QUESTIONS REPORT
for 2009A NRC SRO ONLY QUESTIONS REV1

1. 2009A NRC SRO 001/NEW/F/3/T.S. 3.9.8.1/N/2009A NRC SRO/025AG2.2.36/

Given the following plant conditions:
- Plant is in Mode 6
- Refueling Cavity Level is at 23' 6"
- Both trains of RHR are in service for Shutdown Cooling
- 'B' EDG is under clearance for scheduled maintenance

A Loss of Offsite Power occurs.

Which ONE of the following describes the action required to comply with the RHR Limiting Condition for Operation and the basis of this LCO?

A. Restore power to the 'B' RHR Pump;
Ensures that sufficient cooling capacity is available to maintain the RCS below 200°F

B. Restore power to the 'B' RHR Pump;
Ensures that sufficient cooling capacity is available to maintain the RCS below 140°F

C. Start the 'A' RHR Pump after Load Block 9 on the Sequencer;
Ensures that sufficient cooling capacity is available to maintain the RCS below 200°F

D. Start the 'A' RHR Pump after Load Block 9 on the Sequencer;
Ensures that sufficient cooling capacity is available to maintain the RCS below 140°F

Plausibility and Answer Analysis

A Incorrect. This is plausible if the candidate believes two RHR pump are required to be operable which would be true in Mode 5 or if cavity level was lower. 200°F is plausible because this is Mode 4 where addition concerns arise.

B Incorrect. This is plausible if the candidate believes two RHR pump are required to be operable which would be true in Mode 5 or if cavity level was lower. 140°F is correct.

C Incorrect. 'A' RHR Pump must be started. 200°F is plausible because this is Mode 4 where addition concerns arise.

D Correct. 'A' RHR Pump must be started. 140°F is correct.

QUESTIONS REPORT

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K/A statement - Loss of RHR System: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations

Importance Rating:	3.1 4.2
Technical Reference:	Tech Spec 3.9.8.1 pg 3/4 9-9 (page 364) Tech Spec Bases 3/4.9.8 pg B 3/4 9-2 (page 466)
References to be provided:	None
Learning Objective:	RHR System, Obj 9f
Question origin:	NEW
Comments:	'B' EDG under clearance is the maintenance piece of the KA and the Loss of Offsite Power produces the Loss of RHR
SRO justification:	Requires knowledge of Tech Spec Bases that are not system knowledge.

Origin:	NEW	Cog Level:	F
Difficulty:	3	Reference:	T.S. 3.9.8.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	025AG2.2.36	K/A 2:	

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation.*

APPLICABILITY: MODE 6, with irradiated fuel in the vessel when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet.

ACTION:

With no RHR loop OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2500 gpm at least once per 12 hours.

* The RHR loop may be removed from operation for up to 1 hour per 2-hour period during the performance of CORE ALTERATIONS and core loading verification in the vicinity of the reactor vessel hot legs.

CONTAINMENT BUILDING PENETRATIONS (Continued)

The allowance to have containment penetration (including the airlock doors and equipment hatch) flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement and CORE ALTERATIONS is based on (1) confirmatory dose calculations as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident that the airlock or equipment hatch can and will be promptly closed following containment evacuation (even though the containment fission product control function is not required to meet acceptable dose consequences) and that the open penetration(s) can and will be promptly closed. The time to close such penetrations or combination of penetrations shall be included in the confirmatory dose calculations.

Containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated, or capable of isolation via administrative controls, on at least one side of containment. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during fuel movement.

3/4.9.5 COMMUNICATIONS - DELETED

3/4.9.6 REFUELING MACHINE - DELETED

3/4.9.7 CRANE TRAVEL - FUEL HANDLING BUILDING - DELETED

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of residual heat removal capability. With the reactor vessel head removed and at least 23 feet of water above the reactor pressure vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

The minimum RHR flow requirement is reduced to 900 gpm when the reactor water level is below the reactor vessel flange. The 900 gpm limit reduces the possibility of cavitation during operation of the RHR pumps and ensures sufficient mixing in the event of a MODE 6 boron dilution incident.

3/4.9.9 CONTAINMENT VENTILATION ISOLATION SYSTEM

The OPERABILITY of this system ensures that the containment purge makeup and exhaust penetrations will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

2. 2009A NRC SRO 002/MODIFIED/F/3/FRP-S.1 BASIS/N/2009A NRC SRO/029EA2.09/

Given the following plant conditions:
- The plant is operating at 100% power

Current conditions:
- BOTH Main Feedwater pumps trip
- The RO reports that the reactor has failed to trip and cannot be tripped from the MCB
- FRP-S.1, Response to Nuclear Power Generation/ATWS, is entered
- The BOP trips the Main Turbine
- Emergency Boration has been established
- The RO is checking Pressurizer Pressure and reports that it is 2385 psig and rising

Which ONE of the following lists the action required in FRP-S.1 and the basis for that action?

A. Verify Normal Pressurizer Spray Valves are open;
To prevent a challenge to the Pressurizer Safety Valves

B. Verify Normal Pressurizer Spray Valves are open;
Boration flow will be insufficient at this Pressurizer Pressure

C. Verify Pressurizer PORVs and block valves are open;
To prevent a challenge to the Pressurizer Safety Valves

D. Verify Pressurizer PORVs and block valves are open;
Boration flow will be insufficient at this Pressurizer Pressure

Plausibility and Answer Analysis

A *Incorrect. Pressurizer spray valves are the normal pressure control components and should be open but the RNO is to verify PORVs and block valves open. The function of the pressurizer control components is to prevent reaching the pressurizer safety setpoint however the background document is concerned about boration flow not the pressurizer safeties.*

B *Incorrect. Pressurizer spray valves are the normal pressure control components and should be open but the RNO is to verify PORVs and block valves open. The background document is concerned about boration flow though.*

C *Incorrect. With pressurizer pressure above 2335 psig, the RNO is to verify PORVs and block valves open. The function of the pressurizer control components is to prevent reaching the pressurizer safety setpoint however the background document is concerned about boration flow, not the pressurizer safeties.*

D *Correct. With pressurizer pressure above 2335 psig the RNO is to verify PORVs and block valves open and the background document is concerned about boration flow.*

K/A statement - ATWS - Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Occurrence of a main turbine/reactor trip

Importance Rating:	4.4 4.5
Technical Reference:	FRP-S.1 Rev. 15, page 5 WOG ERG FR-S.1 HP-Rev. 1C, page 79
References to be provided:	None
Learning Objective:	EOP-LP-3.15, Obj 5d
Question origin:	Modified from Bank question, OIT Development Bank FRP-S.1 (03) #3
Comments:	(K/A Match) The turbine trip has occurred as part of immediate actions resulting in the increased RCS Pressure when heat removal is lost and candidate must recall from FRP-S.1 the strategy to mitigate this transient.
SRO justification:	Requires knowledge of FRP-S.1 and the RNO action when the Desired Pressurizer Pressure is not obtained as well as reason for performing the action.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

Origin:	MODIFIED	Cog Level:	F
Difficulty:	3	Reference:	FRP-S.1 BASIS
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	029EA2.09	K/A 2:	

Instructions	Response Not Obtained

NOTE:
- Actuation of the sequencer inhibits operation of the boric acid pumps. (If the sequencer runs on Program A, the pumps can be started manually after LB-9. Otherwise, the sequencer must be reset to restore operation of the pumps)
- SI flow accomplishes emergency boration.

6. Initiate Emergency Boration of RCS:		
a. Check SI flow - GREATER THAN 200 GPM		a. GO TO Step 6c.
b. GO TO Step 6d.		
c. Emergency borate from the BAT:		c. Observe CAUTION prior to Step 7 AND GO TO Step 7.
1) Start a boric acid pump.		
2) Perform any of the following (listed in order of preference):		
o Open Emergency Boric Acid Addition valve: 1CS-278		
o Open normal boration valves: FCV-113A FCV-113B		
3) Verify boric acid flow to CSIP suction - AT LEAST 30 GPM		
4) Verify CSIP flow to RCS - AT LEAST 30 GPM		
d. Check PRZ Pressure - LESS THAN 2335 PSIG		d. Perform the following:
		1) Verify PRZ PORVs AND block valves - OPEN
		2) Maintain PRZ PORVs AND block valves open until PRZ pressure less than 2135 PSIG.
e. GO TO Step 8.		

STEP DESCRIPTION TABLE FOR FR-S.1 Step 4

STEP: Initiate Emergency Boration of RCS

PURPOSE: To add negative reactivity to bring the reactor core subcritical

BASIS:

After control rod trip and rod insertion functions, boration is the next most direct manner of adding negative reactivity to the core. The intended boration path here is the most direct one available, not requiring SI initiation, but using normal charging pump(s). Pump miniflow lines are assumed to be open to protect the pumps in the event of high RCS pressure.

Several plant specific means are usually available for rapid boration and should be specified here in order of preference. Methods of rapid boration include emergency boration, injecting the BIT, and safety injection actuation. It should be noted that SI actuation will trip the main feedwater pumps. If this is undesirable, the operator can manually align the system for safety injection. However, the RWST valves to the suction of the SI pumps should be opened first before opening up the BIT valves. If a safety injection is already in progress but is having no effect on nuclear flux, then the BIT and RWST are not performing their intended function, perhaps due to blockage or leakage. In this case some other alignment using the BATs and/or non-safeguards charging pump(s) is required.

The check on RCS pressure is intended to alert the operator to a condition which would reduce charging or SI pump injection into the RCS and, therefore, boration. The PRZR PORV pressure setpoint is chosen as that pressure at which flow into the RCS is insufficient. The contingent action is a rapid depressurization to a pressure which would allow increased injection flow. When primary pressure drops 200 psi below the PORV pressure setpoint, the PORVs should be closed. The operator must verify successful closure of the PORVs, closing the isolation valves, if necessary.

QUESTIONS REPORT
for OIT Development Bank

1. FRP-S.1 (03) 003

Given the following:

- The plant is at 100% power.
- A transient on SG level required a reactor trip, but the reactor did not trip.
- The crew is performing FRP-S.1, Response To Nuclear Power Generation / ATWS.
- The crew notes that the Pressurizer pressure is 2350 psig.
- Control rods are inserting in AUTO.
- All Pressurizer PORV valve position indicating green lights are on and red lights are off.

Which ONE of the following actions are required in relation to the PZR PORVs?

A. Verify ONLY ONE Pressurizer PORV and Block valve OPEN;

reduce pressure to less than 2135 psig.

B. Verify ALL Pressurizer PORVs and Block valves OPEN;

reduce pressure to less than 2135 psig.

C. Verify ONLY ONE Pressurizer PORV and Block valve OPEN;

reduce pressure to less than 2235 psig.

D. Verify ALL Pressurizer PORVs and Block valves OPEN;

reduce pressure to less than 2235 psig.

Ability to determine or interpret the following as they apply to a ATWS: System component valve position indications

Importance Rating:	3.4
Technical Reference:	FRP-S.1 and BD
References to be provided:	None
Learning Objective:	
Question History:	
10 CFR Part 55 Content:	55.41
Comments:	

Program:	RS	Cog Level:	H
Difficulty:	3	Reference:	FRP-S.1
Ref. Provided?:	N	Key Words:	
K/A 1:	029EA2.05	K/A 2:	

3. 2009A NRC SRO 003/NEW/H/3/EPP-001/Y/2009A NRC SRO/055EA2.03/

Given the following plant conditions:
- The plant is operating at 100% power
- A Station Blackout occurs
- The crew has entered EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses, and completed Steps 1 through 6
- Method reports that Offsite Power will be unavailable for approximately 30 minutes

The following annunciators are in alarm on the MCB:
- ALB-24/3-1, Diesel Generator A Trip
- ALB-24/3-2, Diesel Generator A Trouble
- ALB-24/3-3, Diesel Generator A Start Failure

- ALB-25/3-1, Diesel Generator B Trip
- ALB-25/3-2, Diesel Generator B Trouble
- ALB-25/3-3, Diesel Generator B Start Failure

The Outside AO reports the following annunciators locally:
- Trip Low Press Lube Oil at the 'A' ECP
- Trip Vibration at the 'A' ECP

- Loss Of Both Gen Pot CKS Trip at the 'B' ECP
- Trip Low Press Jacket Water at the 'B' ECP

The USCO has reached step 7 of EPP-001. What actions are required by EPP-001 to restore power to an emergency bus and what procedure should the crew transition to? **(Reference provided)**

A. Start the 'A' EDG;
Transition to PATH-1

B. Start the 'A' EDG;
Transition to EPP-004, Reactor Trip Response

C. Start the 'B' EDG;
Transition to PATH-1

D. Start the 'B' EDG
Transition to EPP-004, Reactor Trip Response

Plausibility and Answer Analysis

A *Correct. Since 'A' EDG tripped due to a non-emergency trip then it should be tried first. The correct procedure implementation then would be to verify immediate actions of Path-1 and after those are complete transition per the Path into EPP-004.*

B *Incorrect. The 'A' EDG is the one that should be started since it is tripped due to a non-emergency trip, but the procedure directs "Return to Procedure and Step in Effect". While EPP-001 is a direct-entry procedure, the correct transition at this point would be Path-1 to verify immediate actions. EPP-004 is the procedure that will ultimately be used, but actions of Path-1 must be verified first.*

C *Incorrect. 'B' EDG has tripped due to an Emergency Trip and should not be started until problem is resolved. Plausible if candidate fails to recognize 'B' has tripped on an Emergency Trip. Procedure transition is correct.*

D *Incorrect. 'B' EDG has tripped due to an Emergency Trip and should not be started until problem is resolved. Plausible if candidate fails to recognize 'B' has tripped on an Emergency Trip. Procedure transition is incorrect.*

K/A statement - Station Blackout - Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION): Actions necessary to restore power

Importance Rating:	3.9 4.7
Technical Reference:	EPP-001 Rev. 31, page 6
References to be provided:	Steps 1-7 of EPP-001 (pages 1-6)
Learning Objective:	EOP-LP-3.7, Obj 3
Question origin:	NEW
Comments:	
SRO justification:	Requires SRO judgement and knowledge of procedure selection to determine correct procedure transition.

Origin:	NEW	Cog Level:	H
Difficulty:	3	Reference:	EPP-001
Ref. Provided?:	Y	Key Words:	2009A NRC SRO
K/A 1:	055EA2.03	K/A 2:	

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CAROLINA POWER & LIGHT COMPANY

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PLANT OPERATING MANUAL

VOLUME 3

PART 4

PROCEDURE TYPE: Emergency Operating Procedure (EOP)

NUMBER: EOP-EPP-001

TITLE: LOSS OF AC POWER TO 1A-SA AND 1B-SB BUSES

Instructions	Response Not Obtained

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CAUTION

Critical Safety Function Status Trees should be monitored for information only. Function Restoration Procedures should NOT be implemented unless directed by this procedure.

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NOTE: Steps 1 AND 2 are immediate action steps.

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1. Verify Reactor Trip:

   - Check for any of the following:
     - Trip breakers RTA AND BYA - OPEN
     - Trip breakers RTB AND BYB - OPEN
   - Neutron flux - DECREASING

   Manually trip reactor.

2. Verify Turbine Trip:

   a. Check for any of the following:
      - All turbine throttle valves - SHUT
      - All turbine governor valves - SHUT

   a. Manually trip turbine from MCB.

Instructions	Response Not Obtained
3. Check If RCS Isolated:	
a. Check PRZ PORVs - SHUT	a. WHEN PRZ pressure less than 2335 PSIG, THEN shut PRZ PORVs.
b. Check letdown isolation valves - SHUT: 1CS-1 (LCV-460) 1CS-2 (LCV-459)	b. Perform the following: 1) Shut all orifice isolation valves: 1CS-7 1CS-8 1CS-9 2) Shut letdown isolation valves: 1CS-1 (LCV-460) 1CS-2 (LCV-459)
c. Verify excess letdown valves - SHUT: 1CS-460 1CS-461	

Instructions	Response Not Obtained
4. Verify AFW Flow AND Control SG Levels:	
a. Verify AFW Flow - GREATER THAN 210 KPPH	a. Perform the following: 1) Verify TDAFW pump - RUNNING 2) Adjust TDAFW pump speed controller as necessary to increase flow. 3) Verify TDAFW pump discharge pressure - GREATER THAN SG PRESSURE 4) Verify AFW valves - PROPERLY ALIGNED
b. Any level - GREATER THAN 25% [40%]	b. Maintain AFW flow greater than 210 KPPH until level greater than 25% [40%] in at least one intact SG.
c. Control AFW flow to maintain all intact levels between 25% and 50% [40% and 50%]	
5. Evaluate EAL Network Using Entry Point X.	
6. Verify AC Emergency Bus Cross-Ties to Non-Emergency AC Buses - OPEN	
o Verify any cross tie to Bus 1A-SA - OPEN o Breaker 104 o Breaker 105	
o Verify Any cross tie to Bus 1B-SB - OPEN o Breaker 124 o Breaker 125	

Instructions	Response Not Obtained
7. Energize AC Emergency Buses using EDGs:	
a. Check EDGs 1A-SA AND 1B-SB - AVAILABLE o EDG emergency trips - CLEAR (NOT PRESENT) o EDG output breakers - NORMAL (NOT TRIPPED)	a. Do NOT start EDG OR close output breaker until problem corrected. Emergency stop any running EDG with tripped output breaker. IF NO EDG available, THEN GO TO Step 8.
b. Check any EDG - RUNNING	b. Perform the following as necessary to start EDGs (listed in order of preference): 1) Manually start EDGs. 2) Actuate SI. GO TO Step 7d.
c. GO TO Step 7e.	
d. Check any EDG - RUNNING	d. GO TO Step 8.
e. Check any AC emergency bus - ENERGIZED: o 1A-SA bus voltage o 1B-SB bus voltage	e. Perform the following: 1) Manually close running EDG output breaker at MCB OR locally perform at switchgear: EDG A: Breaker 106 EDG B: Breaker 126 2) GO TO Step 7h.
f. Implement function restoration procedures as required.	
g. RETURN TO procedure and step in effect.	
h. Check any AC emergency bus - ENERGIZED: o 1A-SA bus voltage o 1B-SB bus voltage	h. Emergency stop the running EDG(s). GO TO Step 8.
i. Implement function restoration procedures as required.	
j. RETURN TO procedure and step in effect.	

4. 2009A NRC SRO 004/NEW/F/2/T.S. 3.8.3.1/N/2009A NRC SRO/057AG2.2.40/

Given the following plant conditions:
- The plant is operating at 100% power
- The Instrument Bus S-IV Inverter failed at 1330
- Instrument Bus S-IV was reenergized from its alternate source at 1430

Which ONE of the following identifies the required action of Tech Specs for the failed Inverter?

Energize Instrument Bus S-IV from its Inverter connected to its:

	Source	Required tomorrow by:
A.	A.C. Bus	1330
B.	A.C. Bus	1430
C.	D.C. Bus	1330
D.	D.C. Bus	1430

Plausibility and Answer Analysis

A Incorrect. This is plausible because the normal power supply to the inverter is A.C. but T.S. require it to be connected to the D.C. bus. The time to restore is correct based on time of loss.

