

**Final Submittal**  
(Blue Paper)

ST. LUCIE 2006-301

**COMBINED RO/SRO WRITTEN EXAM  
WITH KAS, ANSWERS, REFERENCES,  
AND ANALYSIS**

**ST. LUCIE MARCH/APRIL 2006-301 EXAM**

**05000335/2006301 AND 05000389/2006301**

**MARCH 20 - 29, 2006 AND APRIL 6, 2006**

**U.S. Nuclear Regulatory Commission**

**St. Lucie SRO Written Examination**

**Applicant Information**

Name:

Date:

Facility/Unit:

Region: II

Reactor Type: CE

Start Time:

Finish Time:

**Instructions**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with a 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

**Applicant Certification**

All work done on this examination is my own. I have neither given nor received aid.

\_\_\_\_\_  
Applicant's Signature

**Results**

RO/SRO-Only/Total Examination Values      \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Points

Applicant's Score      \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Points

Applicant's Grade      \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Percent

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	007.EK2.03	_____
	Importance Rating	3.5	_____

Knowledge of the interrelations between Reactor Trip and reactor trip status panel

Proposed Question: Common 1

A reactor trip has occurred on Unit 1.

Which ONE (1) of the following describes the reactor trip indication available on the Reactor Trip Status Panel?

- A. UV lights OFF; Shunt lights ON; TCB GREEN lights ON
- B. UV lights ON; Shunt lights OFF; TCB GREEN lights ON
- C. UV lights OFF; Shunt lights ON; TCB WHITE lights ON
- D. UV lights ON; Shunt lights OFF; TCB WHITE lights ON

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. UV and Shunt light indication is switched.
- C. Incorrect. TCB white light goes out. Green light is lit on reactor trip
- D. Incorrect. TCB white light goes out, and UV and shunt lights are reversed

Technical Reference(s): RPS SD pg 30 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: N/A

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge     X      
Comprehension or Analysis \_\_\_\_\_10 CFR Part 55 Content: 55.41     7      
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	009.EA1.09	
	Importance Rating	3.6	

Ability to operate and/or monitor the RCP during a small break LOCA.

Proposed Question: Common 2

Given the following:

- Unit 2 Reactor was tripped from full power.
- 160 gpm LOCA existed at time of trip.
- Actions of 2-EOP-03, LOCA, are in progress.
- RCS That is 515°F.
- RCS pressure 1700 psia.
- RVLMS Level 4-8 indicate covered.
- 2-EOP-99, Appendices/Figures/Tables/Data Sheets, Appendix J, Restoration of CCW and CBO to the RCPs has been completed.

Which ONE (1) of the following actions must be performed for the above conditions?

- A. Stop the RCS depressurization.
- B. Reduce RCS pressure, regardless of subcooling.
- C. Ensure one (1) RCP secured in each loop.
- D. Stop ALL four (4) RCPs.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Continuous depressurization is required to place RCS on Shutdown Cooling. Plausible if candidate thinks that break flow is under control.
- B. Incorrect. Approximately 100°F subcooling exists at this point; pressure could be reduced to < 1000 psia and still meet subcooling requirements based on current temperature. Plausible if candidate thinks that pressure must be reduced immediately to reduce break flow.
- C. Correct. RCP trip strategy for a LOCA states 2 RCPs should be secured when RCS < 1736 psia (SIAS setpoint).
- D. Incorrect. Minimum subcooling still exists to operate 2 RCPs. Plausible if candidate thinks that inadequate subcooling exists.

Technical Reference(s): EOP-03, LOCA (Attach if not previously provided)Proposed references to be provided to applicants during examination: Steam Tables, Figure 1ALearning Objective: 0702824-06 (As available)

Question Source: Bank # 1023

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7, 10

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	022.AG2.2.22	_____
	Importance Rating	3.4	_____

Conduct of Operations: Knowledge of limiting conditions for operations and safety limits for loss of Reactor Coolant Makeup.

Proposed Question: Common 3

Unit 2 is at full power when the following conditions occur:

- Normal Charging flow was lost due to a rupture in Containment downstream of V2429, Charging Pump Disch at Penetration #27 Isolation.
- The alternate Charging flowpath to the RCS through the HPSI header is being aligned.

Which ONE (1) of the following Limiting Conditions for Operation (LCO) will require the earliest Technical Specification action during this alignment and why?

