential to the mitigation of plant transients and accidents. The system has two separate 100 percent capacity underground intake conduits, independent pumps, and underground discharge conduits to provide for a single failure while still providing required flow. An ESAS initiation signal will start both decay heat seawater pumps upon low Reactor Coolant System (RCS) pressure and/or high containment pressure. This ensures that the required cooling capacity is provided to the DC System for cooling of components required for reactor heat removal following a steam line break, steam generator tube rupture, makeup system letdown line failure, or loss of coolant accident.

During normal and post-accident cooldown operations, when RCS temperature and pressure are reduced to allow the alignment of the DHR System to the RCS, the Decay Heat Seawater System is placed in service to support decay heat removal.

The Decay Heat Seawater System satisfies Criterion 3 of the NRC Policy Statement.

LCOs

The requirement for OPERABILITY of both decay heat seawater trains provides redundancy necessary to ensure the system will provide adequate post-accident heat removal in the event of a coincident single failure.

(continued)

BASES (continued)

ACTIONS

A.1 and A.2

With one Decay Heat Seawater train inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not OPERABLE, the capability to remove core decay heat can not be assured and Condition B is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

Required Action A.2 is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.5, "RCS Loops - MODE 4," should be entered if an inoperable decay heat seawater train results in an inoperable required DHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for an inoperability of a required DHR loop.

If one of the decay heat seawater trains is inoperable, action must be taken to restore the train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE train is adequate to perform the heat removal function. The 72 hour Completion Time for restoring full Decay Heat Seawater System OPERABILITY is the same as that for the ECCS Systems, whose safety functions are supported by the Decay Heat Seawater System. This Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train and the low probability of a DBA occurring during this period.

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BASES

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BASES

LCO (continued)

c. ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

The ability to maintain temperature in the Control Complex is addressed in Technical Specification 3.7.18.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CREVS must be OPERABLE to ensure that the control complex will remain habitable during and following a postulated DBA. During movement of irradiated fuel assemblies, the CREVS must be OPERABLE to cope with a release due to a fuel handling accident.

ACTIONS

A.1

With one CREVS train inoperable, action must be taken to restore the train to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train is adequate to perform the control room radiation protection function. However, the overall reliability is reduced because a failure in the OPERABLE CREVS train could result in loss of CREVS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

B.1 and B.2

In MODE 1, 2, 3, or 4, if the inoperable CREVS train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

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B 3.7 PLANT SYSTEMS

B 3.7.18 Control Complex Cooling Systems

BASES

BACKGROUND

The Control Complex Cooling System provides temperature control for the control room and other portions of the Control Complex containing safety related equipment.

The Control Complex Cooling System consists of two redundant chillers and associated chilled water pumps that provide cooling of recirculated control complex air. Redundant chillers and chilled water pumps are provided for suitable temperature conditions in the control complex for operating personnel and safety related control equipment. Dampers and two pairs of heat exchangers also form part of the system. The Control Complex Cooling System maintains the nominal temperature between 70°F and 80°F.

A single chiller and associated chilled water pump will provide the required temperature control for either heat exchangers. The Control Complex Cooling System operation to maintain control complex temperature is discussed in the FSAR, Section 9.7 (Ref. 1).

For certain small break LOCAs with a concurrent loss of offsite power, it is necessary to provide capability on the emergency diesel generator to load the "A" train low pressure injection pump and other required loads. In these situations, CHHE-1B and CHP-1B would be relied upon to provide required cooling.

APPLICABLE SAFETY ANALYSIS

The Control Complex Cooling System consists of redundant, safety related components, with some common piping. The Control Complex Cooling System maintains the temperature between 70°F and 80°F. A single active failure of a

(continued)

BASES

APPLICABLE SAFETY ANALYSIS (continued)

Control Complex Cooling System component does not impair the ability of the system to perform as designed. The Control Complex Cooling System is designed in accordance with Seismic Category I requirements. The Control Complex Cooling System is capable of removing heat loads from the control room and other portions of the Control Complex containing safety related equipment, including consideration of equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY.

The Control Complex Cooling System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two redundant heat exchangers and two redundant chillers and associated pumps of the Control Complex Cooling System are required to be OPERABLE to ensure that at least one of each is available, assuming a single failure disables one redundant component. Total system failure could result in the equipment operating temperature exceeding limits.