B Incorrect. This is plausible because the normal power supply to the inverter is A.C. but T.S. require it to be connected to the D.C. bus. The time is also incorrect. This is 24 hours from the time the bus was reenergized. This would require the candidate to believe the actions required are series vice parallel.

C Correct. This is correct because the action requires it to be connected to the D.C. bus and a 24 hour action exists from the time of loss (1330).

D Incorrect. This is correct because the action requires it to be connected to the D.C. bus. The time is incorrect. This is 24 hours from the time the bus was reenergized. This would require the candidate to believe the actions required are series vice parallel.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Loss of Vital AC Inst. Bus - Ability to apply technical specifications for a system.

Importance Rating:	3.4 4.7
Technical Reference:	Tech Spec 3.8.3.1 pg 3/4 8-16, 8-17 (pages 346-347)
References to be provided:	None
Learning Objective:	ADEL-LP-2.7, Obj 1b; 120 Volt UPS, Obj 5
Question origin:	NEW
Comments:	
SRO justification:	Requires detailed knowledge of greater than >1 hour Tech Spec actions and how they are applied.

Origin:	NEW	Cog Level:	F
Difficulty:	2	Reference:	T.S. 3.8.3.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	057AG2.2.40	K/A 2:	

ELECTRICAL POWER SYSTEMS

3/4.8.3 ONSITE POWER DISTRIBUTION

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.3.1 The following electrical buses shall be energized in the specified manner with tie breakers open between redundant buses within the unit:

a. Division A ESF A.C. Buses consisting of:

1. 6900-volt Bus 1A-SA.
2. 480-volt Bus 1A2-SA.
3. 480-volt Bus 1A3-SA.

b. Division B ESF A.C. Buses consisting of:

1. 6900-volt Bus 1B-SB.
2. 480-volt Bus 1B2-SB.
3. 480-volt Bus 1B3-SB.

c. 118-volt A.C. Vital Bus 1DP-1A-SI energized from its associated inverter connected to 125-volt D.C. Bus DP-1A-SA*,

d. 118-volt A.C. Vital Bus 1DP-1A-SIII energized from its associated inverter connected to 125-volt D.C. Bus DP-1A-SA*,

e. 118-volt A.C. Vital Bus 1DP-1B-SII energized from its associated inverter connected to 125-volt D.C. Bus DP-1B-SB*,

f. 118-volt A.C. Vital Bus 1DP-1B-SIV energized from its associated inverter connected to 125-volt D.C. Bus DP-1B-SB*,

g. 125-volt D.C. Bus DP-1A-SA energized from Emergency Battery 1A-SA and charger 1A-SA or 1B-SA, and

h. 125-volt D.C. Bus DP-1B-SB energized from Emergency Battery 1B-SB and charger 1B-SB or 1A-SB

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

*Two inverters may be disconnected from their 125-volt D.C. bus for up to 24 hours as necessary, for the purpose of performing an equalizing charge on their associated Emergency Battery provided: (1) their vital buses are energized and (2) the vital buses associated with the other Emergency Battery are energized from their associated inverters and connected to their associated 125-volt D.C. bus.

ELECTRICAL POWER SYSTEMS

ONSITE POWER DISTRIBUTION

OPERATING

LIMITING CONDITION FOR OPERATION

ACTION:

a. With one of the required divisions of A.C. ESF buses not fully energized, reenergize the division within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one 118-volt A.C. vital bus not energized from its associated inverter, reenergize the 118-volt A.C. vital bus within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one 118-volt A.C. vital bus not energized from its associated inverter connected to its associated D.C. bus, re-energize the 118-volt A.C. vital bus through its associated inverter connected to its associated D.C. bus within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With either 125-volt D.C. bus 1A-SA or 1B-SB not energized from its associated Emergency Battery, reenergize the D.C. bus from its associated Emergency Battery within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.3.1 The specified buses shall be determined energized in the required manner at least once per 7 days by verifying correct breaker alignment and indicated voltage on the buses.

5. 2009A NRC SRO 005/MODIFIED/H/3/AOP-025/N/2009A NRC SRO/058AG2.4.20/

Given the following plant conditions:

- The plant is in Mode 3
- The 'A' MDAFW Pump is under clearance for motor replacement
- A loss of DP-1B-SB occurs
- The crew enters AOP-025, Loss of One Emergency AC Bus (6.9KV) or One Emergency DC Bus (125V)

Which ONE of the following describes the operation of the TDAFW Pump if a start signal occurs and the limiting Tech Spec action required as a result of these conditions?

The TDAFW Pump will:	Tech Spec Action
A. start and continue to run	place the plant in Hot Shutdown in 7 hours
B. start and continue to run	ALL required Mode changes are suspended
C. start and trip on overspeed	place the plant in Hot Shutdown in 7 hours
D. start and trip on overspeed	ALL required Mode changes are suspended

Plausibility and Answer Analysis

A Incorrect. This is plausible because if 'A' Train DC had been lost this would be the response but with the loss of 'B' Train, control power is lost and an overspeed trip will occur. The Tech Spec action listed is from 3.0.3 and is plausible because all three AFW pumps are inoperable but AFW has specific actions for all three inoperable which suspends required mode changes.

B Incorrect. This is plausible because if 'A' Train DC had been lost this would be the response but with the loss of 'B' Train, control power is lost and an overspeed trip will occur. The Tech Spec action is correct.

C Incorrect. There is a NOTE in the AOP-025 which addresses the TDAFW Overspeed Trip. The Tech Spec action listed is from 3.0.3 and is plausible because all three AFW pumps are inoperable but AFW has specific actions for all three inoperable which suspends required mode changes.

D Correct. There is a NOTE in the AOP-025 which addresses the TDAFW Overspeed Trip. The Tech Spec action is correct.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Loss of DC Power - Knowledge of operational implications of EOP warnings, cautions and notes.

Importance Rating:	3.8 4.3
Technical Reference:	AOP-025 Rev. 25, page 45 Tech Specs 3.7.1.2 pg 3/4 7-4 (page 306)
References to be provided:	None
Learning Objective:	AOP-LP-3.25, Obj 3d
Question origin:	Modified from bank, OIT Exam Bank DP (08) #1
Comments:	(K/A Match) Matches KA because a Note in AOP-025 alerts operator that TDAFW will start and trip on overspeed in this situation.
SRO justification:	Requires application of notes associated with application of Tech Spec action items.

Origin:	MODIFIED	Cog Level:	H
Difficulty:	3	Reference:	AOP-025
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	058AG2.4.20	K/A 2:	

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

a. Two motor-driven auxiliary feedwater pumps, each capable of being powered from separate emergency buses, and

b. One steam turbine-driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible. (NOTE: LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. Following restoration of one AFW train, all applicable LCOs apply based on the time the LCOs initially occurred.)

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. At least once per 92 days on a STAGGERED TEST BASIS by:

1. Demonstrating that each motor-driven pump satisfies performance requirements by either:

a) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1514 psid at a recirculation flow of greater than or equal to 50 gpm (25 KPPH), or

b) Verifying each pump develops a differential pressure ~~that (when temperature - compensated to 70°F) is~~ greater than or equal to 1259 psid at a flow rate of ~~greater than or equal to 430 gpm (215 KPPH).~~

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.4 Loss of DP-1B-SB Emergency DC Bus (125V)

☐ 4. **MONITOR** inverter output voltage and instrument readings for indication of proper voltage on instrument bus.

☐ 5. **CHECK** power to ALL instrument buses is ON.

☐ 5. **REFER TO** AOP-24, Loss of Uninterruptible Power Supply.

☐ 6. **DISPATCH** operator to inspect the following for fault conditions:

- DP-1B-SB Emergency DC Bus
- 125V Battery Chargers 1A-SB AND 1B-SB

☐ 7. **CONTACT** Maintenance as necessary to initiate repair or other corrective actions.

NOTE

- Loss of DP-1B-SB will result in all equipment on that side becoming inoperable from the loss of EDG and Load Sequencer or DC control power.
- Local manual operation will be necessary for any breakers that have lost DC control power. **[C.1]**
- Loss of B-SB Emergency DC Bus will make the Turbine Driven AFW Pump inoperable due to loss of power to 1MS-72.
- Loss of DP-1B-SB results in losing the control panel for the TDAFW pump. If started, the TDAFW pump will trip on overspeed without any alarm or indication of trip and throttle valve.

☐ 8. **OPEN** all load breakers on DP-1B-SB.

QUESTIONS REPORT
for OIT Exam Bank

1. DCP (08) 001
Given the following:

- The unit is at 100% power.
- The following alarm is received:
  - ALB-015, 4-4, 125 VDC EMER BUS A TROUBLE
- DP-1A-SA Bus voltage indicates 65 VDC and lowering.
- Battery Charger 1A-SA is tripped, and the cause has not been determined.
- The USCO has declared DC Bus "A" inoperable.
- The crew has entered AOP-025, Loss of ONE Emergency AC Bus (6.9 KV) or One Emergency DC Bus (125 VDC).

Which ONE of the following describes the impact on TDAFW Pump operability, and the action(s) required to restore the DC Bus in accordance with AOP-025?

A. TDAFW Pump remains operable;

Direct the AO to immediately place the standby battery charger in service in accordance with OP-156.01, DC Electrical Distribution. Maintenance support is NOT required prior to restoration.

B. TDAFW Pump remains operable;

Notify Maintenance to determine the cause and initiate repairs prior to restoring the bus in accordance with AOP-025.

C. TDAFW pump is inoperable;

Direct the AO to immediately place the standby battery charger in service in accordance with OP-156.01, DC Electrical Distribution. Maintenance support is NOT required prior to restoration.

D. TDAFW pump is inoperable;

Notify Maintenance to determine the cause and initiate repairs prior to restoring the bus in accordance with AOP-025.

D is correct. AOP-025 states that both the EDG and the TDAFW Pump are inoperable. Actions for loss of DC Bus. Would not place spare charger in service at 65 volts and decreasing on battery, require greater than 105 volts to place spare battery charger in service.

A and B are incorrect because TDAFW is declared inoperable, even if the other train is available to supply DC power. Actions for B are correct

C is incorrect because actions to place the spare charger in service will not be performed at this battery bus voltage

Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.
Tier 1 Group 1
Importance Rating: SRO 3.3
Technical Reference: ALB-15, 4-4, AOP-025
Proposed references to be provided to applicants during examination: None
Learning Objective: DCP text Obj 8
10 CFR Part 55 Content: 43.5, 43.2

Comments:

10CFR55.43(b).5 because the SRO must assess conditions and determine appropriate course of action. 10CFR55.43(b).2 because technical specification operability must be determined

Program:	S	Cog Level:	H
Difficulty:	3.75	Reference:	ALB-015-4-4
Ref. Provided?:	N	Key Words:	
K/A 1:	058G2.1.14	K/A 2:	NO

6. 2009A NRC SRO 006/NEW/F/3/AOP-028/N/2009A NRC SRO/077AA2.10/

Given the following plant conditions:

- The plant is operating at 47% power
- Method reports a large disturbance occurring on the grid
- Efforts are in progress to stabilize the grid
- The crew enters AOP-028, Grid Instability

The following conditions are observed:

Time	Grid Frequency (Hz)
0107	59.6
0110	59.2
0113	58.9
0116	58.7
0119	58.5
0121	58.3

Which ONE of the following describes the EARLIEST time that the Reactor must be tripped in accordance with AOP-028 and what is the basis for that Reactor Trip?

A. 0118;
Continued operation in this condition could lead to high temperatures in the generator and subsequent insulation degradation

B. 0121;
Continued operation in this condition could lead to high temperatures in the generator and subsequent insulation degradation

C. 0118;
Provides reactor core protection against DNB as a result of underfrequency on more than one RCP

D. 0121;
Provides reactor core protection against DNB as a result of underfrequency on more than one RCP

Plausibility and Answer Analysis

In AOP-028 the body of the procedure provides specific guidance on generator conditions that require a reactor trip.

- *Generator frequency less than 59 Hz for greater than or equal to 5 minutes*
- *Generator frequency less than 58.4 Hz*
- *Turbine speed less than or equal to 1752 RPM*

A reactor trip is required at 0118 when frequency is less than 59 Hz for 5 minutes. A reactor trip setpoint is also exceeded at 0121 but this is not the earliest.

A Correct. Correct time and basis

B Incorrect. Rx trip was required at 0118. Basis is correct.

C Incorrect. Correct time. Basis is plausible as this is the basis for RCP Underfrequency Trip.

D Incorrect. Incorrect time. Basis is plausible as this is the basis for RCP Underfrequency Trip.

K/A statement - Generator Voltage and Electric Grid Disturbances - Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION): Generator overheating and required actions

Importance Rating:	3.6 3.8
Technical Reference:	AOP-028 Rev. 25, page 4 AOP-028-BD Rev. 9, page 7
References to be provided:	None
Learning Objective:	AOP-LP-3.28, Obj 6
Question origin:	NEW
Comments:	
SRO justification:	Must assess plant conditions and understand overall strategy and actions required to mitigate event and the bases for those actions

Origin:	NEW	Cog Level:	F
Difficulty:	3	Reference:	AOP-028
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	077AA2.10	K/A 2:	

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

NOTE

- This procedure contains no immediate actions.
- The loss of Off-Site power may require the initiation of the Emergency Plan **[C.1]**

☐1. **REFER TO** PEP-110, Emergency Classification and Protective Action Recommendations, **AND** enter EAL Network at entry point X. **[C.1]**

NOTE

- If frequency drops suddenly and power is greater than P-7, the reactor will trip automatically when RCP frequency decreases to 57.5 Hz, resulting in a turbine trip.
- Operation of electrical motors with voltage below the normal band will increase stator current and change torque loading. Component trips, insulation and/or bearing damage, shorts, grounds, or blown fuses may result. The probability of damage is increased with lowering voltage and increased operating time. **[C.2]**

CAUTION

- Operation of the unit between 59.0 and 58.4 Hz should be limited to 5 minutes, after which time the generator must be taken off-line.
- Operation below 58.4 Hz is not allowed and the generator must be taken off-line immediately.

✸ 2. **CHECK** Main Generator indications for ANY of the following conditions:

☐ • Generator frequency less than 59 Hz for greater than or equal to 5 minutes

☐ • Generator frequency less than 58.4 Hz

☐ • Turbine speed less than or equal to 1752 RPM

☐ a. **TRIP** the Reactor, **AND GO TO** EOP PATH-1.

☐2. **GO TO** Step 3.

Section 3.0—Operator Actions

Step	Description
C2	• **Operation of the unit between 59.0 and 58.4 Hz should be limited to 5 minutes, after which time the generator must be taken off-line.** • **Operation below 58.4 Hz is not allowed and the generator must be taken off-line immediately.** This caution alerts the operator to the consequences of operating equipment in an underfrequency condition. Operation outside of established limits could cause high temperatures in the generator and possibly lead to insulation degradation and generator damage. This condition could also lead to damage of major electrical equipment when operating at lower speeds and higher currents.
2	**I: Check Main Generator indications for ANY of the following conditions:** • **Generator frequency less than 59 Hz for greater than or equal to 5 minutes** • **Generator frequency less than 58.4 Hz** • **Turbine speed less than or equal to 1752 RPM** **a. Trip the Reactor and Go to EOP-Path-1.** **RNO: Go to step 3.** This continuous action step checks for indications of underfrequency that will require the generator to be taken off line quickly to protect the generator and major electrical equipment. If any condition applies, frequency conditions require rapidly taking generator off-line. The operator is directed to trip reactor and go to EOP-Path-1. This will result in tripping the turbine and taking the generator off-line.
3	**I: Check both emergency buses energized.** **RNO: Refer to AOP-025, Loss of One Emergency AC Bus (6.9kV) or One Emergency DC Bus (125V).** This is a continuous action step to monitor emergency buses during condition of grid instability. Emergency buses are powered from the UAT when the generator is online during normal operation, or from the SUT during startup and shutdown. Grid instability may result in loss of one or both emergency buses. AOP-025 addresses actions for loss of emergency buses.

7. 2009A NRC SRO 007/NEW/H/2/AOP-012/N/2009A NRC SRO/051AA2.02/

Given the following plant conditions:

- The plant is operating at 79% power
- The following alarms are received:
  - ALB-020-2-4A, Condsr Pre Trip Low Vacuum
  - CTMP-7-1, Cooling Tower 1 Level HI/LO
  - ALB-021-8-5, Computer Alarm Circ Water Systems
- Computer Alarm on the Circ Water system is determined to be due to Condenser Pit High Level
- The BOP determines that condenser backpressure is 6.6 inches Hg in Zone 2 and rising
- The Turbine Building Operator reports that there is a failure of an expansion joint on the Circulating Water system
- 'A' Condenser Vacuum Pump is in service and verified running
- The crew enters AOP-012, Partial Loss of Condenser Vacuum

Which ONE of the following actions is required?

A. Start up standby Vacuum Pump and maintain condenser backpressure less than 7.5 inches Hg

B. Reduce turbine load using AOP-038, Rapid Downpower until power is less than 60%

C. Trip the reactor, go to PATH-1, and trip ALL Circulating Water pumps as time allows

D. Trip the turbine and continue with actions in AOP-012 to stabilize condenser vacuum

Plausibility and Answer Analysis

A Incorrect. This action would be correct if there were indications of a problem with the in service Condenser Vacuum Pump, but it is not put in service for every loss of condenser vacuum event.

B Incorrect. 60% is a threshold setpoint in AOP-012, but it is for determining reactor trip setpoints, not for AOP-038 implementation.

C Correct. This action is correct for CW system expansion joint failures causing a loss of condenser vacuum at >10% power.

D Incorrect. Action is directed by AOP-012, but only when less then P-10.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Loss of Condenser Vacuum - Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION): Conditions requiring reactor and/or turbine trip

Importance Rating:	3.9 4.1
Technical Reference:	AOP-012 Rev. 18, pages 4-6
References to be provided:	None
Learning Objective:	AOP-LP-3.12, Obj 5
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and then recalling what action written into AOP-012 is required.

Origin:	NEW	Cog Level:	H
Difficulty:	2	Reference:	AOP-012
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	051AA2.02	K/A 2:	

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

NOTE

This procedure contains no immediate actions.

☐ **1. CHECK** Turbine - IN OPERATION	☐ **1. GO TO** Step 5.
✸☐ **2. CHECK** Condenser pressure in both Zones less than: • 7.5 inches Hg absolute AND Turbine first stage pressure is greater than 60% TURBINE LOAD **- OR -** • 5 inches Hg absolute AND Turbine first stage pressure is less than 60% TURBINE LOAD	**2. PERFORM** the following: ☐ **a. IF** Reactor power is greater than P-10 (10%), **THEN TRIP** Reactor **AND GO TO** EOP-Path-1. ☐ **b. IF** Reactor power is less than P-10 (10%), **THEN TRIP** Turbine **AND GO TO** Step 5.
3. REDUCE Turbine load as necessary to maintain Condenser vacuum using ONE of the following: ☐ • GP-006, Normal Plant Shutdown from Power Operation to Hot Standby ☐ • AOP-038, Rapid Downpower	
☐ **4. CONTINUE** Turbine load reduction until directed otherwise by Unit SCO based on the following: • Cause of vacuum loss identified and corrected • Vacuum stable or increasing • Plant conditions require Reactor or Turbine trip	
☐ **5. CHECK** Condenser Vacuum Pump - OPERATING.	☐ **5. START** Standby Condenser Vacuum Pump per OP-133, Main Condenser Air Removal System.