- LCO 3.0.3, Limiting Conditions for Operation, due to all Charging pumps placed in STOP.
- LCO 3.5 2, Emergency Core Cooling Systems, due to the B HPSI header being *inoperable*.
- LCO 3.1.2.2, Reactivity Control Systems, due to loss of a boron injection flowpath.
- LCO 3.4.3, Pressurizer, due to the reduction in pressurizer level from RCP Controlled Bleed-Off flow with no charging flow.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Tech Spec 3.0.3 is applicable when all 3 Charging Pumps are in STOP.
- B. Incorrect. The A HPSI header is *inoperable* when using this alignment. Plausible if the candidate thinks that the B header is used for the alternate charging flowpath.
- C. Incorrect. A boron injection flowpath is not lost during this alignment. Plausible if the candidate thinks that loss of the normal charging flowpath constitutes loss of an injection flowpath.
- D. Incorrect. Pressurizer level LCO will eventually require action, but 3.0.3 will be most limiting

Technical Reference(s): 2-ONP-02.03, Charging and Letdown. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X \_\_\_\_\_  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10 \_\_\_\_\_  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	025.AK2.02	
	Importance Rating	3.2	

Knowledge of the interrelations between a Loss of RHR System and the RHR Pumps.

Proposed Question: Common 4

Given the following conditions on Unit 1:

- Mid Loop Operations are in progress
- LPSI Pump 1A is in service providing Shutdown Cooling.
- LPSI Pump 1B is in Standby.
- LPSI Pump amperage has just started oscillating.
- NO action has been taken by the crew.
- The Unit Supervisor enters ONP-1-0440030, Shutdown Cooling Off-Normal.

Which ONE (1) of the following describes the action(s) required to mitigate the event in accordance with ONP-1-0440030?

- A. Raise LPSI Pump flow to increase pump cooling and stabilize amperage.
- B. Lower LPSI Pump flow to increase NPSH and stabilize amperage.
- C. Start and align LPSI Pump 1B for Shutdown Cooling and Stop LPSI Pump 1A.
- D. Start and align LPSI Pump 1B to for Shutdown Cooling and equalize LPSI flow between both trains.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Raising flow would increase the cavitation already occurring
- B. Correct. Lower flow. If amps do not stabilize, trip the pump
- C. Incorrect. Subsequent action if pump continues to operate erratically
- D. Incorrect. Would start second pump and equalize flow only if cooldown rate could not be maintained and heat load was higher than available cooling capacity

Technical Reference(s): ONP 1-0440030 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 0702814-09 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_

New X

Changed values for time after shutdown and initial RCS temperature (see Comments).

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	026.AA2.03	
	Importance Rating	2.6	

Ability to determine and interpret the following as they apply to Loss of Component Cooling Water: Valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition.

Proposed Question: Common 5

Unit 2 is at 100% power when a 'B' side CCW leak occurs.

- Low level alarms on both compartments for the CCW Surge Tank were received.
  - LA-10 – CCW SURGE TANK COMPARTMENT A LEVEL LOW
  - LB-10 - CCW SURGE TANK LEVEL HIGH/ COMPARTMENT B LEVEL LOW
- The leak was subsequently isolated and CCW Surge Tank level has returned to normal.
- NO other actions have been taken

Which ONE (1) of the following describes the expected configuration of the CCW system?

- A. Only the 'N' header valves from the 'A' side closed separating the 'A' CCW header from the 'B' side CCW header. The 'N' header valves automatically re-opened when the low level cleared.
- B. Only the 'N' header valves from the 'B' side closed separating the 'A' CCW header from the 'B' side CCW header. The 'N' header valves will have to be manually re-opened.
- C. All the 'N' header valves closed separating the 'A' CCW header from the 'B' CCW header. The 'N' header valves automatically re-opened when the low level cleared.
- D. All the 'N' header valves closed separating the 'A' CCW header from the 'B' CCW header. The 'N' header valves will have to be manually re-opened.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Both CCW 'N' header valves close. The valves have no feature to automatically re-open. Plausible if candidate thinks only the A side N header valves close.
- B. Incorrect. Surge tank will lower on both headers, closing all 'N' header valves. Plausible if candidate thinks the B side N header valves close.
- C. Incorrect. The valves have no feature to automatically re-open. Plausible if candidate thinks the valves re-open automatically.
- D. Correct.

Technical Reference(s): 07111209,CCW SD (Attach if not previously provided)

2-ARP-01-LA10 Alarm Response

2-ARP-01-LB10 Alarm Response

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702209-08 (As available)

Question Source: Bank # 356

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam 2002

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	027 AK3.03	
	Importance Rating	3.7	

Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: Actions contained in EOP for Pressurizer Pressure Control malfunctions.

Proposed Question: Common 6

What is the reason for verifying that spray line temperatures are approximately equal when isolating the spray valves during a Pressurizer Pressure Control malfunction?

- A. Divergence of spray line temperatures may indicate a stuck open spray valve. The stuck open valve is identified as being at the higher temperature and approaching Tcold.
- B. Similar spray line temperatures could indicate that both spray valves were open. The stuck open valves are identified as being between Pressurizer temperature and Tcold.
- C. Divergence of spray line temperatures may indicate a stuck open spray valve. The stuck open valve is identified as being at the lower temperature and approaching Tcold.
- D. Similar spray line temperatures could indicate that both spray valves were closed. The closed valves are identified as being between Pressurizer temperature and Tcold.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. First part of distractor is true; however, spray line temperature will approach Tcold.
- C. Incorrect. The stuck valve spray line will be at a higher temperature; however, spray line temperature will approach Tcold.
- D. Incorrect. First part of distractor is true, however, if the valves were closed you would expect temperature to be between Tcold and ambient.