The Control Complex Cooling System is considered OPERABLE when the individual redundant components that are necessary to maintain control complex temperature are OPERABLE. These components include the cooling coils, water cooled condensing units, and associated temperature control instrumentation. In addition, the Control Complex Cooling System must be OPERABLE to the extent that air circulation can be maintained (See Specification 3.7.12).

APPLICABILITY

In MODES 1, 2, 3, and 4, the Control Complex Cooling System must be OPERABLE to ensure that the control complex temperature will not exceed equipment OPERABILITY requirements.

ACTIONS

A.1 and A.2

With the CHHE-1B or CHP-1B inoperable, prompt action must be taken within 1 hour to verify the turbine driven emergency feedwater pump and associated flow path is OPERABLE to

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

provide steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not OPERABLE, the capability to provide EDG load management for small break LOCA mitigation improvement cannot be assured and Condition C is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to provide the capability for EDG load management for small break LOCA mitigation improvement. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

With CHHE-1B or CHP-1B inoperable, action must be taken to restore its OPERABLE status within 30 days. In this Condition, the remaining OPERABLE Control Complex Cooling System redundant components are adequate to maintain the control complex temperature within limits. However, the overall reliability is reduced because a failure in the OPERABLE Control Complex Cooling System components could result in a loss of Control Complex Cooling System function. The 30 day Completion Time is based on the low probability of an event occurring requiring the Control Complex Cooling System and the consideration that the remaining redundant components can provide the required capabilities.

(continued)

BASES

ACTIONS (continued)

B.1

With CHHE-1A, CHP-1A or one Control Complex Cooling heat exchanger inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE Control Complex Cooling System equipment is adequate to maintain the control complex temperature within limits. However, the overall reliability is reduced because a failure in the OPERABLE Control Complex Cooling System redundant components could result in a loss of Control Complex Cooling System function. The 30 day Completion Time is based on the low probability of an event occurring requiring the Control Complex Cooling System and the consideration that the remaining components can provide the required capabilities.

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable Control Complex Cooling System component cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner without challenging unit systems.

D.1

If any combination of components that would render the Control Complex Cooling System not capable of performing the intended function, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.18.1

Verifying that each Control Complex Cooling chiller's developed head at the flow test point is greater than or equal to the required developed head ensures that chiller's performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 3). This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

SR 3.7.8.2

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. An 24 month Frequency is appropriate, as significant degradation of the system is slow and is not expected over this time period.

REFERENCES

1. FSAR, Section 9.7.

2. FTI 51-1266138-01, Safety Analysis Input to Startup Team Safety Assessment.

3. ASME, Boiler and Pressure Vessel Code, Section XI.

BASES

BACKGROUND (continued)

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE. With ASV-204, EFV-12, or EFV-13 inoperable, Train "B" Emergency Diesel Generators, Train "B" AC Electrical Power Distribution Subsystems, and Train "B" AC Vital Bus Subsystems are required OPERABLE.

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BASES

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(continued)

BASES

BACKGROUND (continued)

Provided an ES signal is present, certain required ES loads are returned to service in a predetermined sequence in order to prevent overloading the EDG in the process. Within 35 seconds after the initiating signal is received, all loads needed to recover the plant or maintain it in a safe condition are returned to service.

The service ratings of the EDG are:

- 0 to 2850 kw on a continuous basis
- 2851 to 3200 kw on a cumulative 2000 hour basis
- 3201 to 3400 kw on a cumulative 200 hour basis
- 3401 to 3500 kw on a cumulative 30 minute basis.

Loads powered from the 4160 V ES buses are listed in Reference 2.

Steady state load does not include loads imposed by the starting of motors such as during block loading, and short duration loads such as motor operated valves, battery charger surges, and short duration pump surge flows. Loads imposed by the starting of motors are not included in the service ratings and are less than the EDG manufacturer limits of 3910 kW for such loading.

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the FSAR, Chapter 6 (Ref. 4) and Chapter 14 (Ref. 5), assume ES systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that the fuel, RCS, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

(continued)

BASES

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(continued)

BASES

ACTIONS

A.3 (continued)

additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently.

As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition A was entered.