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

☐ **6.** **DISPATCH** Operator(s) to locally perform actions of Attachment 1, Local Actions for a Loss of Condenser Vacuum.

7. **VERIFY** the following valves - SHUT:

☐ • 1CE-447, Condenser Vac Breaker

☐ • 1CE-475, Condenser Vac Breaker

☐ **8.** **CONTACT** Radwaste Control Room to determine if recent equipment operations using auxiliary steam or condensate may have caused loss of vacuum.

☐ **9.** **CHECK** Circulating Water Pumps - ANY TRIPPED.

☐ **9.** **GO TO** Step 11.

☐ **10.** **VERIFY** associated pump discharge valve - SHUT.

NOTE

If a Circulating Water Pump has tripped, it is not considered available until the cause of the trip has been identified and corrected.

☐ **11.** **CHECK** ALL available Circulating Water Pumps - RUNNING.

☐ **11.** **START** ALL available Circulating Water Pumps per OP-138.01, Circulating Water System.

☐ **12.** **CHECK** at least ONE Condensate Booster Pump - RUNNING.

12. **OPEN** the following valves to establish a flow path for the Gland Seal Exhaust Condenser:

☐ • 1CE-290, 1CE-293 Inlet Line Isolation

☐ • 1CE-294, 1CE-293 Outlet Line Isolation

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

13. CHECK BOTH of the following conditions EXIST: (indicates complete failure of a Circulating Water System expansion joint) **[A.1]**

☐ **a. CHECK** ALB-021-8-5 in ALARM due to Condenser Pit High Level.

☐ **a. GO TO** Step 15.

b. CHECK EITHER of the following conditions EXISTS:

☐ **b. GO TO** Step 15.

☐ • A known expansion joint failure

☐ • CTMP-7-1, COOLING TOWER 1 LEVEL HI/LO alarm due to low level.

14. PERFORM the following:

☐ **a. CHECK** Reactor power is greater than P-10 (10%).

☐ **a. IF** Turbine is in operation, **THEN TRIP** Turbine **AND GO TO** Step 14.c.

☐ **b. TRIP** Reactor **AND GO TO** EOP-Path-1. (Perform substeps 14.c -14.f as time allows.)

☐ **c. TRIP** ALL Circulating Water Pumps.

☐ **d. TRIP** Normal SW Pumps.

☐ **e. REFER TO** AOP-022, Loss of Service Water.

☐ **f. EXIT** this procedure.

☐ **15. CHECK** for major unisolable leak in Circulating Water System - EXISTS.

☐ **15. GO TO** Step 18.

8. 2009A NRC SRO 008/NEW/H/3/PEP-110/Y/2009A NRC SRO/061AG2.4.41/

Given the following plant conditions:
- The plant is operating at 100% power
- The crew has noted indications that an RCS leak is in progress and has entered AOP-016, Excessive Primary Plant Leakage

The following alarms and indications are observed:
- Plant Vent Stack #1 WRGM Effluent is alarming at 4.8E4 uCi/sec and rising
- Charging Pump 1B Room Area Radiation monitor alarming at 1200 times normal and rising
- GFFD is in alarm and has increased by 80,000 CPM over the last 20 minutes
- 1RM-1CR-3589-SA, CNMT HI Range Accident Monitor, is alarming at 14.7 R/hr and rising
- 1RM-1CR-3590-SB, CNMT HI Range Accident Monitor, is alarming at 18.4 R/hr and rising

Which ONE of the following is the EAL classification to be declared for this event?
(Reference provided)

A. EAL 2-1-1

B. EAL 2-1-2

C. EAL 2-1-3

D. EAL 2-1-4

Plausibility and Answer Analysis

A Incorrect. Plausible since the conditions for this classification have been met by the increase in GFFD, but this is not the most limiting EAL.

B Incorrect. Plausible since the conditions for this classification have been met due to the Table 2 area rad monitor reading >1200 times normal, but this is not the most limiting EAL.

C Correct. Multiple radiation alarms require evaluating Cnmt Hi Range Accident Monitors. With one above the setpoint the correct classification is to identify two fission product barriers breached.

D Incorrect. Plausible since it is possible to reach a General Emergency based solely on Plant Vent Stack WRGM, but the threshold for this classification has not yet been reached.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - ARM System Alarms - Knowledge of the emergency action level thresholds and classifications.

Importance Rating:	3.9 4.1
Technical Reference:	Side 1 of EAL Flow Path Rev. 05-1
References to be provided:	Side 1 of EAL Flow Path Rev. 05-1
Learning Objective:	
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and making appropriate determination of EAL classification. This task is only performed by SRO qualified individuals.

Origin:	NEW	Cog Level:	H
Difficulty:	3	Reference:	PEP-110
Ref. Provided?:	Y	Key Words:	2009A NRC SRO
K/A 1:	061AG2.4.41	K/A 2:	

9. 2009A NRC SRO 009/BANK/H/3/FRP-P.1/N/2009A NRC SRO/WE08EG2.4.47/

Given the following plant conditions:
- The plant is operating at 100% power
- A LOCA occurs
- FRP-P.1, Response to Imminent Pressurized Thermal Shock, is in progress

Thirty (30) minutes after the initiating event, the following conditions are observed:
- RCS pressure has lowered to 600 psig and is now stable
- Tcolds have lowered to 220°F and are now stable
- Containment pressure is 12.3 psig and slowly rising

Which ONE of the following identifies requirements for this event in accordance with FRP-P.1?

	Soak Requirement	Subsequent Cooldown Limit
A.	Soak required	< 50°F/hr
B.	Soak required	< 100°F/hr
C.	Soak NOT required	< 50°F/hr
D.	Soak NOT required	< 100°F/hr

Plausibility and Answer Analysis

A Correct. The trend over the last 30 minutes would warrant implementation of procedural guidance to perform a 1 hr soak and subsquent cooldown limit of 50°F/hr.

B Incorrect. Plausible since a one hour soak is required but 100°F/hr is not established in FRP-P.1. 100°F/hr is the cooldown rate used in other EOPs (EPP-009, EPP-020, EPP-021).

C Incorrect. Plausible since a soak is not always required in FRP-P.1 but with the existing cooldown in the last 30 min, a soak is required. Subsquent cooldown limit of 50°F/hr is correct.

D Incorrect. Plausible since a soak is not always required in FRP-P.1 but with the existing cooldown in the last 30 min, a soak is required. 100°F/hr is not established in FRP-P.1 but this is plausible since 100°F/hr is the cooldown rate used in other EOPs (EPP-009, EPP-020, EPP-021).

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - RCS Overcooling - PTS - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

Importance Rating:	4.2 4.2
Technical Reference:	FRP-P.1 Rev. 18, pages 44 & 46
References to be provided:	None
Learning Objective:	EOP-LP- 3.14, Obj 2d
Question origin:	Bank
Comments:	
SRO justification:	Requires assessing plant conditions to recognize conditions warranting implementation of specific strategies from plant procedures.

Origin:	BANK	Cog Level:	H
Difficulty:	3	Reference:	FRP-P.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	WE08EG2.4.47	K/A 2:	

Instructions	Response Not Obtained

****

CAUTION

Following an excessive cooldown, reactor vessel stress must be relieved to enhance and maintain vessel integrity. Do NOT perform any actions that increase pressure OR cause an RCS cooldown until the soak is complete.

****

32. Determine RCS Soak Requirements:

a.	RCS cooldown rate - GREATER THAN 100°F IN ANY SIXTY MINUTE PERIOD	a. GO TO Step 34.
b.	Perform one hour RCS soak: o Maintain RCS temperature stable. o Maintain RCS pressure stable. o Perform actions of other procedures that do NOT cause an RCS cooldown OR increase pressure.	

Instructions	Response Not Obtained
33. Establish Subsequent Cooldown Limits:	
a. RCS subcooling monitor - AVAILABLE	a. Maintain RCS pressure AND temperature within the limits of Figure 2 OR Figure 3 based on CNMT conditions. GO TO Step 33c.
b. Maintain RCS subcooling between 10°F and 190°F [40°F and 158°F].	
c. Maintain RCS cooldown rate less than 50°F in any sixty minute period.	
34. RETURN TO Procedure And Step In Effect.	
- END -	

10. 2009A NRC SRO 010/NEW/H/4/CSFST/N/2009A NRC SRO/WE13EA2.1/

Given the following plant conditions:

- The USCO is evaluating FRPs for implementation.
- Containment pressure is 0.8 psig
- The following Steam Generator conditions exist:
  - 'A' SG Pressure = 1175 psig
  - 'A' SG Level = 79%
  - 'B' SG Pressure = 1235 psig
  - 'B' SG Level = 65%
  - 'C' SG Pressure = 1100 psig
  - 'C' SG Level = 23%

Based on the CSFST for Heat Sink, which ONE of the following identifies the FRP that should be addressed first?

A. FRP-H.2, Response to Steam Generator Overpressure

B. FRP-H.3, Response to Steam Generator High Level

C. FRP-H.4, Response to Loss of Normal Steam Release Capability

D. FRP-H.5 Response to Steam Generator Low Level

Plausibility and Answer Analysis

A Correct. This yellow path procedure would be addressed first by the status tree.

B Incorrect. Plausible since FRP-H.3 is a yellow path that will need to be addressed for the 'A' Steam Generator but current conditions will require addressing the overpressure condition first.

C Incorrect. Plausible since FRP-H.4 is a yellow path that will need to be addressed for the 'A' Steam Generator but the current conditions require implementing H.2

D Incorrect. Plausible since FRP-H.5 is a yellow path that will need to be addressed for 'C' Steam Generator but the current conditions require implementing H.2

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

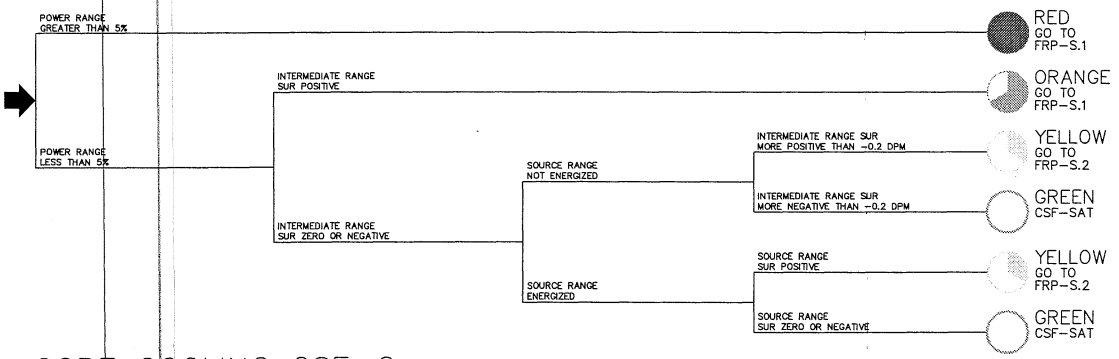
K/A statement - Steam Generator Overpressure - Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Importance Rating:	2.9 3.4
Technical Reference:	EOP-CSFST Rev. 9, page 2 of 3 (Side 1)
References to be provided:	None
Learning Objective:	EOP-LP-3.11, Obj 4a
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and then prescribing the procedure required to mitigate event in progress

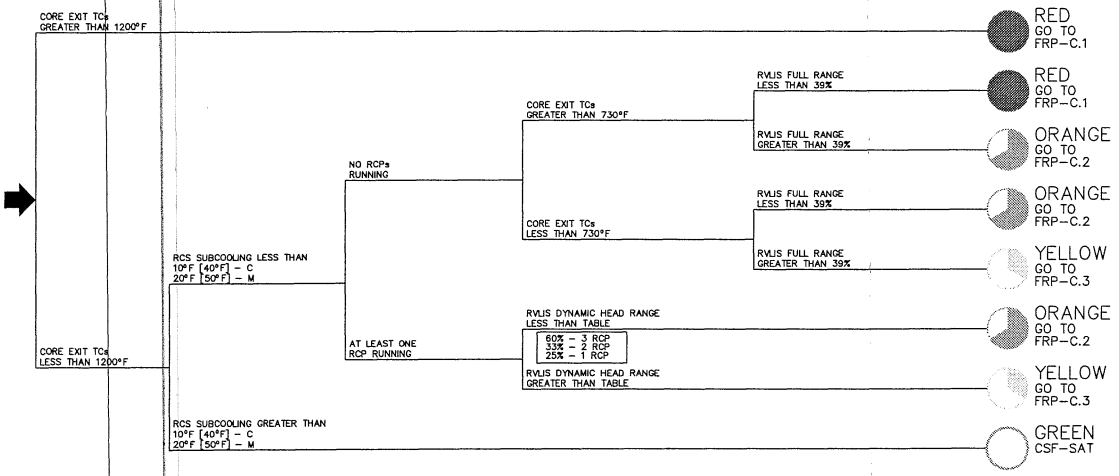
Origin:	NEW	Cog Level:	H
Difficulty:	4	Reference:	CSFST
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	WE13EA2.1	K/A 2:	

CSFST

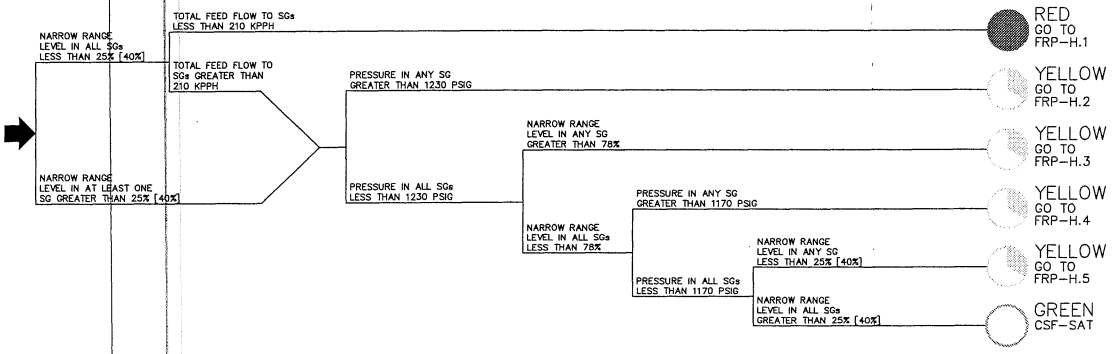
SUBCRITICALITY CSF-1



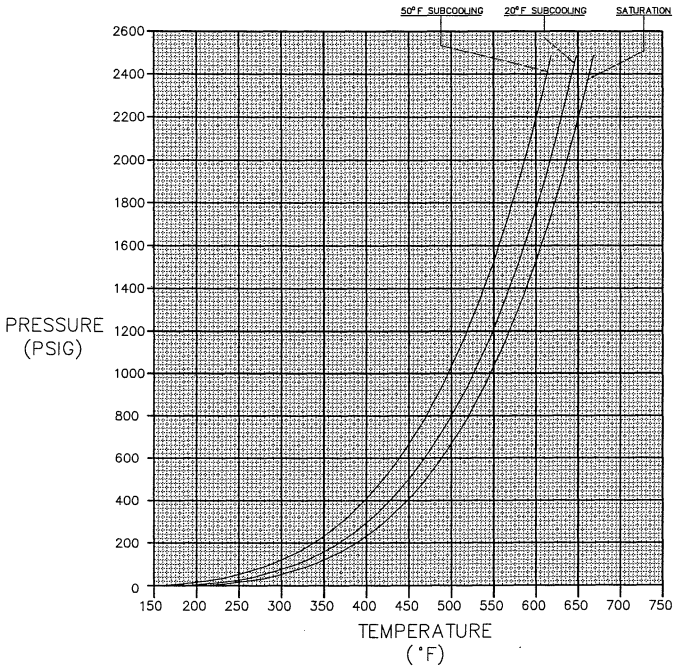
CORE COOLING CSF-2



HEAT SINK CSF-3



REACTOR COOLANT TEMPERATURE AND PRESSURE LIMITATIONS



11. 2009A NRC SRO 011/NEW/F/2/PATH-1/N/2009A NRC SRO/006A2.13/

An Inadvertent Safety Injection has occurred. The crew is implementing PATH-1 and has reached the point of terminating Safety Injection in PATH-1.

The following conditions exist:
- Conditions are met for terminating Safety Injection
- 'A' CSIP is running
- 1CS-214, Normal Miniflow Common Isolation Valve, is SHUT and will not open
- 1SI-3 and 1SI-4, BIT Outlet Valves are OPEN
- 1CS-235 and 1CS-238, Charging Line Isolation Valves are SHUT
- The crew has just shut FCV-122, Charging Flow Control Valve in accordance with Path-1

Which ONE of the following describes, in order, the actions to be taken in accordance with PATH-1?

A. SHUT 1SI-3 & 1SI-4,
Fully OPEN FCV-122 to 100%,
OPEN 1CS-235 and 1CS-238,
Throttle SHUT FCV-122 to maintain less than 60 GPM flow

B. SHUT 1SI-3 & 1SI-4,
Throttle OPEN FCV-122 to 30%,
OPEN 1CS-235, and 1CS-238,
Throttle OPEN FCV-122 to establish at least 60 GPM flow

C. OPEN 1CS-235, and 1CS-238,
Throttle OPEN FCV-122 to 30%,
SHUT 1SI-3 & 1SI-4,
Throttle OPEN FCV-122 to establish at least 60 GPM flow

D. OPEN 1CS-235 & 1CS-238,
Fully OPEN FCV-122 to 100%,
SHUT 1SI-3 & 1SI-4,
Throttle SHUT FCV-122 to maintain less than 60 GPM flow

Plausibility and Answer Analysis

A *Incorrect. Actions taken are in the incorrect order, plausible if candidate believes that SI can not be run in parallel with charging. This is normally the case, but failure of a miniflow isolation is an exception to this to ensure the running ECCS equipment is not deadheaded. Final goal is also incorrect, it is to maintain at least 60 gpm, not less than 60 gpm (common mistake).*

B *Incorrect. Actions taken are in the incorrect order, plausible if candidate believes that SI can not be run in parallel with charging. This is normally the case, but failure of a miniflow isolation is an exception to this to ensure the running ECCS equipment is not deadheaded.*

C *Correct. FCV is opened a minimal amount prior to isolating SI flow path in order to prevent deadheading a running CSIP.*

D *Incorrect. FCV is throttled to 30% open first to provide minimal flow and then goal is to establish and maintain AT LEAST 60 GPM flow.*

K/A statement - Emergency Core Cooling - Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Inadvertent SIS actuation

Importance Rating:	3.9 4.2
Technical Reference:	EOP-GUIDE-1 Rev. 23, pages 29 & 31
References to be provided:	None
Learning Objective:	
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and recalling what strategy written into plant procedures is required

Origin:	NEW	Cog Level:	F
Difficulty:	2	Reference:	PATH-1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	006A2.13	K/A 2:	

Instructions	Response Not Obtained
19. Reset SI.	IF any train of SI will NOT reset at MCB, THEN reset at SSPS using Attachment 12.
20. Manually Realign Safeguards Equipment Following A Loss Of Offsite Power. (Refer to Attachment 2.)	
21. Stop All But One CSIP.	
22. Check RCS Pressure - STABLE OR INCREASING	GO TO EPP-009, "POST LOCA COOLDOWN AND DEPRESSURIZATION", Step 1.
23. Isolate High Head SI Flow:	
a. Open normal miniflow isolation valves: 1CS-182 1CS-196 1CS-210 1CS-214	a. Observe NOTE prior to Step 24 AND GO TO Step 24.
b. Shut BIT outlet valves: 1SI-3 1SI-4	b. Locally shut OR isolate valves. 1SI-3 (A-230-FX32-W6-S1) 1SI-4 (A-230-FX32-W3-S2)
c. Verify cold leg AND hot leg injection valves - SHUT 1SI-52 1SI-86 1SI-107	c. Locally shut valves. 1SI-52 (A-250-GY38-W2-S6) 1SI-86 (A-230-FX25-W4-N3) 1SI-107 (A-245-FV20-W6-N9)
d. Observe CAUTION prior to Step 25 AND GO TO Step 25.	