B.1

To ensure a highly reliable power source in the event one EDG is inoperable, it is necessary to verify the availability of the OPERABLE offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met (Condition F). However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

B.2

With Train "A" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

(continued)

BASES

ACTIONS

B.2 (continued)

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

B.3

Required Action B.3 is intended to provide assurance that a loss of offsite power, during the period that a EDG is inoperable, does not result in a complete loss of safety function of critical redundant required features. These features are designed with redundant safety related trains. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable EDG. Single train systems (from an electrical perspective), such as the turbine driven emergency feedwater pump, are not included.

The Completion Time for Required Action B.3 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An EDG is inoperable; and

b. A required feature on the other train is inoperable.

If at any time during the existence of this Condition (one EDG inoperable) a required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

(continued)

BASES

ACTIONS

B.3 (continued)

Declaring the required features inoperable within four hours from the discovery of items 'a' and 'b' existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the plant to transients associated with shutdown.

In this Condition, the remaining OPERABLE EDG and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system. Thus, on a component basis, single-failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, a[illegible]he low probability of a DBA occurring during this period.

B.4.1 and B.4.2

Required Action B.4.1 provides an option to testing the OPERABLE EDG in order to avoid unnecessary testing. If it can be determined that the cause of the inoperable EDG does not exist on the OPERABLE EDG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on the other EDG, the other EDG would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered. If the common cause failure evaluation is indeterminate (the cause of the initial inoperable EDG cannot be confirmed not to exist on the remaining EDG), performance of SR 3.8.1.2 is adequate to provide assurance of continued OPERABILITY of that EDG.

The Completion Time of 24 hours is reasonable to confirm that the OPERABLE EDG is not affected by the same problem as the inoperable EDG and is based on the recommendations of Generic Letter 84-15 (Ref. 7).

(continued)

BASES

ACTIONS (continued)

B.5

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with one EDG inoperable should be limited to a period not to exceed 72 hours.

In Condition B, the remaining OPERABLE EDG and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system. The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.5 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failure to meet the LCO. Refer to the Bases for Required Action A.3 for additional information on this Completion Time.

C.1, C.2, C.3, C.4, and C.5

Refer to the Bases for Actions B.1, B.3, B.4, and B.5 for the discussion for the corresponding Bases of Required Action C.

For Action C.2, with Train "B" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump, associated flow path, ASV-204, EFV-12, and EFV-13 are available for steam generator cooling. If the required equipment is not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

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BASES

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BASES

ACTIONS (continued)

D.1 and D.2

Required Action D.1, which applies when both required offsite circuits are inoperable, is intended to provide assurance that a DBA, coincident with a worst-case single failure, will not result in a complete loss of redundant required safety functions. The Completion Time for declaring the redundant required features inoperable is 12 hours; reduced from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is no longer valid, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. Single train features (from an electrical perspective), such as the turbine driven emergency feedwater pump, are not included.

The Completion Time for Required Action D.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. All required offsite circuits are inoperable; and

b. A required feature is inoperable.

If at any time during the existence of Condition C (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked.

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with two required offsite circuits inoperable should be limited to a period not to exceed 24 hours. In this condition, the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more EDGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, the simultaneous loss of offsite AC sources coincident with a LOCA, and a worst-case single failure were postulated as a part of the original licensing basis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

If one required offsite source is restored within 24 hours, power operation may continue in accordance with the required Actions of Condition A.

E.1

With Train "A" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump and associated flow path are not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

E.2 and E.3

Pursuant to LCO 3.0.6, the distribution system ACTIONS would not be entered if the de-energization of the busses was due to all AC sources to them being inoperable. Therefore, the Required Actions of Condition E are modified by a Note indicating that when Condition E is entered with no AC sources to one train, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems—Operating," must be immediately entered. This allows Condition E to provide requirements for the loss of one offsite circuit and one EDG whether or not a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.

(continued)

BASES

ACTIONS

E.2 and E.3 (continued)

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with one onsite and one offsite circuit inoperable should be limited to a period not to exceed 12 hours.

In Condition E, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. However, since power system redundancy is provided by two diverse sources of power it may appear the reliability of the power systems in this Condition is higher than that in Condition D (loss of both required offsite circuits). This is not necessarily the case since this difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

F.1

With Train "B" EDG inoperable, prompt action within 1 hour is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are available for steam generator cooling. If the turbine driven emergency feedwater pump, associated flow path, ASV-204, EFV-12, and EFV-13 are not available, the capability for core decay heat removal has not been assured and Condition H is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

(continued)

BASES

ACTIONS (continued)

F.2 and F.3

Refer to the Bases for Actions E.2 and E.3 for the discussion for the corresponding Bases of Required Actions F.2 and F.3.

G.1

With the Train A and Train B EDGs inoperable, there are no qualified onsite standby AC sources. Thus, with an assumed loss of offsite electrical power, there would not be sufficient standby AC sources available to power the minimum required ES systems. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time is balanced with that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). However, since any inadvertent generator trip could also result in a total loss of offsite AC power, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

The 2 hour Completion Time is consistent with the recommendations of Reference 6.

H.1 and H.2

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging plant systems.

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BASES

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BASES

ACTIONS (continued)

I.1

Condition I corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any subsequent failures in the AC electrical power system will cause a loss of function condition, and potentially, a station blackout. Therefore, the unit is required to enter LCO 3.0.3 immediately and prepare for a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function. This is consistent with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during outages (under simulated accident conditions). Where the SRs for this LCO specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 3933 V is 94.5% of the nominal 4160 V output voltage. This value allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is usually specified as 85% to 90% of name plate rating. The specified maximum steady state output voltage of 4400 V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the EDG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). Regulatory Guide 1.9 requirements are satisfied by monitoring EDG output.

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank is adequate. The level is expressed as an equivalent usable volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of EDG operation at a loading which bounds the postulated worst case accident.

The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and an automatic level control system is included in the design.

SR 3.8.1.5

This Surveillance demonstrates that each required fuel oil transfer pump operates automatically to transfer fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of the EDG. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer are OPERABLE.

The design of fuel transfer systems is such that pumps will operate automatically in order to maintain an adequate volume of fuel oil in the day tanks during or following EDG operation. The 31 day Frequency is based upon engineering judgement and has been shown to be acceptable by operating experience.

SR 3.8.1.6

See SR 3.8.1.2.

SR 3.8.1.7

Transfer of each 4160 V ES bus power supply from the normal offsite circuit to the required alternate offsite circuit demonstrates the capability of the alternate circuit distribution network to power the shutdown loads. The

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.7 (continued)

24 month Frequency is based on engineering judgment, taking into consideration plant conditions needed to perform the Surveillance. Operating experience has shown the 24 month Frequency to be adequate. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.1.8

Each EDG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the EDG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. For the CR-3 EDGs, the largest single load is less than 750 kW. The surveillance test will have a minimum rejected load of 750 kW. According to IEEE-308 (Ref. 13), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. For CR-3, the acceptance criteria of 66.75 Hz is based on 75% of the difference between synchronous speed and the overspeed trip setpoint. The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified for voltage is equal to 60% the 5 second load sequence interval associated with sequencing of the largest load. Four seconds for frequency is likewise based on Regulatory Guide 1.9 recommendations. SR 3.8.1.8.a corresponds to the maximum frequency excursion, while SR 3.8.1.8.b and SR 3.8.1.8.c are Regulatory Guide 1.9 specific voltage and frequency values to which the system must recover to following load rejection. Regulatory Guide 1.9 specifies nominal voltage and frequency values which are 4160V and 60 Hz respectively. The 24 month Frequency takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths.

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

This SR is modified by three Notes. The reason for Note 1 is to minimize wear and tear on the EDGs during testing. For the purpose of this testing, the EDGs may be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for EDGs. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and potentially challenge safety systems. However, Note 2 acknowledges that should an unplanned event occur in MODES 1, 2 or 3, following verification that the acceptance criteria of the SR are met, the event can be credited as a successful performance of this SR. Note 3 is an SR 3.0.4 type allowance to place the plant in MODE 4 for the purposes of performing this Surveillance. This is necessary in order to establish the pre-requisite plant configuration needed to perform the SR.