FOLDOUT A

- RCP TRIP CRITERIA

  IF both of the following occur, THEN stop all RCPs:

  - SI flow - GREATER THAN 200 GPM
  - RCS pressure - LESS THAN 1400 PSIG

- AFW SUPPLY SWITCHOVER CRITERIA

  IF CST level decreases to less than 10%, THEN switch the AFW water supply to the ESW system using OP-137, "AUXILIARY FEEDWATER SYSTEM", Section 8.1.

- RHR RESTART CRITERIA

  IF RCS pressure decreases to less than 230 PSIG in an uncontrolled manner, THEN restart RHR pumps to supply water to the RCS.

- ALTERNATE MINIFLOW OPEN/SHUT CRITERIA

  - IF RCS pressure decreases to less than 1800 PSIG, THEN verify alternate miniflow isolation OR miniflow block valves - SHUT
  - IF RCS pressure increases to greater than 2200 PSIG, THEN verify alternate miniflow isolation AND miniflow block valves - OPEN

Instructions	Response Not Obtained

NOTE: The following step contains an SI termination sequence for which CSIP normal miniflow is not available. The charging flow control valve is opened a minimal amount prior to isolating the BIT to ensure the running CSIP is not deadheaded.

24. Establish Minimum Charging Flow AND Isolate BIT Flow:

a. Shut charging flow control valve:

FK-122.1

b. Open charging line isolation valves:

1CS-235
1CS-238

c. Set charging flow controller demand position to 30%.

d. Shut BIT outlet valves:

1SI-3
1SI-4

d. Locally shut OR isolate valves.

1SI-3 (A-230-FX32-W6-S1)
1SI-4 (A-230-FX32-W3-S2)

e. Verify cold leg AND hot leg injection valves - SHUT

1SI-52
1SI-86
1SI-107

e. Locally shut valves.

1SI-52 (A-250-GY38-W2-S6)
1SI-86 (A-230-FX25-W4-N3)
1SI-107 (A-245-FV20-W6-N9)

f. Establish and maintain at least 60 GPM flow through CSIP.

g. Observe CAUTION prior to Step 26 AND GO TO Step 26.

12. 2009A NRC SRO 012/NEW/H/3/OWP-RP/N/2009A NRC SRO/012A2.01/

Given the following plant conditions:
- The plant is operating at 100% power
- The AFD Target value is (-)1.5%
- Reactor Engineering is performing a flux map
- PT-456, Pressurizer Pressure Channel II, has failed and OWP-RP-02 is in place
- Repair of PT-456 will not be completed for another 17 hours

The following conditions occur:
- ALL normally lit bistable lights for N-43 on TSLB-4 are OFF
- N-43 continues to indicate 100% power
- I&C reports that N-43 repairs will take 15 hours and the instrument must be deenergized to facilitate repairs

Which ONE of the following describes the action that should be completed for these conditions?

A. N-43 should be bypassed while repairs are completed on PT-456

B. Reduce Power to less than 75% within 4 hours

C. Trip the bistables for N-43 within 6 hours

D. Place the plant in Mode 3 within 13 hours

Plausibility and Answer Analysis

A Incorrect. This is plausible because Action 2.b. says the inoperable channel may be bypassed but this is only for surveillance testing and is only allowed for up to 4 hours.

B Incorrect. This is plausible because Action 2.c requires power to be reduced to 75% within 4 hours or perform QPTR (flux map) every 12 hours. Flux map is in progress and can continue.

C Incorrect. This is plausible because Action 2.a requires tripping bistables but precautions of OWP require checking bistables when taking instruments out of service to preclude a plant trip.

D Correct. Because taking the instrument out of service will produce a plant trip, Action 2.a can not be performed. 6 hours of Action 2.a and 7 hours of T.S. 3.0.3 is a total of 13 hours.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Reactor Protection - Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Faulty bistable operation

Importance Rating:	3.1 3.6
Technical Reference:	OWP-RP Rev. 15, pages 96-99 Tech Spec 3.3.1 pg 3/4 3-2, 3/4 3-6&7 (pages 150, 154, and 155) Tech Spec 3.0.3 pg 3/4 0-1 (page 103)
References to be provided:	None
Learning Objective:	RPS Obj 12
Question origin:	NEW
Comments:	
SRO justification:	Requires evaluation of T.S. Table 3.3-1 Action 2.a and determining that based on plant procedures it can not be complied with, resulting in T.S. 3.0.3 entry.

Origin:	NEW	Cog Level:	H
Difficulty:	3	Reference:	OWP-RP
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	012A2.01	K/A 2:	

EIR Number: _____
W/O Number: _____
Clearance Number: _____

1. OWP - RP-25

2. System: Nuclear Instrumentation

3. Component: POWER RANGE N-43

4. Scope: LCO action required due to inoperable Channel 3 Power Range Nuclear Instrumentation

5. Applicable Requirements: 3.3.1 (Modes 1 and 2), 4.2.1.1 and 4.2.4.2 (Mode 1 above 50% RATED THERMAL POWER)

6. Precautions: 1) Ensure only one channel out of service at a time. 2) This procedure does not alter the input to the P-8 or P-10 permissives.

7. Component lineups completed per attached sheet(s). _____ / _____
Signature Date

8. Testing required on redundant equipment while the component is inoperable. Perform EST-915 once per 12 hrs if Rx power is greater than 75% with one Channel inoperable. Perform OST-1039 once per 12 hrs if Rx power is greater than 50%.

9. Testing/Action required to restore operability. (N/A if tracked on EIR)

- OST-1021, 1022 or 1033 _____ / _____
- OST-1004 _____ / _____
- OST-1039 (above 50% RTP) _____ / _____
- MST-I0046 _____ / _____

Signature Date

10. Component lineups restored per attached sheet(s). _____ / _____
Signature Date

11. Remarks: _____

12. Reviewed By: _____ _____
Superintendent - Shift Operations Date

After receiving the final review signature, this OWP becomes a QA RECORD and should be submitted to Document Services.

Bistable/Status Light Lineup

Component ID or Number		Position for Inoperability Initial/Verified		Restored Position Initial/Verified
NOTE: This OWP must be performed in order to prevent possible spurious rod motion or level control swings.				
On MAIN CONTROL BOARD:				
ROD BANK SELECTOR Switch	MANUAL	_____/_____	MANUAL	_____/_____
FW Reg Byp Valve Controllers:				
FK-479.1	MANUAL	_____/_____	MANUAL	_____/_____
FK-489.1	MANUAL	_____/_____	MANUAL	_____/_____
FK-499.1	MANUAL	_____/_____	MANUAL	_____/_____
In PIC 3 on Card C3-822:				
NOTE: Concurrent verification is preferred while tripping bistables.				
BS3 (TB/432C1 OTΔT)	TEST	_____/_____	NORMAL	_____/_____
BS4 (TB/432C2 OTΔT C-3)	TEST	_____/_____	NORMAL	_____/_____
On DETECTOR CURRENT COMPARATOR Drawer:				
UPPER SECTION Switch	PRN43	_____/_____	NORMAL	_____/_____
LOWER SECTION Switch	PRN43	_____/_____	NORMAL	_____/_____
On MISCELLANEOUS CONTROL AND INDICATION PANEL:				
ROD STOP BYPASS Switch	BYPASS PR N43	_____/_____	OPERATE	_____/_____
POWER MISMATCH BYPASS Switch	BYPASS PR N43	_____/_____	OPERATE	_____/_____
On COMPARATOR AND RATE Drawer:				
COMPARATOR CHANNEL DEFEAT Switch	N43	_____/_____	NORMAL	_____/_____
On Power Range Drawer N43A				
NOTE: The purpose of the sign installed below is to alert personnel of tripped bistables that may not be obvious at the NI drawer. The wording in quotations is the recommended wording, but similar words may also be used.				
Sign stating "Bistables Tripped - OWP-RP in Affect"	Installed	_____/_____	Removed	_____/_____

Bistable/Status Light Lineup

Component ID or Number	Position for Inoperability Initial/Verified	Restored Position Initial/Verified
In POWER RANGE N43:		
NOTE: Concurrent verification is preferred in the following Step.		
At the rear of N43 Drawer A, disconnect P312 from J312	DISCONNECTED _____/_____	CONNECTED _____/_____
(On completion of the above lineup, check the following.)		
On TSLB-3:		
C TRIP O/TEMP ΔT TB432C1 (Window 9-1)	ENERGIZED _____/_____	DE-ENERGIZED _____/_____
C RUN BK O/TEMP ΔT TB432C2 (Window 9-3)	ENERGIZED _____/_____	DE-ENERGIZED _____/_____
On TSLB-4:		
* Circle required state as determined by present plant conditions.		
PR LO PWR HI FLUX NC 43P (Window 5-3)	ENERGIZED _____/_____	*ENERGIZED OR DE-ENERGIZED _____/_____
PR HI PWR HI FLUX NC 43R (Window 6-3)	ENERGIZED _____/_____	DE-ENERGIZED _____/_____
**May require manual reset of rate trips locally at drawer.		
PR HI FLUX RATE NC 43U/K (Window 7-3)	ENERGIZED _____/_____	** DE-ENERGIZED _____/_____
On BYPASS PERMISSIVE LIGHTS Panel:		
PR OVERPWR ROD WTHDRWL BLK BYPASS CHAN III (Window 3-7)	ENERGIZED _____/_____	DE-ENERGIZED _____/_____

Bistable/Status Light Lineup

Component ID or Number	Position for Inoperability	Initial/Verified	Restored Position	Initial/Verified
On ERFIS Computer:				
(After status lights have been checked, perform the following using the DR function.)				
ANM0122M - PWR RNG CHANNEL N43 Q1 1-MIN AVG	DELETED FROM PROCESSING	/	RESTORED TO PROCESSING	/
On MAIN CONTROL BOARD:				
+ Circle appropriate position as determined by plant conditions.				
ROD BANK SELECTOR Switch	MAN/AUTO+	/	MAN/AUTO+	/
FW Reg Byp Valve Controllers:				
+ Circle appropriate position as determined by plant conditions.				
FK-479.1	MAN/AUTO+	/	MAN/AUTO+	/
FK-489.1	MAN/AUTO+	/	MAN/AUTO+	/
FK-499.1	MAN/AUTO+	/	MAN/AUTO+	/

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Manual Reactor Trip	2	1	2	1, 2	1
	2	1	2	3*, 4*, 5*	9
2. Power Range, Neutron Flux					
a. High Setpoint	4	2	3	1, 2	2
b. Low Setpoint	4	2	3	1###, 2	2
3. Power Range, Neutron Flux High Positive Rate	4	2	3	1, 2	2
4. Power Range, Neutron Flux, High Negative Rate	4	2	3	1, 2	2
5. Intermediate Range, Neutron Flux	2	1	2	1###, 2	3
6. Source Range, Neutron Flux					
a. Startup	2	1	2	2##	4
b. Shutdown	2	1	2	3, 4, 5	5
7. Overtemperature ΔT	3	2	2	1, 2	6
8. Overpower ΔT	3	2	2	1, 2	6
9. Pressurizer Pressure--Low (Above P-7)	3	2	2	1	6(1)
10. Pressurizer Pressure--High	3	2	2	1, 2	6
11. Pressurizer Water Level--High (Above P-7)	3	2	2	1	6

TABLE 3.3-1 (Continued)

TABLE NOTATIONS

*When the Reactor Trip System breakers are closed and the Control Rod Drive System is capable of rod withdrawal.

**Whenever Reactor Trip Breakers are to be tested.

##Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

###Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

(1)The applicable MODES for these channels noted in Table 3.3-3 are more restrictive and, therefore, applicable.

ACTION STATEMENTS

ACTION 1 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1, and

c. Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint, and

b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes.

ACTION 5 - a. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor Trip System breakers, and verify compliance with the shutdown margin requirements of Specification 3.1.1.2 within 1 hour and at least once per 12 hours thereafter.

b. With no channels OPERABLE, open the Reactor Trip System breakers within 1 hour and suspend all operations involving positive reactivity changes. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.2 within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours, and

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.

ACTION 7 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

Ref for SRO #12, 012A2.01

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 Noncompliance with a specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required unless otherwise noted in the ACTION statement.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within 1 hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

a. At least HOT STANDBY within the next 6 hours,
b. At least HOT SHUTDOWN within the following 6 hours, and
c. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the action may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual specifications.

This specification is not applicable in MODE 5 or 6.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the Limiting Conditions for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements or that are part of a shutdown of the unit. Exceptions to these requirements are stated in the individual specifications.

3.0.5 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to 3.0.1 above for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

13. 2009A NRC SRO 013/NEW/H/3/T.S. 3.7.1.1/N/2009A NRC SRO/039A2.02/

Given the following plant conditions:
- The plant is operating at 100% power

The following indications are received:
- Pressurizer level is lowering
- RCS pressure is lowering
- Charging flow is increasing
- RCS Tavg is lowering
- Turbine first stage pressure has lowered 25 psig and is stable
- Electrical output has lowered 30 MW and is stable
- A field operator reports that a Safety Valve is lifting on the 'A' SG

Which ONE of the following describes the procedure required to mitigate this event and the Power Range High Flux Trip Setpoints required to allow continued operation in accordance with Tech Specs?

	Procedure to be entered	Power Range High Flux Trip Setpoints
A.	AOP-015, Secondary Load Rejection	33%
B.	AOP-015, Secondary Load Rejection	50%
C.	Enter AOP-038, Rapid Down Power	33%
D.	Enter AOP-038, Rapid Down Power	50%

Plausibility and Answer Analysis

A Incorrect. AOP-015 is plausible as it contains actions for a safety valve opening but a load rejection has not occurred as indicated by primary plant parameters. 33% is plausible because this is the action for two inoperable safeties.

B Incorrect. AOP-015 is plausible as it contains actions for a safety valve opening but a load rejection has not occurred as indicated by primary plant parameters. 50% is correct.

C Incorrect. AOP-038 is correct. 33% is plausible because this is the action for two inoperable safeties.

D Correct. AOP-038 is correct. 50% is correct.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Main and Reheat Steam - Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Decrease in turbine load as it relates to steam escaping from relief valves

Importance Rating:	2.4 2.7
Technical Reference:	AOP-038 Rev. 18, page 3 Tech Spec 3.7.1.1 pg 3/4 7-1, 3/4 7-2 (pages 303-304) AOP-015 Rev. 17, page 3
References to be provided:	None
Learning Objective:	AOP-LP-038, Obj 3
Question origin:	NEW
Comments:	
SRO justification:	Requires knowledge of a 4 hour T.S.

Origin:	NEW	Cog Level:	H
Difficulty:	3	Reference:	T.S. 3.7.1.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	039A2.02	K/A 2:	

1.0 PURPOSE

This procedure provides guidance to lower Reactor power and Turbine load in a rapid fashion based on plant conditions or Tech Spec requirements while maintaining all plant parameters within necessary limits. This procedure can be used to lower power to a reduced output or take the plant to Turbine shutdown.

This procedure shall not be used for planned down powers. For planned down powers, Reactor Engineering should be contacted for a Reactivity Plan.

2.0 ENTRY CONDITIONS

2.1 Plant Conditions require a rapid reduction in power level to preclude a plant trip or in lieu of a plant trip.

2.2 The following are potential conditions (NOT a complete listing) that may require a rapid power reduction to maintain the plant in operation while recovery efforts are executed or take the plant to Turbine shutdown:

- Impending loss of a Main Feedwater Pump
- Main Turbine or Generator problems
- Impending loss of control fluids
- Condenser vacuum abnormalities
- Any condition that would require a complete power reduction in less than 60 minutes

2.3 Any condition requiring greater than 5 MW/min load reductions.

3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

SAFETY VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.1 All main steam line Code safety valves associated with each steam generator shall be OPERABLE with lift settings as specified in Table 3.7-2.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one or more main steam line Code safety valves inoperable, operation may proceed provided, that within 4 hours, either the inoperable valve is restored to OPERABLE status or the Power Range Neutron Flux High Trip Setpoint is reduced per Table 3.7-1; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.1 No additional requirements other than those required by the Inservice Testing Program.

TABLE 3.7-1

MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINT WITH INOPERABLE STEAM LINE SAFETY VALVES DURING 3 LOOP OPERATION

MAXIMUM NUMBER OF INOPERABLE SAFETY VALVES ON ANY OPERATING STEAM GENERATOR	MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINT (PERCENT OF RATED THERMAL POWER)
1	50
2	33
3	16

1.0 PURPOSE

Provides actions to respond to and recover from a secondary load rejection, turbine runback or malfunction of the DEH controller.

2.0 ENTRY CONDITIONS

This procedure is entered upon a secondary load rejection, turbine runback or malfunction of the DEH controller with the following exception:

- AOP-010, Feedwater Malfunctions, should be entered if turbine runback was caused by a loss of Main Feed Pump or Loss of BOTH Heater Drain Pumps.

14. 2009A NRC SRO 014/BANK/H/4/FRP-J.1/N/2009A NRC SRO/076G2.4.30/

Given the following plant conditions:
- FRP-J.1, Response to High CNMT Pressure, is in progress
- 'A' CNMT Spray Pump is under clearance for motor replacement
- 'A' ESW Booster Pump is running
- The breaker for 1B2-SB has tripped and cannot be reclosed
- 1SW-116, AH-2&3 SW Return Orifice Bypass Isol, is OPEN

Which ONE of the following describes the action required by FRP-J.1 and the basis for this action?

A. Notify Chemistry to sample ONLY the A-SA ESW Return Header;
Activity may have entered the A train of ESW from CNMT

B. Notify Chemistry to sample BOTH A-SA and B-SB ESW Return Headers;
Activity may have entered BOTH trains of ESW from CNMT

C. Shut the ESW isolation valves to ONLY A-SA CNMT Fan Coolers;
To prevent activity from entering the 'A' train of ESW from CNMT

D. Shut the ESW isolation valves to BOTH A-SA and B-SB CNMT Fan Coolers;
To prevent activity from entering any train of ESW from CNMT

Plausibility and Answer Analysis

A Incorrect. Since 1SW-116 is not shut sampling the A-SA header is required. Chemistry would sample only the A-SA header if 'B' train ESW booster pump and orifice bypass isolation had operated properly. B-SB booster pump did not start because of fault on 1B2-SB bus. Basis is correct for sampling A-SA train.

B Correct. Action and bases are correct due to no running Containment Spray pumps and the failure of both trains of ESW Booster pumps to operate properly.