SR 3.8.1.11

This Surveillance demonstrates the EDGs are capable of synchronizing and accepting a load greater than or equal to the maximum expected steady state accident loads, which are the automatically connected accident loads and required manually applied accident loads. However, the upper limit of the 200 hour service rating is still available for flexibility in post accident EDG load management, including short duration loads. The test load band is provided to avoid routine overloading of the EDGs. Routine overloading may result in more frequent teardown inspections, in accordance with vendor recommendations, in order to maintain EDG OPERABILITY.

The 60 minute run time is provided to stabilize the engine temperature. This ensures that cooling and lubrication are adequate for extended periods of operation.

The 24 month Frequency takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by two Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. The reason for Note 2 is that during

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B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

BASES

BACKGROUND

Each emergency diesel generator (EDG) is provided with a fuel oil storage tank. The combined fuel oil capacity of both storage tanks is sufficient to operate one diesel for a period of 7 days while the EDG is supplying the upper limit of its 200-hour rating (Ref. 1). The fuel oil supply is calculated using the assumption that one EDG is available to supply sufficient post accident loads. In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation. This onsite fuel oil capacity ensures adequate time is available to replenish the onsite supply from outside sources prior to the diesel running out of fuel.

Fuel oil is transferred from the storage tank to the day tank by either of two transfer pumps associated with each EDG. The pumps and piping are redundant to preclude failure of one pump, or the rupture of any pipe, valve or tank resulting in the loss of more than one EDG. All outside tanks and piping are located underground to preclude consideration of the effects of missiles in their design.

For proper operation of the EDGs, it is necessary to ensure the proper quality of the fuel oil. CR-3 has a Diesel Fuel Oil (DFO) Testing Program which is an overall effort to ensure the quality of the fuel oil. The program includes purchasing, on-site receipt acceptance testing of new fuel, offsite analysis of new fuel accepted, and periodic testing (both onsite and offsite) of the stored fuel oil. Additionally, the program includes water removal and biocide addition to control bacteriological growth, and performance checks of the cathodic protection system for underground storage tanks. CR-3 is not committed to Regulatory Guide 1.137 or ANS 59.51 (ANSI N195), however, these standards were utilized as guidance in the development of the DFO Testing Program.

The EDG lube oil subsystem is designed to provide sufficient lubrication to permit proper operation of its associated EDG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during

(continued)

BASES

BACKGROUND (continued)

operation. The onsite lube oil storage, in addition to that contained in the engine sump, is sufficient to ensure 7 days of one EDG supplying the upper limit of its 200-hour rating. In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation. This supply ensures adequate time is available to replenish lube oil from outside sources prior to the EDG running out of lube oil.

Each EDG has an air start system with adequate capacity for six successive start attempts on the EDG without recharging the air start receivers. A single EDG start is assured with air receiver pressure $\geq$ 150 psig. Additional evaluations have been performed which indicate there is substantial margin included in the single start receiver pressure limit (Ref. 9).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 6 (Ref. 4) and Chapter 14 (Ref. 5), assume Engineered Safeguard (ES) systems are OPERABLE. The EDGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, lube oil, and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Policy Statement.

LCO

A sufficient combined stored diesel fuel oil supply is required to be available to ensure the capability to operate a single EDG at the upper limit of its 200-hour rating for 7 days. During an event that requires 7 days operation before replacement fuel oil is obtained, manual reconfiguration of loads and transferring the stored fuel oil supply from one tank to the other may be needed to support operation of the EDG. Diesel fuel oil is also required to meet specific quality standards. In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation.

(continued)

BASES

LCO (continued)

A sufficient lube oil supply must be available to ensure the capability to operate a single EDG at the upper limit of its 200-hour rating for 7 days. In certain small break LOCA scenarios, both EDGs are relied upon for accident mitigation. EDG lube oil sump level, in conjunction with the on-site supply and the ability to obtain replacement supplies within the required timeframe, supports the availability of EDGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. EDG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown."

The starting air system is required to have a minimum capacity for six successive EDG start attempts without recharging the air start receivers. As such, the air start compressors are not addressed as a part of this (or any other) LCO.

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required in order to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support EDG OPERABILITY, these features are required to be within limits whenever the associated EDG is required to be OPERABLE.

ACTIONS

The ACTIONS are modified by two Notes. Note 1 indicates separate Condition entry is allowed for each EDG. This is acceptable based upon the fact each EDG is treated as an independent entity for this Specification. Note 2 indicates LCO 3.0.4 is not applicable and MODE changes while in the ACTIONS of this Specification are permitted. It could be argued this Note is not required since this Specification allows indefinite operation. However, to avoid any future confusion on the allowance, LCO 3.0.4 has been specifically excepted. This is considered acceptable since operation in accordance with this Specification still means the EDG is OPERABLE.

(continued)

BASES

ACTIONS (continued)

A.1

With usable fuel oil volume in one or more storage tanks < 22,917 gallons, prompt action must be taken within 1 hour to verify that the combined fuel oil supply > 45,834 gallons. However, the Condition is restricted to fuel oil level reductions that maintain at least a combined 7 day supply. In this Condition, a period of 1 hour is allowed to ensure that sufficient fuel oil supply for 7 days of EDG operation at its upper 200-hour rating is available. In order to maintain the ability to treat the EDG as independent entities for the ACTIONS (from a fuel oil perspective), an artificial lower limit on stored fuel oil has been established. The minimum usable volume specified for each tank is equivalent to 3 days operation and was set to ensure a minimum combined 6 day supply.

The limit on combined supply recognizes that while one tank may contain less than 3.5 day supply, the usable volume in the other tank could be such that 7 day capacity still exists.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

B.1

With usable fuel oil volume in one or more storage tanks < 22,917 gallons and combined fuel oil supply < 45,834 gallons, sufficient fuel oil supply for 7 days of EDG operation at its upper 200-hour rating is not available. However, the Condition is restricted to fuel oil level reductions, that maintain at least a combined 6 day supply. In this Condition, a period of 48 hours is allowed prior to declaring the associated EDG inoperable. In order to maintain the ability to treat the EDG as independent entities for the ACTIONS (from a fuel oil perspective), an artificial lower limit on stored fuel oil has been established. The minimum usable volume specified for each tank is equivalent to 3 days operation and was set to ensure a minimum combined 6 day supply.

(continued)

BASES

ACTIONS

B.1 (continued)

The limit on combined supply recognizes that while one tank may contain less than 3.5 day supply, the usable volume in the other tank could be such that 7 day capacity still exists.

The 48 hour Completion Time allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. This period is acceptable based on the remaining capacity (> 6 days), the fact that action will be initiated to obtain replenishment, and the low probability of an event occurring during this brief period.

C.1

With lube oil inventory < 280 gallons, there is not sufficient lube oil to support 7 days continuous operation of one EDG at the upper limit of its 200-hour rating. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. In this Condition, a period of 48 hours is considered adequate to restore the required volume prior to declaring the

(continued)

BASES

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(continued)

BASES

ACTIONS

C.1 (continued)

EDGs inoperable. The volume specified includes the lube oil contained in the sump as well as the lube oil stored onsite (off-engine). If the required stored volume cannot be restored, both EDGs must be declared inoperable since this volume is common to both EDGs.

The 48 hour Completion Time is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that actions will be initiated to obtain replenishment, and the low probability of an event occurring during this brief period.

D.1

This Condition is entered as a result of a failure to meet the acceptance criterion for EDG fuel oil particulates. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. However, poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean the fuel oil will not burn properly and given that proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period of time prior to declaring the associated EDG inoperable. The 7 day Completion Time allows for further evaluation, re-sampling, and re-analysis of the EDG fuel oil.

E.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties prior to declaring the associated EDG inoperable. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed, filtering, or combinations of these procedures. Even if an EDG start and load was required during this time and the fuel oil properties were outside limits, there is a high likelihood that the EDG would still be capable of performing its intended function.

(continued)

BASES

ACTIONS (continued)

F.1

With starting air receiver pressure < 225 psig, sufficient capacity for six successive EDG start attempts does not exist. However, as long as the receiver pressure is > 150 psig, there is adequate capacity for at least one start attempt, and the EDG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the associated EDG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most EDG starts are accomplished on the first attempt, and the low probability of an event occurring during this brief period.