C Incorrect. This action would be correct if one or more Containment Spray pumps were running and the B-SB ESW Booster pumps had operated properly.

D Incorrect. This action would be correct if one or more Containment Spray pumps were running. Since none are, the priority is to maintain the cooling to the fan coolers, despite the potential that activity may enter the lower pressure ESW system.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Service Water - Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.

Importance Rating:	2.7 4.1
Technical Reference:	FRP-J.1 Rev. 13, pages 7-9
References to be provided:	None
Learning Objective:	EOP-LP-3.13, Obj 3
Question origin:	Slightly modified from bank question
Comments:	
SRO justification:	Requires recalling what strategy is written into the body of the procedure to address the plant conditions given.

Origin:	BANK	Cog Level:	H
Difficulty:	4	Reference:	FRP-J.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	076G2.4.30	K/A 2:	

Instructions	Response Not Obtained
7. Check CNMT Spray Pump Status:	
a. Check CNMT spray pumps - BOTH RUNNING	a. GO TO Step 7c.
b. GO TO Step 9.	
c. Check CNMT spray pumps - ONE RUNNING	c. GO TO Step 7e.
d. GO TO Step 8.	
e. Check all of the following: o ESW booster pump A-SA - RUNNING o Orifice bypass isolation valve 1SW-116 - SHUT	e. Coordinate with plant operations staff AND chemistry to sample "A" ESW return header for activity.
f. Check all of the following: o ESW booster pump B-SB - RUNNING o Orifice bypass isolation valve 1SW-118 - SHUT	f. Coordinate with plant operations staff AND chemistry to sample "B" ESW return header for activity.
g. Observe NOTE prior to Step 11 AND GO TO Step 11.	

Instructions	Response Not Obtained
8. Check ESW Booster Pump Status:	
a. Check all of the following: o ESW booster pump A-SA - RUNNING o Orifice bypass isolation valve 1SW-116 - SHUT o ESW booster pump B-SB - RUNNING o Orifice bypass isolation valve 1SW-118 - SHUT	a. GO TO Step 8c.
b. GO TO Step 11.	
c. Check any ESW header with both of the following: o Associated ESW booster pump - RUNNING o Associated orifice bypass isolation valve - SHUT	c. Perform the following: 1) Shut valves in one of the following ESW fan cooler trains: o Train A: 1SW-91 1SW-92 1SW-97 1SW-109 o Train B: 1SW-225 1SW-227 1SW-110 1SW-98 2) Coordinate with plant operations staff AND chemistry to sample for activity in the ESW return header with open CNMT fan cooler ESW isolation valves. 3) GO TO Step 10.

Instructions	Response Not Obtained
9. Check ESW Booster Pumps:	
a. Check both of the following: o ESW booster pump A-SA - RUNNING o Orifice bypass isolation valve 1SW-116 - SHUT	a. Shut CNMT fan cooler ESW isolation valves: 1SW-91 1SW-92 1SW-97 1SW-109
b. Check both of the following: o Check ESW booster pump B-SB - RUNNING o Orifice bypass isolation valve 1SW-118 - SHUT	b. Shut CNMT fan cooler ESW isolation valves: 1SW-225 1SW-227 1SW-110 1SW-98

15. 2009A NRC SRO 015/NEW/H/3/FRP-J.1/N/2009A NRC SRO/103G2.4.4/

The crew has transitioned to PATH-1, Entry Point C and is presently evaluating the RHR System capable of Cold Leg Recirculation.

The following conditions exist:
- Offsite Power has been lost
- 'B' EDG immediately tripped
- CNMT Pressure is 17 psig and rising
- CNMT High Range Rad Monitors are in alarm
- CNMT Wide Range Sump Level is reading 211 inches
- ALB-001-2-3, Spray Pump A Autostart Fail/Override, is in alarm
- ALB-001-2-4, Spray Pump A O/C Trip or Close Circuit Trouble, is in alarm

Which ONE of the following is the required procedure transition and when will a transition back to PATH-1 be allowed?

A. FRP-J.1, Response to High CNMT Pressure;
After completion of required actions even if the Orange Path still exists

B. FRP-J.1, Response to High CNMT Pressure;
ONLY after the condition causing the Orange Path has been corrected

C. FRP-J.2, Response to Containment Flooding;
After completion of required actions even if the Orange Path still exists

D. FRP-J.2, Response to Containment Flooding;
ONLY after the condition causing the Orange Path has been corrected

Plausibility and Answer Analysis

A *Correct. An ORANGE path exists due to containment pressure greater than 10 psig with no CNMT Spray Pump running and FRP-J.1 does not require the condition to be corrected prior to exit as other FRPs do (FRP-S.1, FRP-H.1).*

B *Incorrect. An ORANGE path exists due to containment pressure greater than 10 psig with no CNMT Spray Pump running and FRP-J.1 does not require the condition to be corrected prior to exit as other FRPs do (FRP-S.1, FRP-H.1).*

C *Incorrect. Conditions are met for FRP-J.2 but this ORANGE path would only be evaluated if CNMT pressure was less than 10 psig. Additionally, FRP-J.2 also allows exit before the cause of the ORANGE path is corrected.*

D *Incorrect. Conditions are met for FRP-J.2 but this ORANGE path would only be evaluated if CNMT pressure was less than 10 psig. Additionally, FRP-J.2 does not require the condition to be corrected prior to exit as other FRPs do (FRP-S.1, FRP-H.1).*

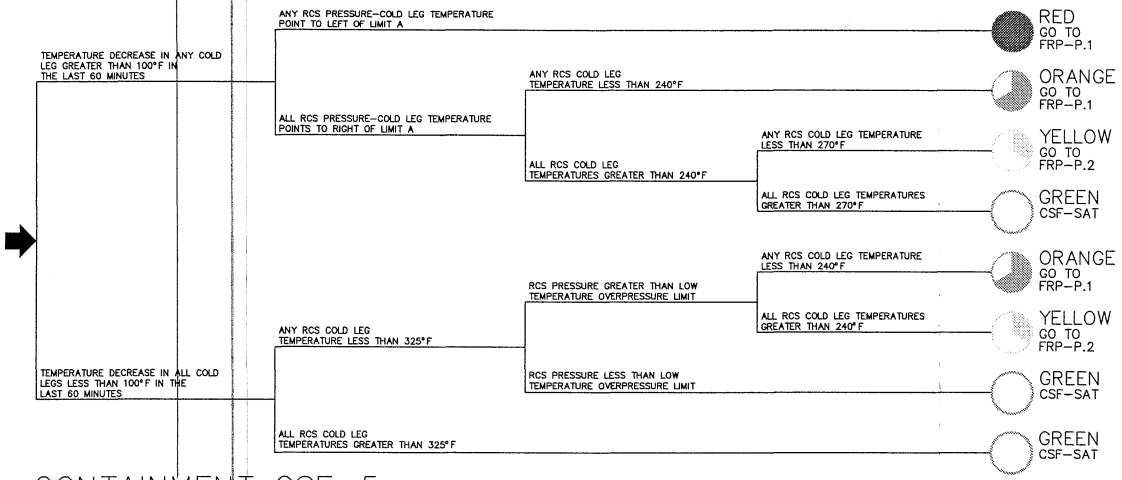
K/A statement - Containment - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Importance Rating:	4.5 4.7
Technical Reference:	EOP-CSFST Rev. 9 pg 3 of 3 (side 2) FRP-J.1 Rev. 13, page 10
References to be provided:	None
Learning Objective:	EOP-LP-3.13, Obj 1
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and prescribing correct procedure to mitigate event in progress. Additionally, requires individual to recall the strategy of the FRP in that it will attempt to mitigate the problem but exit is made before condition is corrected.

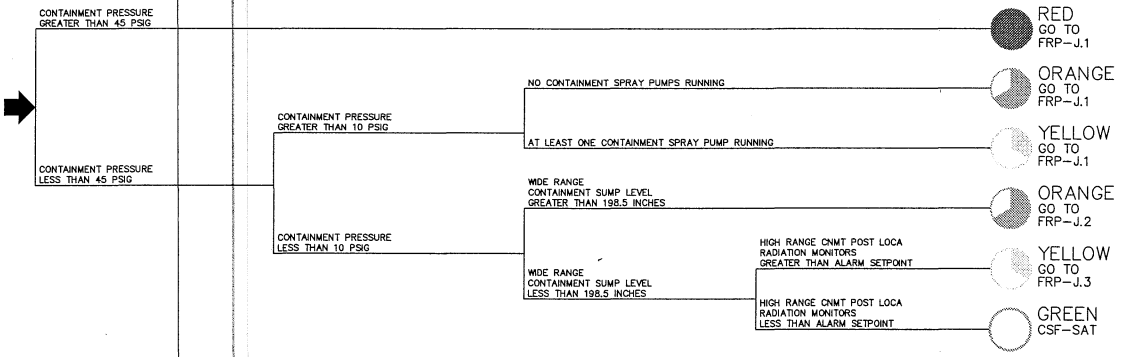
Origin:	NEW	Cog Level:	H
Difficulty:	3	Reference:	FRP-J.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	103G2.4.4	K/A 2:	

CSFST

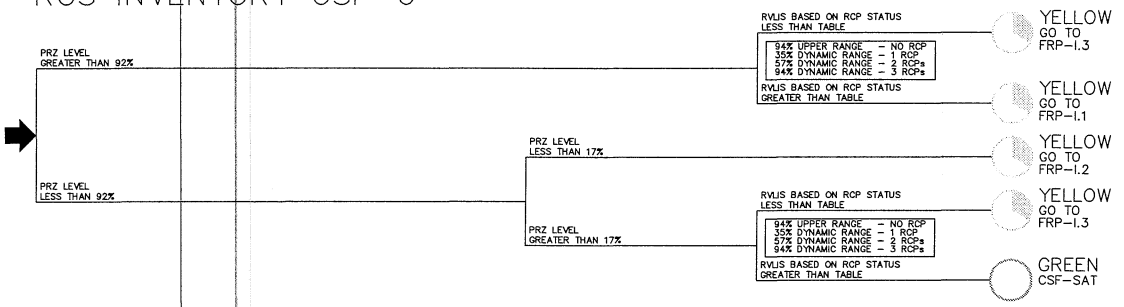
RCS INTEGRITY CSF-4



CONTAINMENT CSF-5

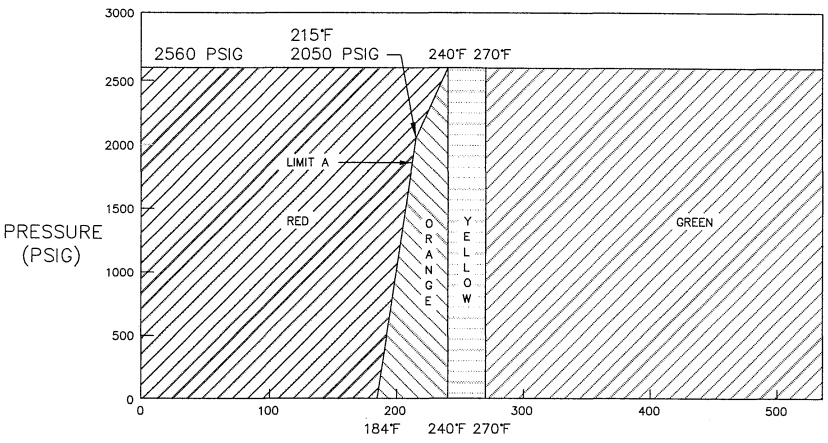


RCS INVENTORY CSF-6

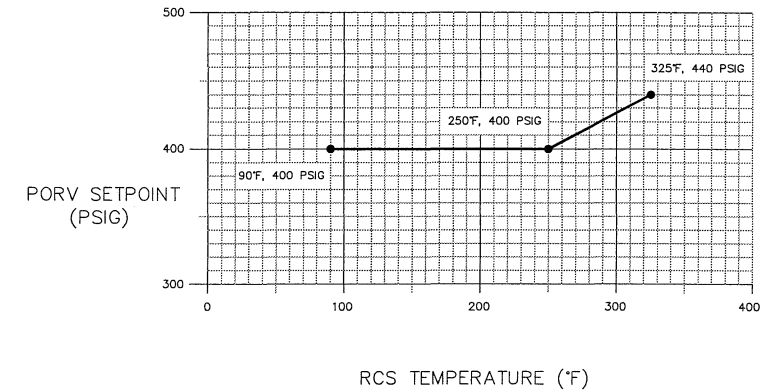


RCS INTEGRITY

PTS LIMITS CURVE



LOW TEMPERATURE OVERPRESSURE LIMIT



Instructions	Response Not Obtained
10. Monitor Conditions To Restore ESW To Isolated Fan Coolers:	
a. Check ESW - ISOLATED TO ANY FAN COOLERS IN STEPS 8 OR 9	a. Observe NOTE prior to Step 11 AND GO TO Step 11.
b. Check for any of the following: o Check CNMT pressure - LESS THAN 10 PSIG o Check ESW header isolated to fan coolers for both of the following: o Associated ESW booster pump - RUNNING o Associated orifice bypass isolation valve - SHUT	b. WHEN any of the conditions occurs, THEN do Step 10c. Observe NOTE prior to Step 11 AND Continue with Step 11.
c. Restore ESW to isolated fan coolers.	

NOTE: The Containment Status Tree may continue to display a "non-satisfied" condition after completion of the procedure. If this is the case, the appropriate Function Restoration Procedure does not need to be implemented again since all necessary actions have already been performed.

11. RETURN TO Procedure And Step In Effect.

- END -

16. 2009A NRC SRO 016/NEW/H/4/FRP-H.1/N/2009A NRC SRO/002A2.01/

Given the following plant conditions:
- 'B' MDAFW Pump is under clearance for motor replacement
- Unit tripped from an Inadvertent Safety Injection
- Offsite Power was subsequently lost
- 'A' EDG failed to start
- The TDAFW Pump tripped on overspeed
- FRP-H.1, Response to Loss of Secondary Heat Sink, is in progress
- RCS Bleed and Feed has been initiated

The following conditions exist:
- Secondary Heat Sink has been established by restoring the TDAFW Pump
- RCS Bleed and Feed is being terminated
- 1RC-118, Pressurizer PORV (PCV-445A-SA), cannot be closed

Which ONE of the following identifies the correct procedure to be implemented?

A. Remain in FRP-H.1

B. ✔ Go to PATH-1 Entry Point C

C. Return to Procedure and Step in effect

D. Go to EPP-009, Post LOCA Cooldown and Depressurization

Plausibility and Answer Analysis

A Incorrect. This would be correct if the PORV Block Valve had power to be shut but the 'A' EDG tripped.

B Correct. This is the appropriate response for the loss of coolant Inventory in progress.

C Incorrect. Plausible since this would be correct if the heat sink had been restored PRIOR to starting bleed and feed.

D Incorrect. Plausible as EPP-009 will be the ultimate procedure required to address the SBLOCA in progress, but it will be entered from Path-1.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Reactor Coolant - Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Loss of coolant inventory

Importance Rating:	4.3 4.4
Technical Reference:	FRP-H.1 Rev. 23, page 38
References to be provided:	None
Learning Objective:	EOP-LP-3.11, Obj 4e
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and the prescribing the procedure section with which to proceed.

Origin:	NEW	Cog Level:	H
Difficulty:	4	Reference:	FRP-H.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	002A2.01	K/A 2:	

Instructions	Response Not Obtained

NOTE: After shutting a PRZ PORV, RCS pressure should be allowed to increase to determine if SI can be terminated.

30. Check SI Termination Criteria:

a. Check for both of the following: 1) RCS subcooling - GREATER THAN 60°F [90°F] - C 70°F [100°F] - M 2) Check RVLIS full range GREATER THAN 63%	a. GO TO Step 31.
b. GO TO Step 32.	

31. Check RCS Bleed Path Status:

a. Check PRZ PORVs AND associated block valves - ANY BLEED PATH OPEN	a. GO TO PATH-1, entry point C.
b. Shut one PRZ PORV AND place in auto.	b. Shut its block valve. GO TO Step 31d.
c. Observe NOTE prior to Step 30 AND RETURN TO Step 30.	
d. Block valves - SHUT FOR ANY STUCK OPEN PRZ PORV	d. GO TO PATH-1, entry point C.
e. Observe NOTE prior to Step 30 AND RETURN TO Step 30.	

32. Reduce SI Flow:

a. Both CSIPs - RUNNING	a. GO TO Step 33.
b. Stop one CSIP.	

17. 2009A NRC SRO 017/BANK/H/2/PLP-114/Y/2009A NRC SRO/034G2.1.23/

Given the following plant conditions:
- On Feb 1, at 0600, a plant shutdown, for refueling, was initiated from 100% power
- The Reactor was shutdown at 2000 on the same day
- CCW heat exchanger outlet temperature is currently 97.4°F

Which ONE of the following indicates the MINIMUM number of hours after shutdown before fuel movement in the Reactor Vessel may begin in accordance with PLP-114, Relocated Technical Specifications and Design Basis Requirements? (**Reference provided**)

A. 104 hours

B. 120 hours

C. 152 hours

D. 160 hours

Plausibility and Answer Analysis

A Incorrect. This is number you get if you use 97.4 degrees vice effective CCW temperature of 102.4 and interpolate.

B Incorrect. This is number you get if you use 97.4 degrees vice effective CCW temperature of 102.4 and do not interpolate.

C Correct. Effective CCW becomes 102.4 degrees. Interpolation gives 8 hours beyond lower boundary of 144 hours.

D Incorrect. This is the most likely number if candidate performs interpolation incorrectly (168-8 vice 144+8).

K/A statement - Fuel Handling Equipment - Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Importance Rating:	4.3 4.4
Technical Reference:	PLP-114 Rev. 18, page 8
References to be provided:	Provide PLP-114 Rev. 18, page 8
Learning Objective:	TS-LP-2.0/3.0/5.0/8.0, Obj 5
Question origin:	Modified slightly from bank to improve distractor plausibility
Comments:	
SRO justification:	Knowledge of fuel handling facilities and procedures

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

Origin:	BANK	Cog Level:	H
Difficulty:	2	Reference:	PLP-114
Ref. Provided?:	Y	Key Words:	2009A NRC SRO
K/A 1:	034G2.1.23	K/A 2:	

Refueling Operations

1.0 OPERATIONAL REQUIREMENTS - DECAY TIME

1.1 The reactor shall be subcritical for a minimum period of time as determined by Table A.

APPLICABILITY: During movement of irradiated fuel in the reactor vessel.

ACTION:

With the reactor subcritical for a time less than determined by Table A, suspend all operations involving movement of irradiated fuel in the reactor vessel. Fuel movement in the reactor vessel may continue provided the minimum decay time is greater than the time shown on Table A.

2.0 SURVEILLANCE REQUIREMENTS

2.1 The reactor shall be determined to have been subcritical for a minimum period of time as determined using Table A by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor vessel.

2.2 CCW temperature shall be monitored every 12 hours during the movement of fuel in the reactor vessel to ensure the temperature used to determine decay time is not exceeded.

Table A

Time from Reactor Subcritical (Hours)	Effective CCW Temperature (°F)
100	96.9
120	99.3
144	101.7
168	103.8
192	105.6
216	107.2
240	108.6

NOTE 1: - Linear interpolation between listed points is acceptable.
NOTE 2: - These delay times are applicable to end of cycle full core off-loads only. A mid-cycle core off-load assumes two CCW and Fuel Pool Cooling trains available and does NOT require compliance with these limits.
NOTE 3: - Effective CCW temperature refers to actual CCW heat exchanger outlet temperature plus 5°F.
NOTE 4: - The table assumes the core off-load duration is 30 hours or greater. Spent Fuel Pool Cooling analysis assumes full core off-load occurs no sooner than the earliest allowed time to start core off-load after reactor subcritical (based on CCW temperature) plus 30 hours.

18. 2009A NRC SRO 018/NEW/H/3/T.S. 3.6.3/N/2009A NRC SRO/068A2.04/

Given the following plant conditions:
- The plant is in Mode 3
- During slave relay testing 1ED-164, RCDT Vent IRC Isolation, failed to shut automatically
- 1ED-164 also failed to shut remotely from the MCR
- 1ED-161, RCDT Vent ORC Isolation, operated as expected
- Maintenance reports that repair of 1ED-164 will take approximately 15 hours

Which ONE of the following is required in order to comply with Technical Specifications and what is the limiting operational concern for this failure?

A. Shut AND then remove fuses for 1ED-161;
Potential to damage the #2 RCP seals

B. Shut AND then remove fuses for 1ED-161;
Potential to damage the #3 RCP seals

C. Shut 1ED-161, fuses for 1ED-161 do NOT need to be removed;
Potential to damage the #2 RCP seals

D. Shut 1ED-161, fuses for 1ED-161 do NOT need to be removed;
Potential to damage the #3 RCP seals

Plausibility and Answer Analysis

A Correct. Technical Specification action is correct. Technical Specifications require isolation valve be deactivated in the shut position. Operational concern is correct. If RCDT pressure increases to >15 psig damage could occur to the #2 RCP seals.

B Incorrect. Technical Specification action is correct. Technical Specifications require isolation valve be deactivated in the shut position but the operational concern is incorrect. Plausible because #3 seals do send ~400 cc of their discharge to the RCDT. But even without this flowpath #3 seal would still have flow from the standpipe to the containment sump

C Incorrect. Technical Specification action is incorrect. Technical Specifications require isolation valve to be deactivated in the isolation position. This action would be correct if 1ED-164 had failed in the shut position. Operational concern is correct. If RCDT pressure increases to >15 psig damage could occur to the #2 RCP seals.

D Incorrect. Technical Specification action is incorrect. Technical Specifications require isolation valve to be deactivated in the isolation position. This action would be correct if 1ED-164 had failed in the shut position. Operational concern is incorrect, but plausible because #3 seals do send ~400 cc of their discharge to the RCDT. But even without this flowpath #3 seal would still have flow from the standpipe to the containment sump

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Liquid Radwaste - Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Failure of automatic isolation

Importance Rating:	3.3 3.3
Technical Reference:	PLP-106 Rev. 44, pages 18, 32, 33 T.S. 3.6.3 pg 3/4 6-14 (page 296) APP-102 Rev. 12 pages 3-6
References to be provided:	None
Learning Objective:	
Question origin:	NEW
Comments:	(K/A Match) KA match since the RCDT is a key component of the Liquid Radwaste system
SRO justification:	Requires knowledge of required actions per Tech Specs > 1 hour

Origin:	NEW	Cog Level:	H
Difficulty:	3	Reference:	T.S. 3.6.3
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	068A2.04	K/A 2:	

Containment Isolation Valves

PENETRATION NO.	VALVE NO. CP&L (EBASCO)	FUNCTION	MAXIMUM ISOLATION TIME (SEC)	APPLICABLE NOTES	REDUNDANT VALVE(S)
1.	PHASE A ISOLATION (continued)				
73A	1SP-12 (SP-V300)	HYDROGEN ANALYZER A	60	7,13	1SP-915
73A	1SP-915 (SP-V348)	HYDROGEN ANALYZER A	60	7,13	1SP-12
73B	1SP-941 (SP-V301)	HYDROGEN ANALYZER A	60	7,13	1SP-917
73B	1SP-917 (SP-V349)	HYDROGEN ANALYZER A	60	7,13	1SP-941
74	1ED-94 (MD-V36)	CNMT SUMP PUMP DISCH	60	7,13	1ED-95
74	1ED-95 (MD-V77)	CNMT SUMP PUMP DISCH	60	7,13	1ED-94
76A	1SI-179 (SI-V554)	ACCUMULATOR FILL FROM RWST	10	7,13	1SI-182
76B	1SI-263 (SI-V555)	ACCUMULATOR DRAIN TO RWST	10	7,13	1SI-264
76B	1SI-264 (SI-V550)	ACCUMULATOR DRAIN TO RWST	10	7,13	1SI-263
77A	1SI-287 (SI-V530)	NITROGEN SUPPLY	10	7,13	1SI-290
77B	1RC-141 (RC-D528)	PRT NITROGEN CONNECTION	10	7,13	1RC-144
77B	1RC-144 (RC-D529)	PRT NITROGEN CONNECTION	10	7,13	1RC-141
77C	1ED-164 (WG-D590)	RCDT HYDROGEN CONNECTION	10	7,13	1ED-161
77C	1ED-161 (WG-D291)	RCDT HYDROGEN CONNECTION	10	7,13	1ED-164
78A	1SP-948 (SP-V111)	RCS SAMPLE	60	7,13	1SP-949
78A	1SP-949 (SP-V23)	RCS SAMPLE	60	7,13	1SP-948
78B	1SP-40 (SP-V11)	PRESSURIZER LIQ SAMPLE	60	7,13	1SP-41
78B	1SP-41 (SP-V12)	PRESSURIZER LIQ SAMPLE	60	7,13	1SP-40

Containment Isolation Valves

TABLE NOTATIONS

(7) For this valve, the valves listed in the REDUNDANT VALVE column are the valves which are used to meet the initial ACTION statement of Specification 3.6.3 which states "maintain at least one isolation valve OPERABLE. . ." Further action under Specification 3.6.3 is still required to isolate the affected penetration or to shut down in accordance with Actions a, b, c, or d. Reopening of an inoperable valve is allowed to permit surveillance testing to demonstrate its operability or the operability of other equipment per Specification 4.6.3.1, or to change to another action statement for the LCO. A change between action statements is permitted for activities directly related to restoring the valve to an operable status. Each deviation constitutes a new LCO entry and the 4-hour action requirement applies.

The following guidance is provided for complying with the follow-up action requirement, specified in Actions a, b, or c, to isolate the penetration:

- Either the inoperable valve, or all containment isolation valves listed under "REDUNDANT VALVE(S)" column, must be closed (and de-activated, if applicable, for power-operated valves), OR

- A valve having the same safety class and seismic design class in series with the inoperable valve must be closed (and de-activated, if applicable for power-operated valves). If the piping branches, each branch must be isolated.

- Check valves may not be used to isolate a penetration beyond the four-hour period.

(8) For this valve, the closed, water-sealed system outside containment is considered to be an OPERABLE isolation valve for purposes of compliance with the initial ACTION statement of Specification 3.6.3 which states "maintain at least one isolation valve OPERABLE. . ." Further action under Specification 3.6.3 is still required to isolate the affected penetration or to shut down in accordance with Actions a, b, c, or d. Reopening of an inoperable valve is allowed to permit surveillance testing to demonstrate its operability or the operability of other equipment per Specification 4.6.3.1, or to change to another action statement for the LCO. A change between action statements is permitted for activities directly related to restoring the valve to an operable status. Each deviation constitutes a new LCO entry and the 4-hour action requirement applies.

The following guidance is provided for complying with the follow-up action requirement, specified in Actions a, b, or c, to isolate the penetration:

- Either the inoperable valve must be closed (and de-activated, if applicable for power-operated valves), OR

- A valve having the same safety class and seismic design class in series with the inoperable valve must be closed (and de-activated, if applicable for power-operated valves). If the piping branches, each branch must be isolated.

- Check valves may not be used to isolate a penetration beyond the four-hour period.

Containment Isolation Valves

TABLE NOTATIONS

(9) For relief valves, the "REDUNDANT VALVE(s)" column applies to the action statement whenever the relief is unable to isolate (that is, excessive leakage or failed open). When a relief is unable to open or cannot otherwise adequately relieve design overpressure conditions, the penetration must be isolated, and the penetration and closed system (if Note 6 or 8 is applicable) drained to eliminate the potential for an overpressurization event.

(10) For this valve, no redundant valve or closed system is available for purposes of compliance with the initial ACTION statement of Specification 3.6.3 which states "maintain at least one isolation valve OPERABLE. . ." Immediate action to isolate the penetration must be initiated or Technical Specification 3.0.3 should be applied.

(11) Deleted.

(12) Engineering review required when maximum isolation time exceeds 8 seconds to ensure the corresponding Engineered Safety Features Response Time meets the ten second requirement.

(13) If the valve is inoperable, perform Technical Specification Surveillance Requirement 4.6.1.1.a at least once every 31 days.

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 Each containment isolation valve specified in the Technical Specification Equipment List Program, plant procedure PLP-106, shall be OPERABLE with isolation times less than or equal to required isolation times.

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

ACTION:

With one or more of the containment isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange, or

d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each isolation valve shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test, and verification of isolation time.

ALARM

UNIT 1 RCDT PRESS HI

AUTOMATIC ACTIONS

None applicable

CAUSE

1. 1ED-164 or 1ED-161 Containment Isolations shut due to "T" signal or improper valve lineup.
2. 1ED-182, RCDT HY Vent Line Ck Vlv, stuck shut.
3. 1ED-153, Hydrogen Inlet Control Valve not operating properly.
4. Waste Gas Compressor is shut down.
5. 1ED-178, Hydrogen Vent Line Control Valve not operating properly.

OBSERVATIONS

1. **CONTACT** Main Control Room to verify position of 1ED-164 and 1ED-161.
2. PI-1004 on WPCB. Normal RCDT pressure is 0 to 10 psig. Note pressure increases.
3. RCDT level is 20 to 80% at LI-1003.
4. RCDT temperature is 170°F or less at TI-1058.
5. Computer Graphic 56 and Computer Points PA020, LA020, and TA020.

ACTIONS

CAUTION

Operating the RCDT at greater than 15 psig can cause damage to the #2 seal of the RCPs. Efforts should be made as quickly as possible to reduce the RCDT pressure if RCDT PCVs are not operating properly.

1. **VERIFY** proper valve lineup.

2. **CHECK** Waste Gas System for proper operation.

3. **VERIFY** with the MCR the following valves are OPEN:

   - 1ED-164, RCDT VENT IRC ISOLATION
   - 1ED-161, RCDT VENT ORC ISOLATION

4. Locally, **CHECK** 1ED-178, RCDT Hydrogen Vent Line Control Valve to be open.

5. **IF** 1ED-178 is open and pressure is not dropping in the RCDT,
   THEN PERFORM the following:

   a. **MANAULLY AGITATE** 1ED-182, RCDT HY Vent Line Ck Vlv.

   b. **IF** check valve 1ED-182 will not open,
   THEN INITIATE work order on 1ED-182.

6. **IF** pressure remains high for over 5 minutes **OR** 1ED-178, Hydrogen Vent Line Pressure Control Valve is not operating properly,
   THEN PERFORM the following:

   a. **NOTIFY** MCR and RCP System Engineer of annunciator, RCDT pressure, and inform them that this could damage #2 seal of the RCPs.

ACTIONS (continued)

b. **REDUCE** pressure in the RCDT by performing one or all of the following steps:

CAUTION

OP-120.08, Section 8.10 contains limits for pumping down RCDT in manual. Damage can occur to the RCP #2 Seals if level is dropped quickly and RCDT loses pressure.

(1) **TAKE MANUAL CONTROL** of LK-1003 RCDT LCV/IRC ISOLATION 1ED-121 per OP-120.08, Section 8.10 to open valve and lower RCDT level. Level in RCDT should remain above 20%. Return controller to automatic operations.

(2) **IF** Waste Gas System is inservice,
THEN TAKE MANUAL CONTROL of 1ED-178, Hydrogen Vent Line Pressure Control Valve as follows:

(a) **OPEN** 1ED-178, Hydrogen Vent Line Pressure Control Valve, by adjusting pressure controller at valve to control pressure in the RCDT below 6 psig.

(b) **CONTINUE** to monitor RCDT pressure to determine if 1ED-178 is operating properly.

(3) **IF** Waste Gas System is shutdown or RCDT pressure cannot be maintained in desired range by manipulating RCDT level and PCV, **THEN PERFORM** the following steps:

(a) **CONTACT** MCR to determine PRT pressure. If RCDT pressure is higher than PRT, obtain MCR permission to vent the RCDT to the PRT.

(b) **TAKE MANUAL CONTROL** of LK-1003 RCDT LCV/IRC ISOLATION 1ED-121 and open valve to lower RCDT level until RCDT Pump trips.

(c) **VERIFY** RCDT PUMP A/B RECIRC 1ED-143 is OPEN.

(d) **OPEN** 1ED-138, RCDT PUMPS A/B TO PRESSURIZER RELIEF TANK.

ACTIONS (continued)

(e) **ALLOW RCDT TO VENT** to the PRT until RCDT pressure is at desired pressure or until RCDT pressure quits dropping.

(f) To secure the RCDT vent to PRT, **SHUT** 1ED-138, RCDT PUMPS A/B TO PRESSURIZER RELIEF TANK.

(g) **NOTIFY** MCR that RCDT vent to PRT is secured.

(h) **RETURN** LK-1003 RCDT LCV/IRC ISOLATION 1ED-121 to automatic control.

(i) **RESTART** RCDT Pumps per OP-120.08, Section 5.0.

7. **INITIATE** a Work order if a control valve is malfunctioning or instrument has failed.

DEVICE/SETPOINTS

PS-01WL-1004W	10 psig

POSSIBLE PLANT EFFECTS

1. Potential to release fission gases to containment.
2. Possible damage to RCP's #2 seals.

REFERENCES

1. OP-120.08
2. CAR-2166 B-401, Sheet 4386, Control Wiring Diagram
3. CPL-2165 S-1313, Containment Building Waste Processing System
4. AR 60984, 1ED-182 failures

19. 2009A NRC SRO 019/PREVIOUS NRC/F/3/FHP-020/N/2009A NRC SRO/G2.1.41/

Given the following plant conditions:
- The plant is in Mode 6 with refueling in progress

Current plant conditions are:
- Fuel movement has stopped due to a problem with the gripper tube top limit switch on the Manipulator
- The Main Control Room has been informed that initial troubleshooting is in progress on the Manipulator
- The troubleshooting team desires to operate TS-3, Bridge Left Interlock Bypass, in order to move the bridge while the gripper tube is not at the top limit

Which ONE of the following describes the approval and concurrence, if any, required for this action in accordance with FHP-020, Refueling Operations?

A. The SSO must approve. NO concurrence is required.

B. The SSO must approve with concurrence of Reactor Engineering.

C. The SRO-Fuel Handling must approve. NO concurrence is required.

D. The SRO-Fuel Handling must approve with the concurrence of the SSO.

Plausibility and Answer Analysis

A Incorrect. SRO-Fuel Handling does give permission for this evolution, but for bypassing interlocks the SSO MUST concur.

B Incorrect. The SSO only needs to concur with bypassing the interlock. Reactor Engineering is required to be involved in fuel moves but not in troubleshooting of the equipment doing the moves.

C Incorrect. Concurrence is required from SSO per FHP-020, not approval.

D Correct. FHP-020 Rev. 37 P & L 26 reads: Bypassing of fuel handling equipment interlocks which are not specified in approved procedures shall require permission of the SRO-Fuel Handling and concurrence of the Superintendent - Shift Operations.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Conduct of operations - Knowledge of the refueling processes

Importance Rating:	2.8 3.7
Technical Reference:	FHP-020 Rev. 37, P&L 26, page 12
References to be provided:	None
Learning Objective:	
Question origin:	
Comments:	Slightly modified from 2008 NRC exam item, 034G2.1.14, but evaluated as not significantly modified.
SRO justification:	Knowledge of fuel handling facilities and procedures

Origin:	PREVIOUS NRC	Cog Level:	F
Difficulty:	3	Reference:	FHP-020
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.1.41	K/A 2:	

REFERENCE USE

5.1 Precautions and Limitations for Fuel Movement in the Fuel Handling Building (continued)

24. Fuel Handling Building integrity is maintained by verifying the Fuel Handling Building operating floor hatch cover is in place.

25. The FHB Operator reports to the SRO-Fuel Handling while performing fuel handling functions for core alterations.

26. Bypassing of fuel handling equipment interlocks which are not specified in approved procedures shall require permission of the SRO-Fuel Handling and concurrence of the Superintendent - Shift Operations.

27. Loads in excess of 2300 pounds are prohibited from travel over fuel assemblies in a storage pool with irradiated fuel in the pool.

28. Due to the possibility of a limit switch failure, the hoist upper limit switch on the Spent Fuel Pool Bridge Crane will not be used to halt tool vertical movement except as required to meet the traverse inhibit interlock. In such cases, the limit switch shall be approached slowly.

R 29. The Fuel Handling equipment operators shall use all available indications, load cells, rail indexing, and long handled tool markings, to anticipate limit switch and/or interlock functions. The equipment shall be stopped if limit switch setting or procedural limit is exceeded or if an interlock fails to function. (Reference 2.7.1)

30. During fuel movement in the Fuel Handling Building, communications will be available with the Control Room and Containment. Periodic communications checks are sufficient to meet this requirement. (at least once per shift)

31. The load cell should be monitored at all times when lifting or lowering a fuel assembly. If greater than 100 pounds above or below the suspended weight is observed, stop fuel movement and refer to Attachment 12. If load continues to increase in excess of 250 pounds, stop fuel movement and refer to Attachment 12 for additional information.

32. During core alterations, all activities involving movement of fuel in the Fuel Handling Building shall be under the direct supervision of the FHB Operator. The FHB Operator reports to the SRO Fuel Handling while performing fuel handling functions.

20. 2009A NRC SRO 020/MODIFIED/F/3/PLP-702/N/2009A NRC SRO/G2.2.13/

Given the following plant conditions:
- 'A' ESW Header is under clearance.
- 1SW-39, Normal SW Supply to Header A, has been determined to have seat leakage and must be manually shut

Which ONE of the following identifies the permission level that is required to operate 1SW-39 manually and what must be accomplished to restore the valve to an OPERABLE status?

	Permission	To restore operability
A.	SSO	restore power
B.	SSO	restore power AND stroke the valve electrically
C.	USCO	restore power
D.	USCO	restore power AND stroke the valve electrically

Plausibility and Answer Analysis

OMM-014, section 5.1 (Operations Clearances) step 17 contains the operability requirements. PLP-702 contains permission requirements

A *Incorrect. USCO permission is required to operate an MOV manually IAW PLP-702 section 4.1.8 but SSO permission is required for other things. PLP-702 section 4.1.8.c states manual action should be taken to get the valve off the seat but operability specifically requires the valve be stroked from the control switch (PLP-702 section 4.1.8.g.(1)). Had the valve not been manually shut then restoring power is all that would be required to restore operability.*

B *Incorrect. USCO permission is required to operate an MOV manually IAW PLP-702 section 4.1.8 but SSO permission is required for other things. PLP-702 section 4.1.8.g.(1) requires the valve be stroked from the control switch to declare operable.*

C *Incorrect. USCO permission is required to operate an MOV manually IAW PLP-702 section 4.1.8. PLP-702 section 4.1.8.c states manual action should be taken to get the valve off the seat but operability specifically requires the valve be stroked from the control switch (PLP-702 section 4.1.8.g.(1)). Had the valve not been manually shut then restoring power is all that would be required to restore operability.*

D *Correct. USCO permission is required to operate an MOV manually IAW PLP-702 section 4.1.8. PLP-702 section 4.1.8.g.(1) requires the valve be stroked from the control switch to declare operable.*

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Equipment Control - Knowledge of tagging and clearance procedures.