G.1

With a Required Action and associated Completion Time not met, or one or more EDGs with fuel oil, lube oil, or starting air subsystems not within limits for reasons other than addressed by Conditions A through F, the associated EDG must be immediately declared inoperable. In this case, the ACTIONS of Specification 3.8.1 or 3.8.2, as applicable, are entered. In the case of stored EDG lube oil, both EDGs must be declared inoperable since the stored lube oil volume is common to both EDGs.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate usable inventory of fuel oil in each storage tank to support operation of one EDG for 3.5 days at the upper limit of its 200-hour rating (assuming no offsite power). The SR also verifies combined capacity of the two tanks to be > 7 days fuel supply. The 3.5 day period (7 day capacity provided by the combined inventory of both tanks) is sufficient time to place the plant in a safe shutdown condition, cross connect fuel storage tanks, if necessary, and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and the likelihood any large uses of fuel oil during this period would be detected.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of operation of a single EDG at the upper limit of its 200-hour rating. The 280 gallon requirement is based on the EDG manufacturer consumption values for the run time of the EDG. The specified volume includes the lube oil contained in the sump as well as the onsite stored stock. As such, implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the EDG. When determining compliance with this requirement, both EDGs may take credit for the same volume of onsite stored lube oil.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since EDG starts and run time are closely monitored by the plant staff.

SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

a. Sample the new fuel oil in accordance with ASTM D4057-88, (Ref. 6);

b. Verify in accordance with the tests specified in ASTM D975-74, (Ref. 6) that the sample has a maximum of 0.05% by volume water and sediment (using ASTM D2709-82), a Saybolt viscosity at 100°F of $\geq$ 32.6 SUS and $\leq$ 40.1 SUS, and a flash point of $\geq$ 125°F;

c. Verify in accordance with the test specified in ASTM D287-82 that new fuel has an API specific gravity of 28 (min); and

(continued)

BASES

BACKGROUND (continued)

Certain small break LOCA scenarios require emergency feedwater to maintain steam generator cooling until core decay heat can be removed solely by ECCS cooling. Further, with the turbine driven EFW pump or associated flow path inoperable, SWP-1B, train "B" of the Nuclear Services Seawater System, CHHE-1B and CHP-1B, as well as both trains of ECCS, Decay Heat Closed Cycle Cooling Water, Decay Heat Seawater, Emergency Diesel Generators, AC Electrical Power Distribution Subsystems, and AC Vital Bus Subsystems are required OPERABLE. With ASV-204, EFV-12, or EFV-13 inoperable, Train "B" Emergency Diesel Generators, Train "B" AC Electrical Power Distribution Subsystems, and Train "B" AC Vital Bus Subsystems are required OPERABLE.

(continued)

BASES

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BASES

LCO (continued)

AC, DC, and AC vital bus electrical power distribution subsystems are considered OPERABLE when the associated buses, load centers, MCCs, and distribution panels are energized to their proper voltages.

In addition, tie breakers between 480 V ES bus 3A and 3B must be open. This prevents an electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem. If this were to occur, it could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are no longer redundant and one train must be considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E 4160 V buses from being powered from the same offsite circuit.

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.10, "Distribution Systems—Shutdown."

ACTIONS

A.1, A.2, B.1, and B.2

With Train "A" AC electrical power distribution subsystem inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. With Train "B" AC electrical power distribution subsystem inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path as well as ASV-204, EFV-12, and EFV-13 are OPERABLE for steam generator cooling. If the required equipment is not OPERABLE, the capability to remove core decay heat cannot be assured and Condition F is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

(continued)

BASES

ACTIONS

A.1, A.2, B.1, and B.2 (continued)

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

With one AC electrical power distribution subsystem inoperable, the remaining AC electrical power distribution subsystem in the other train is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. However, the overall reliability is reduced because a single failure in the remaining power distribution subsystems could result in the minimum required ES functions not being met. Therefore, the required AC buses, load centers, MCCs, and distribution panels must be restored to OPERABLE status within 8 hours.

The most severe scenario addressed by Conditions A and B is an entire train without AC power (i.e., no offsite power to the train and the associated EDG inoperable). In this condition, the plant has an increased vulnerability to a complete loss of AC power. It is, therefore, imperative that the operator's attention be focused on minimizing the potential for loss of power to the remaining train by stabilizing the plant, and on restoring power to the affected train. The 8 hour time limit for restoration, prior to requiring a plant shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train to the actions associated with shutting down the plant within this time limit; and

b. The low probability of an event occurring coincident with a single failure of a redundant component in the train with AC power.