Importance Rating:	4.1 4.3
Technical Reference:	OMM-014 Rev. 58, step 17, page 15 PLP-702 Rev. 23, step 8, pages 6-7 OPS-NGGC-1301 Rev. 16, page 30
References to be provided:	None
Learning Objective:	
Question origin:	Modified from Bank (ORQ VAL-18.0-R5)
Comments:	OPS-NGGC-1301 section 9.2.1 step 19 allows manual operation of MOVs for seat leakage and refers you to site procedures. OMM-014, section 5.1 (**Operations Clearances**) step 17 contains the operability requirements. PLP-702 contains permission requirements.
SRO justification:	Approving MOV manual operation and making operability calls are the responsibility of the SRO.

Origin:	MODIFIED	Cog Level:	F
Difficulty:	3	Reference:	PLP-702
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.2.13	K/A 2:	

5.1.1 Standard Practices (continued)

b. If configuration control will not be maintained by the Clearance, perform the following:

(1) The Superintendent - Shift Operations shall approve not maintaining configuration control by the clearance. This approval should be noted in the Special Instructions.

(2) The OP electrical/valve lineup or a System Electrical/Valve Lineup Checklist from OMM-001 should be used to document the restoration of all components within the Clearance boundary. This should be completed prior to restoring the Clearance. When the restoration is complete, process the lineup per OMM-001.

12. The Tag Hanger or individual directing the removal of the Operations Clearance should have as a minimum the Clearance Checklist, or a copy, present during installation and removal of tags.

13. When boundary valves leak by their seat and a complete draining cannot be accomplished, the Unit SCO and the Clearance Holder should determine when conditions are safe to perform the required maintenance.

14. If the Clearance involved draining a portion of a system, OMM-001, Refilling and Venting Systems After Draining section, should be referenced. For filling and venting of an entire train or system, the applicable Operating Procedure should be referenced for instructions. A CMT (Comment) step will be added to the clearance checklist for fill and vent steps.

15. If the component that was drained has a heater associated with the drained portion, the fill and vent must be performed prior to energizing the heater.

16. If applicable, specific Sections of procedures can also be specified to assist in removing the Operations Clearance in the correct order and/or verifying appropriate plant conditions exist before returning the equipment to service. If only a portion of a procedure is to be performed, the applicable steps should be clearly identified and the partial procedure performance accomplished per PRO-NGGC-0200. The Unit SCO shall be fully cognizant of the procedure Steps to be performed and verify that plant conditions are appropriate.

17. All Limitorque SMB-00/SB-00 motor operated valves, if manually operated, are required to be stroked electrically from the control switch to be declared operable. All of the applicable SMB-00/SB-00 valves are listed on Attachment 7. (Reference 2.4.8)

4.1 Generic Information on Valve Manipulation (continued)

6. Pipe caps must be installed properly to ensure a leak tight barrier is established. The following guidance is provided for installing pipe caps:

   a. Verify drain valves are fully shut and line is fully drained.

   b. The proper sealant should be used. (sealant is required for borated systems) CHE-NGGC-0045, can provide information as to the acceptability of the sealant being used. (Grafoil is an approved pipe thread tape for stainless steel pipes.)

   c. A pipe wrench should be used to install pipe caps. Pipe caps should not be left hand tight unless the cap is frequently removed. Pipe caps on borated systems should be fully tightened. The use of tape is not required for frequently removed caps.

   d. If pipe or cap threads are found to be damaged, a work order should be intiated.

NOTE: Stem travel observation is not normally an acceptable method for verifying valve position. Stem lengths vary and valves may not be totally open or shut. Valves with vendor supplied stem position indicators may be checked by observing these indicators. If the operator suspects faulty operation of these indicators, the valve should be manually checked, and corrective action taken to restore the position indicator to an operable status.

7. If a valve cannot be positioned or checked because it appears stuck, inform the Unit SCO before making further attempts to reposition the valve. In such cases, the position of the valve stem may have to be used to verify position of the valve.

8. All motor-operated valves will normally be operated by the respective motor. Motor-operated valves may be manually shut or back seated only with Unit SCO permission or under emergency situations. The following guidelines apply to operation of motor operated valves:

   a. A visual inspection will be performed before manually operating a motor operated valve. This inspection should look for damage to the motor operator and to the valve body.

   b. Power will normally be removed from the motor before local operation of the valve to prevent inadvertent actuation of the motor during manual operation.

4.1 Generic Information on Valve Manipulation (continued)

c. Place a caution tag on the valve(s) control switch(es) to denote that manual operation to shut or backseat a valve has occurred, and manual action should be taken to get a valve off its shut/open seat before operating with the motor.

d. If the valve performs a safety related function, declare the valve inoperable unless determined that the manual operation has not affected operability.

e. No motor operated valve should be operated with a cheater bar, valve wrench or other device which increases the mechanical advantage. The use of excessive force can cause catastrophic failure of valve components resulting in injury or death to the Operator.

f. Limitorque valves can not be operated in manual if the clutch key is in direct interference with manual operation lugs. This makes declutching impossible. To eliminate the interference, the hand wheel will need to be rotated so that the clutch can be engaged. This problem is specifically related to SMB-00 and 'SMB-000 Limitorque operators but could include all types of Limitorque valves. (reference NCR 87560)

g. Motor operated valves that have been operated in manual should be operated from the control switch when power is restored.

(1) Refer to OMM-014 for SMB-00/SB-00 valves. The specified valves in OMM-014 are to be declared inoperable until stroked from the control switch. (Reference CAP Item 95H0426)

CAUTION

The RAB Emergency Exhaust Vortex Dampers (Model NH94 Hydramotor) require that power not be removed from the hydramotor when operating manually. The normally shut dump valve must have power to relieve hydraulic pressure.

9. All hydramotor operated valves will normally be operated by the respective hydramotor. Hydramotor operated valves may be manually operated only with Unit SCO permission or under emergency situations. The following guidelines apply to operation of hydramotor operated valves:

a. Turn off power to the hydramotor before operating the handwheel.

9.2.1 Administrative (Cont.)

19. Motor operated valves may be used as an isolation boundary point provided, after the valve has been positioned for the clearance, its power supply is isolated and tagged and the handwheel is tagged to indicate the valve position. The valve should not be manually engaged to check position. This will prevent inadvertent damage to the torque switch and/or valve seat, and prevents the drifting problem associated with some Limitorque operated valves. Since the valve position may not be available after the motor breaker is turned off, concurrent verification may be used to determine valve position before isolating the power supply. If the valve is determined to have seat leakage, it is permissible to manually engage the handwheel and torque the valve shut. Refer to site procedures for positioning and position verification associated with motor operated valves.

R 2.2.7

20. Conditions may exist such that it is not practical for a single Operations Clearance to cover the scope of planned work. It is permissible to use another Operations Clearance in conjunction with the original clearance to perform such work. When more than one Operations Clearance is used to allow work, the other clearance numbers should be listed on the Checklist Cross Reference screen for the existing clearance.

R 2.2.7

21. If items are added to the Checklist Cross Reference, an entry should be made in the Clearance Order Special Instructions indicating the Checklist has cross references listed. Prior to making boundary changes, the Checklist Cross Reference Screen should be checked. Review of the Checklist Cross References is to ensure no other Clearance Order or Checklist is impacted by the change. The review should be completed by an SRO (CNO for CR3) prior to making any change to an established boundary.

QUESTIONS REPORT
for ORQ

1. VAL-18.0-R5 001

SMB-00 Limitorque MOV 1CS-214 has had power removed and it has been closed with the handwheel with approval by the SCO.
The valve was declared inoperable.
Work has been completed and the valve is now ready to be restored to service.

What action(s) is(are) required to declare the valve operable?

A. Restore power.

B. Manually move the valve off the closed seat and restore power.

C. Manually place the valve in it's required position and restore power.

D. Restore power and position the valve electrically.

Reference Operations Clearances section of OMM-014
LOCT 05-01A;
(TTT comments resolved)
06-01-2
11/07/06 Deleted same question from LOR bank.

Reference:	OPS-NGGC-1301	Reference:	OMM-014
Primary K/A:	2.2.13	K/A Value:	3.6/3.8
Sec. K/A:	NA	K/A Value:	NA
ORQ Yes/NO:	YES	NRC Q? Yes/NO:	NO

21. 2009A NRC SRO 021/MODIFIED/F/3/T.S. 3.8.2.1/N/2009A NRC SRO/G2.2.40/

Given the following plant conditions:
- The plant is operating at 100% power
- Maintenance reports that 'A' Battery electrolyte level is overflowing in several cells
- 'A' Station Battery is declared inoperable

Which ONE of the following is the MAXIMUM time allowed before the plant must be in Mode 3, and the reason why?

A. 8 Hours;
A subsequent loss of the remaining DC system would hamper mitigation and control of accident conditions within the facility

B. 14 Hours;
A subsequent loss of the remaining DC system would hamper mitigation and control of accident conditions within the facility

C. 8 Hours;
Sufficient instrumentation and control capability is no longer available to monitor and maintain the unit status.

D. 14 Hours;
Sufficient instrumentation and control capability is no longer available to monitor and maintain the unit status.

Plausibility and Answer Analysis

A *Correct. Category B parameter is outside allowable parameter (overflowing), TS action required in 2 hours or be in at least HSB within the next 6 hours. The reason why is correct based on TS bases for A.C. and D.C. power sources in Modes 1-3.*

B *Incorrect. Plausible because this time applies for an AC ESF bus not fully energized, but this is for reserve power to a DC bus. (8 hours to reenergize AC ESF bus or be in HSB within the next 6). The reason why is correct based on TS bases for A.C. and D.C. power sources in Modes 1-3.*

C *Incorrect. Plausible due to Category B parameter is outside allowable parameter (overflowing), TS action required in 2 hours or be in at least HSB within the next 6 hours. Time is correct, but reason given is basis for DC distribution operability during shutdown or refueling conditions but conditions are plant is in Mode 1.*

D *Incorrect. Plausible this time applies for an AC ESF bus not fully energized but this is for reserve power to a DC bus. (8 hours to reenergize AC ESF bus or be in HSB within the next 6). Reason given is basis for DC distribution operability during shutdown or refueling conditions but conditions are plant is in Mode 1.*

K/A statement - Equipment Control - Ability to apply technical specifications for a system.

Importance Rating:	3.4 4.7
Technical Reference:	Tech Spec 3.8.2.1 pg 3/4 8-12 (page 342) Tech Spec Bases pg B 3/4 8-1 (page 462)
References to be provided:	None
Learning Objective:	ADEL-LP-2.7, Obj 1b
Question origin:	Modified from Bank OIT Exam Bank DCP (12A) 001
Comments:	Revised times for distractors to AC sources times. Original distractor times were not based on either AC or DC Tech Specs
SRO justification:	Requires knowledge of required tech spec bases

Origin:	MODIFIED	Cog Level:	F
Difficulty:	3	Reference:	T.S. 3.8.2.1
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.2.40	K/A 2:	

ELECTRICAL POWER SYSTEMS

3/4.8.2 D.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum, the following D.C. electrical sources shall be OPERABLE:

a. 125-volt Emergency Battery Bank 1A-SA and either full capacity charger, 1A-SA or 1B-SA, and,

b. 125-volt Emergency Battery Bank 1B-SB and either full capacity charger, 1A-SB or 1B-SB.

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

ACTION:

With one of the required D.C. electrical sources inoperable, restore the inoperable D.C. electrical source to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1 Each 125-volt Emergency Battery and charger shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that:

1. The parameters in Table 4.8-2 meet the Category A limits, and

2. The total battery terminal voltage is greater than or equal to 129 volts on float charge.

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1. The parameters in Table 4.8-2 meet the Category B limits.

2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohm, and

3. The average electrolyte temperature of 10 connected cells is above 70° F.

3/4.8.1, 3/4.8.2, AND 3/4.8.3 A.C. SOURCES, D.C. SOURCES, AND ONSITE POWER DISTRIBUTION

The OPERABILITY of the A.C. and D.C power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for: (1) the safe shutdown of the facility, and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix A to 10 CFR Part 50.

The switchyard is designed using a breaker-and-a-half scheme. The switchyard currently has seven connections with the CP&L transmission network; each of these transmission lines is physically independent. The switchyard has one connection with each of the two Startup Auxiliary Transformers and each SAT can be fed directly from an associated offsite transmission line. The Startup Auxiliary Transformers are the preferred power source for the Class 1E ESF buses. The minimum alignment of offsite power sources will be maintained such that at least two physically independent offsite circuits are available. The two physically independent circuits may consist of any two of the incoming transmission lines to the SATs (either through the switchyard or directly) and into the Class 1E system. As long as there are at least two transmission lines in service and two circuits through the SATs to the Class 1E buses, the LCO is met.

During MODES 5 and 6, the Class 1E buses can be energized from the offsite transmission net work via a combination of the main transformers, and unit auxiliary transformers. This arrangement may be used to satisfy the requirement of one physically independent circuit.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss-of-offsite power and single failure of the other onsite A.C. source. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. There are additional ACTION requirements to verify that all required feature(s) that depend on the remaining OPERABLE A.C. sources as a source of emergency power, are also OPERABLE. These requirements allow a period of time to restore any required feature discovered to be inoperable, e.g. out-of-service for maintenance, to an OPERABLE status. If the required feature(s) cannot be restored to an OPERABLE status, the ACTION statement requires the redundant required feature, i.e. feature receiving power from an inoperable A.C. source, to be declared inoperable. The allowed operating times to restore an inoperable required feature to an OPERABLE status is based on the requirements in NUREG 1431. The term "verify", as used in these ACTION statements means to administratively check by examining logs or other information to determine the OPERABILITY of required feature(s). It does not mean to perform the Surveillance Requirement needed to demonstrate the OPERABILITY of the required feature(s).

QUESTIONS REPORT
for OIT Exam Bank

1. DCP (12A) 001

Given the following conditions:
- The plant is at 100% RTP
- Maintenance reports that 'A' Battery electrolyte level is overflowing in several cells
- 'A' Station Battery is declared inoperable

Which ONE of the following is the maximum time allowed before the plant must be in Mode 3, and the reason why?

A. 7 Hours;
A subsequent worst case single active failure would result in loss of all DC subsystems with attendant loss of ESF functions.

B. 8 Hours;
A subsequent worst case single active failure would result in loss of all DC subsystems with attendant loss of ESF functions.

C. 7 Hours;
Sufficient control and instrumentation capability is no longer available to monitor and maintain the unit status.

D. 8 Hours;
Sufficient control and instrumentation capability is no longer available to monitor and maintain the unit status.

A. Incorrect. 2 hours is allowed, but the reason is correct. 1 hour comes from verification of battery cell parameters, but in this case, they are exceeded.
B. Correct. Category B parameter is outside allowable parameter, TS action required in 2 hours due to reasons described.
C. Incorrect. Reason given is basis for DC distribution operability during shutdown or refueling conditions.
D. Incorrect. Time is correct, but reason is for shutdown or refueling conditions.

K/A Statement - Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

Importance Rating:	RO 3.2/ SRO 4.2
Technical Reference:	TS 3.8.2.1
References to be provided:	None
Learning Objective(s):	---
Question origin:	New 2/08 (modified from HBR NRC Exam)
Comments:	---

QUESTIONS REPORT
for OIT Exam Bank

Program:	S	Cog Level:	H
Difficulty:		Reference:	TS 3.8.2.1
Ref. Provided?:	N	Key Words:	
K/A 1:	063G2.2.25	K/A 2:	

22. 2009A NRC SRO 022/NEW/H/2/PEP-330/N/2009A NRC SRO/G2.3.12/

Given the following plant conditions:

- A General Emergency has been declared
- All Emergency Response facilities are activated
- A non-licensed operator must be dispatched from the Operations Support Center to an area with an identified radiation field of 110 Rem/hour in order to isolate the pathway for a large release to the environment
- The operator will only be in the area for approximately 15 minutes

Assuming all of the available operators have volunteered and are fully aware of the risks involved, which ONE of the following operators should be used to perform the task?

A. Worker A is 24 years old and has received an acute dose of 25 Rem TEDE

B. Worker B is 52 years old and has received an acute dose of 30 Rem TEDE

C. Worker C is 29 years old and has received a cumulative dose of 15 Rem TEDE

D. Worker D is 49 years old and has received a cumulative dose of 20 Rem TEDE

Plausibility and Answer Analysis

From PEP-330 attachment 1 Limitations for Lifesaving and Emergency Reentry/Repair Actions

A Incorrect. Individual has volunteered and is aware of the risk (a and b of 6) but this individual should not be used because of age and already used once before (c and d of 6).

B Incorrect. Individual has volunteered and is aware of the risk (a and b of 6) but this individual should not be used because already used once before (d of 6).

C Incorrect. Individual has volunteered and is aware of the risk (a and b of 6) but this individual should not be used because of age (c of 6).

D Correct. Individual has volunteered and is aware of the risk (a and b of 6) and this individual is the appropriate age and never been used before (c and d of 6).

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Radiation Control - Knowledge of radiological safety principles pertaining to licensed operator duties

Importance Rating:	3.2 3.7
Technical Reference:	PEP-330 Rev. 9, page 17
References to be provided:	None
Learning Objective:	
Question origin:	NEW
Comments:	PEP-330, Attachment 1, additional criteria for exposures >25 rem TEDE
SRO justification:	The SEC would make the decision as to who would perform the task

Origin:	NEW	Cog Level:	H
Difficulty:	2	Reference:	PEP-330
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.3.12	K/A 2:	

Attachment 1- Limitations for Lifesaving and Emergency Reentry/Repair Actions
Sheet 1 of 1

1. A Declared Pregnant Woman shall not take part in these actions.

2. Internal exposure should be minimized by the use of the most appropriate respiratory protection or ALARA practice whenever possible, and contamination should be controlled by the use of protective clothing when practical.

3. Emergency worker exposures during lifesaving and repair/reentry efforts should be limited to the following:

DOSE LIMIT (rem TEDE)	ACTIVITY	CONDITION
5	All	All
10	Protecting valuable property	Lower dose not practicable
25	Lifesaving or protection of large populations	Lower dose not practicable
>25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

4. Limit dose to the lens of the eye to three (3) times the above values and doses to any other organ (including thyroid, skin and body extremities) to ten (10) times the above values.

5. Entry into radiation fields of greater than 25 Rem/hr or exposure in excess of 5 Rem TEDE shall not be permitted unless specifically authorized by the SEC.

6. In emergency situations where a exposure in excess of 25 rem TEDE would be required, the following additional criteria shall be considered:

   a. Rescue personnel must be volunteers.

   b. Rescue personnel should have a full awareness of the risks involved (See Attachment 2).

   c. Other things being equal, volunteers above the age of 45 should be selected whenever possible for the purpose of avoiding unnecessary genetic effects.

   d. Exposure under these conditions should be limited to once in a lifetime, and shall be included when calculating future lifetime permissible exposures.

23. 2009A NRC SRO 023/NEW/H/2/AOP-031/N/2009A NRC SRO/G2.3.14/

Given the following plant conditions:
- The plant is in Mode 6 with fuel movement in progress
- The manipulator crane is latched on to a fuel assembly and transporting it to the upender

The following occur:
- Offsite Power is lost
- Safety Buses are reenergized by the EDGs
- The Fuel Handling SRO reports that Refueling Cavity Level is 18' 6" and rapidly lowering
- CNMT Ventilation Isolation radiation monitors have increased to 115 mR/hr

Which ONE of the following lists the action(s) required in accordance with AOP-031, Loss of Refueling Cavity Integrity for present plant conditions?

A. Place the fuel assembly in the Reactor Vessel **AND** evacuate unnecessary personnel

B. Place the fuel assembly in a Spent Fuel Pool rack **AND** evacuate unnecessary personnel

C. Evacuate **ALL** personnel since no method is available for personnel to move the fuel assembly

D. Evacuate **ALL** personnel since radiation levels are too high for personnel to safely store the fuel assembly

Plausibility and Answer Analysis

From AOP-031 and AOP-031-BD

A *Incorrect. Unnecessary personnel would be evacuated while others stored the fuel assembly if radiation level was less than 150 mR/hr AND offsite power was available, but offsite power has been lost. The reactor vessel is an approved storage location.*

B *Incorrect. Unnecessary personnel would be evacuated while others stored the fuel assembly if both radiation level was less than 150 mR/hr AND offsite power was available, but offsite power has been lost. A SFP rack is an approved storage location.*

C *Correct. Offsite power has been lost and no method is available to store the fuel assembly so all personnel will be evacuated to minimize their exposure to this radiation level while no work can be performed.*

D *Incorrect. All personnel would be evacuated if radiation level exceeded 150 mR/hr due to exposure, but that level has not been exceeded. Other procedures (AOP-013) that are not in progress for this event do evacuate at 100 mR/hr.*

K/A statement - Radiation Control - Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities

Importance Rating:	3.4 3.8
Technical Reference:	AOP-031 Rev. 16, pages 4 & 34 AOP-031-BD Rev. 3, page 45
References to be provided:	None
Learning Objective:	AOP-LP-3.31, Obj 3
Question origin:	NEW
Comments:	(K/A Match) A Radiation Hazard has been created by the lowering refueling cavity level and the candidate must recall the strategy in an abnormal condition to protect individuals in the CNMT and FHB.
SRO justification:	Requires assessing plant conditions and detailed recollection of the strategy in Attachment 1 of AOP-031 and its background document to come to the correct answer.

Origin:	NEW	Cog Level:	H
Difficulty:	2	Reference:	AOP-031
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.3.14	K/A 2:	

INSTRUCTIONS	RESPONSE NOT OBTAINED

3.0 OPERATOR ACTIONS

NOTE

This procedure contains no immediate actions.

☐ **1. VERIFY** one CSIP RUNNING.	☐ **1. GO TO** Step 3.
☐ **2. ADJUST** CSIP flow to a maximum of 150 gpm **AND ATTEMPT** to maintain Refueling Cavity level.	

NOTE

Loss of Refueling Cavity integrity may require initiation of the HNP Emergency Plan. **[C.1]**

☐ **3. REFER TO** PEP-110, Emergency Classification and Protective Action Recommendations, **AND ENTER** the EAL Network at entry point X.	

☐ **4. CHECK** ALL fuel assemblies are safely positioned in one of the following storage locations:
• Reactor vessel
• Spent Fuel Pool fuel rack
• An area isolated from the Refueling Cavity by:
  • Spent Fuel Pool gate
  OR
  • Fuel Transfer Tube Gate Valve
	✸☐ **4. IMPLEMENT** Attachment 1, Placing Fuel in Safe Storage, while continuing with this procedure.

Attachment 1
Sheet 1 of 2
Placing Fuel in Safe Storage

INSTRUCTIONS	RESPONSE NOT OBTAINED
☐ **1.** **EVACUATE** all unnecessary personnel from CNMT and FHB.	
☐ **2.** **DIRECT** that each fuel assembly be placed in the nearest safe storage location listed below: • Reactor vessel • A Spent Fuel Pool fuel rack • An area physically isolated from the Refueling Cavity.	
☐ **3.** **CHECK** offsite power available.	☐ **3.** **EVACUATE** all personnel from CNMT and FHB **AND DIRECT** Security to verify all personnel are clear.
4. **CONTACT** Health Physics **AND INFORM** them of the following (as known): ☐ • Existence of Refueling Cavity leak ☐ • Affected area(s) ☐ • Evacuated area(s) ☐ • Any elevated radiation levels	
☐ **5.** **DIRECT** Health Physics to monitor radiation levels in CNMT areas where plant personnel are stationed.	

Attachment 1—Placing Fuel in Safe Storage

Step	Description
3	**I: Check offsite power available.** **RNO: Evacuate all personnel from CNMT and FHB, and direct Security to verify all personnel are clear.** If offsite power is not available, the Manipulator Crane will lose power. With no method of moving fuel assemblies available and Refueling Cavity level dropping, all personnel are evacuated, including refueling personnel, to minimize personnel exposure as described above. Because radiation levels could rise to levels capable of causing serious illness or death, Security verifies that all personnel are clear.
4	**I: Contact Health Physics and inform them of the following (as known):** • **Existence of Refueling Cavity leak** • **Affected area(s)** • **Evacuated area(s)** • **Any elevated radiation levels** Health Physics is responsible for controlling personnel access to CNMT, and for monitoring radiological conditions in order to maintain habitability from a radiological standpoint. The operator is directed to provide them with the information needed to facilitate those functions.
5	**I: Direct Health Physics to monitor radiation levels in CNMT areas where plant personnel are stationed.** Radiation levels need to be monitored in order to determine how long personnel can safely remain to perform activities related to event mitigation. Health Physics has the capability of performing this function, and is assigned that responsibility.
N6	**I: CNMT Ventilation Isolation radiation monitors are set to alarm at less than or equal to 150 mR/hr for fuel movement.** This provides the operator with one method for detecting rising radiation levels without Health Physics assistance. The radiation monitor is adjusted to this setpoint for refueling in accordance with Technical Specification 3.3.3.1 Table 3.3-6 Item 1a.

24. 2009A NRC SRO 024/NEW/F/2/PEP-230/N/2009A NRC SRO/G2.4.30/

Given the following plant conditions:

0815 Site Area Emergency declared
0829 State and County officials notified
0848 SEC upgraded declaration to a General Emergency
0855 A release to offsite is confirmed to be in progress

Which ONE of the following is the NEXT notification that is required IAW PEP-230, Control Room Operations?

	Who	When
A.	NRC	0915
B.	NRC	0929
C.	State and County	0903
D.	State and County	0910

Answer and plausibility of distractors

A Incorrect. Plausible if candidate does not recognize that an upgrade in classification resets the 15 minute clock on notifications to state and county.

B Incorrect. Plausible if candidate does not recognize that an upgrade in classification resets the 15 minute clock on notifications and believes the 1 hour on NRC notification is based off of 1 hour from State and County notifications vice event time.

C Correct. An upgrade in emergency classification resets the 15 minute clock on notifying the State and County officials.

D Incorrect. Plausible if candidate believes that a release in progress resets the 15 minute clock on notifying State and County officials.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Emergency Procedures/Plans - Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.

Importance Rating:	2.7 4.1
Technical Reference:	PEP-310 Rev. 23, page 3
References to be provided:	None
Learning Objective:	
Question origin:	NEW
Comments:	
SRO justification:	Requires assessment of follow up notifications and Emergency Action Level Upgrade notification. Expected that the Emergency Communicator would understand 15 minutes for first notification but this question is evaluating follow up and upgrade.

Origin:	NEW	Cog Level:	F
Difficulty:	2	Reference:	PEP-230
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.4.30	K/A 2:	

1.0 PURPOSE

The purpose of this procedure is to provide instructions and documentation for:

1. Requesting assistance from offsite support organizations (Immediate Response Organizations).
2. Notifying HNP Emergency Response Organization (ERO) personnel by automated and manual means.
3. Notification of offsite Emergency Response Organizations and authorities.
4. Notifications to the Nuclear Electric Insurance Limited (NEIL), Institute of Nuclear Power Operations (INPO) and American Nuclear Insurers (ANI).

2.0 INITIATING CONDITIONS

1. An emergency has been declared.
2. An event has occurred which requires a response from an offsite support organization (such as fire, medical, local law enforcement or the ERO).

3.0 GENERAL

3.1 Regulations and Other Commitments

1. Alerting of on site personnel via Public Address announcement is required within 15 minutes of event declaration.
2. Federal Regulations state "A licensee shall have the capability to notify responsible state and local governmental agencies within 15 minutes after declaring an emergency." This is satisfied when contact is made with the first agency (state or county).
3. Notification of event declaration to the NRC is required "as soon as possible" and no later than 60 minutes after an event declaration.
4. Activation of the NRC ERDS data link is required within 60 minutes of an Alert or higher event declaration.
5. Notification to Institute of Nuclear Power Operations (INPO) and American Nuclear Insurers (ANI) must occur within four (4) hours after declaration of an Alert, Site Area Emergency, or General Emergency.
6. Nuclear Electric Insurance Limited (NEIL) notification is only applicable to events involving equipment damage.

R 5.2.9

7. The NRC Authentication Code is provided daily to the Main Control Room (MCR). The NRC will provide this code during the morning plant status update. The code will be valid at 0800. Until then the MCR will use the previous day's code.

25. 2009A NRC SRO 025/NEW/F/4/T.S 3.5.2 BASES/N/2009A NRC SRO/G2.4.46/

Given the following plant conditions:
- The plant is operating at 100% power
- The 'C' CSIP is under clearance with its breaker racked out for motor replacement
- The 'A' CSIP has suffered a bearing failure and is being placed under clearance
- The 'A' CSIP breaker has been racked out to support the clearance

Which ONE of the following describes the expected alarm for these conditions and the Tech Spec bases for the ECCS Subsystems Limiting Conditions for Operations?

A. ALB-001-6-5, ESF SYS TRN A Bypassed OR Inoperable;
To supply sufficient core cooling to limit peak cladding temperature to within acceptable limits for all postulated break sizes

B. ALB-001-6-5, ESF SYS TRN A Bypassed OR Inoperable;
To supply sufficient borated water to keep the recovered core subcritical during the early reflooding phase of a Large Break LOCA

C. ALB-006-1-3, CHRG Pumps A Trip OR Close CKT Trouble;
To supply sufficient core cooling to limit peak cladding temperature to within acceptable limits for all postulated break sizes

D. ALB-006-1-3, CHRG Pumps A Trip OR Close CKT Trouble;
To supply sufficient borated water to keep the recovered core subcritical during the early reflooding phase of a Large Break LOCA

Plausibility and Answer Analysis

A Correct. ALB-01-6-5, ESF SYS TRN A Bypassed OR Inoperable will be received and locked in during these conditions. The Tech Spec Bases listed is correct for ECCS Subsystems.

B Incorrect. ALB-01-6-5, ESF SYS TRN A Bypassed OR Inoperable will be received and locked in during these conditions. The Tech Spec Bases listed is incorrect but this is plausible because it is correct for the ECCS Accumulators.

C Incorrect. ALB-06-1-3, CHRG Pumps A Trip OR Close CKT Trouble is plausible because this alarm will be received during the racking process when the control power is removed but will clear when the breaker is racked out. The Tech Spec Bases listed is correct for ECCS Subsystems.

D Incorrect. ALB-06-1-3, CHRG Pumps A Trip OR Close CKT Trouble is plausible because this alarm will be received during the racking process when the control power is removed but will clear when the breaker is racked out. The Tech Spec Bases listed is incorrect but plausible because it is correct for the ECCS Accumulators.

QUESTIONS REPORT

for 2009A NRC SRO ONLY QUESTIONS REV1

K/A statement - Emergency Procedures/Plans - Ability to verify that the alarms are consistent with the plant conditions.

Importance Rating:	4.2 4.2
Technical Reference:	APP-ALB-001 Rev. 18, page 23 APP-ALB-006 Rev. 21, page 5 APP-ESF-A Rev. 10, page 7 Tech Spec Bases 3/4.5.2 and 3/4.5.3 pg B 3/4 5-1,2 (pages 446, 447)
References to be provided:	None
Learning Objective:	SIS Obj 10c
Question origin:	NEW
Comments:	
SRO justification:	Requires assessing plant conditions and prescribing a procedure to mitigate as all actions occur

Origin:	NEW	Cog Level:	F
Difficulty:	4	Reference:	T.S 3.5.2 BASES
Ref. Provided?:	N	Key Words:	2009A NRC SRO
K/A 1:	G2.4.46	K/A 2:	

6-5

DEVICES: NONE **SETPOINT**: N/A

ESF SYS TRN A BYPASSED OR INOPERABLE

REFLASH: NO

OPERATOR ACTIONS:

1. **CONFIRM** alarm by checking for the following:
   - One or more lighted windows on ESF Bypass Panel A
   - Abnormal MCB indications for the system indicated in alarm on ESF Bypass Panel A
2. **VERIFY** Automatic Functions: None
3. **PERFORM** Corrective Actions:
   a. **REFER TO** APP-ESF-A for the window indicated in alarm on ESF Bypass Panel A.
   b. **WHILE** ALB-001-6-5 is ALARMED,
      MONITOR ESF Bypass Panel A
      AND VERIFY that additional alarms received on that panel are noted in a timely manner.
   c. **IF** ALB-001-6-5 is ALARMED **AND** no windows are illuminated on ESF Bypass Panel A,
      THEN:
      (1) **PRESS** the test pushbutton on ESF BYPASS Panel A to perform a lamp check,
          AND CHECK for burned out bulbs.
      (2) **IF** a burned out bulb is identified,
          THEN PERFORM corrective actions a and b above for the alarm with a burned out bulb.
      (3) **CHECK** power available to ARP-7 at DP-1A-2-27.
      (4) **IF** power is available **AND** no bulbs are burned out,
          THEN INITIATE corrective maintenance on the alarm circuitry.
   d. **IF** maintenance is to be performed,
      THEN REFER TO OWP-ESF.

CAUSES:

1. Alarm condition on Engineered Safeguard Feature Bypass Panel A
2. Loss of power to ARP-7
3. Alarm circuit malfunction

REFERENCES:

1. APP-ESF-A
2. Technical Specification 3.3.2
3. 6-B-401 0585
4. OWP-ESF

1-3

DEVICES: 62 relay in charging spring motor circuit

86/HR lockout relay

SETPOINT: N/A

CHRG PUMPS A TRIP OR CLOSE CKT TROUBLE

REFLASH: NO

OPERATOR ACTIONS:

1. **CONFIRM** alarm by checking the following:
   - EI-221SA or EI-223SA, breaker current indication
   - Pump status indication

2. **VERIFY** Automatic Functions:
   - Charging pump will trip on overcurrent

3. **PERFORM** Corrective Actions:
   a. **REFER TO** OP-156.02, AC Electrical Distribution, **AND INVESTIGATE** tripped breaker prior to reclosure.
   b. **CHECK** for breaker malfunction or testing.
   c. **IF** necessary, **THEN START** another charging pump.
   d. **REFER TO** Technical Specifications 3.1.2.3, 3.1.2.4, 3.5.2, and 3.5.3, **AND INITIATE** action where appropriate.

CAUSES:

1. Breaker for Charging Pump 1A-SA or 1C-SAB in test, fails to close, or control power off
2. Instantaneous overcurrent or rate of rise relay for Charging Pump 1A-SA or 1C-SAB energized
3. AC time overcurrent relay for Charging Pump 1A-SA or 1C-SAB energized
4. Alarm circuit malfunction

REFERENCES:

1. Technical Specifications 3.1.2.3, 3.1.2.4, 3.5.2, 3.5.3
2. 6-B-401 0225
3. OP-156.02, AC Electrical Distribution

2-1

DEVICES: None applicable **SETPOINT**: N/A

SAFETY INJECTION SYSTEM

REFLASH: NO

OPERATOR ACTIONS:

1. **CONFIRM** alarm using:
   a. Position indication for the following:
      (1) 1CS-291 SA, Suction From RWST LCV-115B
      (2) 1SI-4 SA, Boron Injection Tank Outlet
   b. CSIP 1A-SA and 1C-SAB indicating lights
   c. RHR Pump 1A-SA indicating lights

2. **VERIFY** Automatic Functions: None

3. **PERFORM** Corrective Actions:
   a. **Locally CHECK** status of the following breakers:
      (1) 1A-SA-7 and 1A-SA-5 (CSIPs)
      (2) 1A35-SA-8D (1CS-291 SA)
      (3) 1A31-SA-4C (1SI-4 SA)
      (4) 1A2-SA-5A (RHR Pump 1A-SA)

CAUSES:

1. Both 1A-SA-5 (for 1A-SA CSIP) and 1A-SA-7 (for 1C-SAB CSIP) racked out or in TEST position
2. 1A2-SA5A (for RHR Pump 1A-SA) racked out or in TEST position
3. Motor or control circuit power loss to 1CS-291 SA or 1SI-4 SA
4. Alarm circuit failure
5. Performance of OWP-SW

REFERENCES:

1. Technical Specifications 3.1.2.2, 3.1.2.3, 3.1.2.4, 3.5.2, 3.5.3, 3.9.8.1, 3.9.8.2
2. 2166-B-401 0221, 0242, 0321, 0407, 0409, 0586, 0602
3. OWP-SW, Service Water

3/4.5 EMERGENCY CORE COOLING SYSTEMS

BASES

3/4.5.1 ACCUMULATORS

The OPERABILITY of each Reactor Coolant System (RCS) accumulator ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration and pressure ensure that the assumptions used for accumulator injection in the safety analysis are met. The value of 66% indicated level ensures that a minimum of 7440 gallons is maintained in the accumulators. The maximum indicated level of 96% ensures that an adequate volume exists for nitrogen pressurization.

The accumulator power operated isolation valves are considered to be "operating bypasses" in the context of IEEE Std. 279-1971, which requires that bypasses of a protective function be removed automatically whenever permissive conditions are not met. In addition, as these accumulator isolation valves fail to meet single failure criteria, removal of power to the valves is required.

The limits for operation with an accumulator inoperable for any reason except an isolation valve closed or boron concentration not within limits minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on the available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. In addition, current analysis demonstrates that the accumulators do not discharge following a large steam line break for HNP. Therefore, 72 hours is permitted to return the boron concentration to within limits. If a closed isolation valve cannot be immediately opened, the full capability of one accumulator is not available and prompt action is required to place the reactor in a mode where this capability is not required.

3/4.5.2 AND 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period.

BASES

ECCS SUBSYSTEMS (Continued)

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

The limitation for a maximum of one charging/safety injection pump to be OPERABLE and the Surveillance Requirement to verify one charging/safety injection pump OPERABLE below 325°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.