(continued)

BASES

ACTIONS

A.1, A.2, B.1, and B.2 (continued)

The second Completion Time for Required Actions A.2 and B.2 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failure to meet the LCO. If Condition A or B is entered while, for instance, a DC bus is inoperable and subsequently restored to OPERABLE status, LCO 3.8.9 may already have been not met for up to 2 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time, a DC circuit could again become inoperable, and AC distribution restored to OPERABLE status. This could continue indefinitely.

The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

C.1, C.2, D.1, and D.2

With Train "A" AC vital bus inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path are OPERABLE for steam generator cooling. With Train "B" AC vital bus inoperable, prompt action is necessary to ensure that the turbine driven emergency feedwater pump and associated flow path as well as ASV-204, EFV-12, and EFV-13 are OPERABLE for steam generator cooling. If the required equipment is not OPERABLE, the capability to remove core decay heat cannot be assured and Condition F is applicable. The operability of the turbine driven emergency feedwater pump is not required in MODE 4.

Consistent with the Bases for Surveillance 3.0.1, OPERABILITY is verified by ensuring the associated surveillance(s) has been satisfactorily completed within the required frequency and the equipment is not otherwise known to be inoperable.

Due to the severity of the consequences should a small break LOCA occur in these conditions, the 1 hour Completion Time to verify the turbine driven emergency feedwater pump and associated flow path are OPERABLE ensures that prompt action will be taken to confirm core decay heat removal capability. The Completion Time minimizes the time the plant is potentially exposed to a LOCA in these conditions.

(continued)

BASES

ACTIONS

C.1, C.2, D.1, and D.2 (continued)

With one AC vital bus inoperable, the remaining OPERABLE AC vital buses are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ES functions not being supported. Therefore, the AC vital bus must be restored to OPERABLE status within 8 hours.

Condition B represents a condition in which potentially both the DC source and the associated AC source are nonfunctional. In this situation the plant is significantly more vulnerable to a complete loss of all non-interruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining vital buses and restoring power to the affected vital bus.

The 8 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without adequate AC vital power. However, there are certain affected features Completion Times of shorter duration. The intent of the Improved Technical Specifications is to remain within this Specification only and not take the ACTIONS for inoperable supported systems. Taking this exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than 8 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue;

(continued)

BASES

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(continued)

BASES

ACTIONS

C.1, C.2, D.1, and D.2 (continued)

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and

c. The low probability of an event occurring coincident with a single failure of a redundant component.

The 8 hour Completion Time takes into account the importance of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

The third Completion Time for Required Actions C.2 and D.2 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failure. Refer to the Bases for Required Actions A.2 and B.2 for further discussion of this Completion Time.

E.1

With DC bus(es) in DC electrical power distribution train inoperable, the remaining train is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution train could result in the minimum required ES functions not being met. Therefore, the DC buses must be restored to OPERABLE status within 2 hours.

(continued)

BASES

ACTIONS

E.1 (continued)

Condition E represents a condition in which one train is without adequate DC power; potentially both with the battery significantly degraded and the associated charger inoperable. In this situation, the plant is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

The 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without adequate AC vital power. However, there are certain affected features with Completion Times of shorter duration. The intent of the Improved Technical Specifications is to remain within this Specification only and not take the ACTIONS for inoperable supported systems. Taking this exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than 2 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in plant conditions (i.e., requiring a shutdown) while allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected train; and

c. The low probability of an event occurring coincident with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with the recommendations of Regulatory Guide 1.93 (Ref. 3).

(continued)

BASES

ACTIONS

E.1 (continued)

The second Completion Time for Required Action E.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failure to meet the LCO. Refer to the Bases for Required Actions A.2 and B.2 for further discussion of this Completion Time.

F.1 and F.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging plant systems.

G.1

Condition G corresponds to a level of degradation in which redundant safety-related trains have lost power to one or more busses. At this severely degraded level, the plant's ability to respond to an event may be significantly reduced. Therefore, if it is determined that redundant trains of a necessary function are concurrently inoperable, no additional time is justified for continued operation. The plant is required to immediately enter LCO 3.0.3 and begin preparations for a controlled shutdown.

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FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

ATTACHMENT D

FRAMATOME DOCUMENT FTI-51-1266138-01