Technical Reference(s): 2-0120035, PZR Pressure and Level Off Normal (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X \_\_\_\_\_  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 5, 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	029 EK1.02	
	Importance Rating	2.6	

Knowledge of the operational implications of the following concepts as they apply to ATWS: Definition of reactivity

Proposed Question: Common 7

An ATWS is in progress.

During the performance of EOP-15, Functional Recovery, Reactivity Control, Success Path 2, boration flow should...

- A. NOT be stopped until adequate shutdown margin is verified during subsequent actions.
- B. be stopped when Wide Range Channels are less than  $5 \times 10^{-4}\%$  and lowering.
- C. NOT be stopped until shutdown margin is adequate for Cold Shutdown conditions.
- D. be stopped when the amount of boron equal to the stuck rods has been added.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Boration must continue until adequate SDM is verified.
- B. Incorrect. Plausible considering this is one of the conditions for meeting the Reactivity Control Success Path; however, emergency boration flow is continued until adequate SDM is verified.
- C. Incorrect. SDM does not have to be adequate for cold shutdown conditions. SDM must be verified for current conditions
- D. Incorrect. Plausible condition as candidate may think that this is adequate to verify SDM.

Technical Reference(s): 1-EOP-15, Functional Recovery, Reactivity Control (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702828-03 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 8, 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	038 EA1.04	_____
	Importance Rating	4.3	_____

Ability to operate and monitor the following as they apply to a SGTR: PZR spray, to reduce coolant system pressure.

Proposed Question: Common 8

Unit 2 conditions:

- A SGTR in 2A Steam Generator resulted in a SIAS.
- During the bus transfer a loss of off-site power occurred.
- All vital equipment is being powered from their respective Emergency Diesel Generators.
- RCS cooldown is in progress. Temperatures are as follows:
  - REP CET is 450°F; Loop 2A That is 440°F; Loop 2B That is 445°F.
- 2A Steam Generator pressure is 750 psia.

Which ONE (1) of the choices completes the following statement regarding RCS depressurization for the current plant conditions in accordance with 2-EOP-04, SGTR?

Depressurize the RCS to no less than \_\_\_\_\_ psia using \_\_\_\_\_ Spray.

- A. 700; Main
- B. 700; Auxiliary
- C. 850; Main
- D. 850; Auxiliary

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Correct value but no RCP's are running for Main Spray.
- B. Correct. First choice after Main Spray and within 50 psi of affected SG pressure.
- C. Incorrect. Pressure below MSSV basis value in EOP-04 but not within 50 psi of affected SG pressure and no RCP's running.
- D. Incorrect. First choice after Main Spray and pressure below MSSV basis value but not within 50 psi of affected SG pressure.

Technical Reference(s): 2-EOP-04, pg. 11 (Step 11.A) (Attach if not previously provided)  
2-EOP-99, Appendices  
/Figures/Tables/Data Sheets,  
Figure 1A

Proposed references to be provided to applicants during examination: 2-EOP-99, Appendices  
/Figures/Tables/Data  
Sheets, Figure 1A

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	054 AK3.04	_____
	Importance Rating	4.4	_____

Knowledge of the reasons for the following responses as they apply to the loss of Main Feedwater: Actions contained in EOPs for loss of MFW.

Proposed Question: Common 9

The following conditions exist during performance of 1-EOP-01, Standard Post Trip Actions:

- 1B AFW Pump is OOS.
- Unit 1 tripped from 100% power.
- Two minutes after the trip the 1AB 125 VDC bus de-energized due to an electrical fault.
- Both Main Feed Pumps tripped due to low flow and CANNOT be restarted.

Which ONE (1) of the following are steps that must be taken in accordance with 1-EOP-01, and why?

- A. Close the PORV valves to preserve RCS inventory.
- B. Secure one RCP in each loop to minimize heat input into the RCS.
- C. Manually control Pressurizer heaters and spray to establish adequate subcooling.
- D. Verify that 1A and 1C AFW Pump have started and are providing adequate AFW flow to ensure secondary heat sink requirements are met.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Would be correct for loss of A or B DC bus. Plausible if candidate thinks PORVs are powered from Bus 1AB.
- B. Correct. Due to loss of C AFW pump and B AFW pump OOS.
- C. Incorrect. Would be correct if PORVs were open then re-closed as a result of the loss of A or B DC bus.
- D. Incorrect. DC Bus 1AB supplies control power to 1C AFW pump. Will not automatically start and cannot be started from RTGB

Technical Reference(s): 1-EOP-01, SPTA (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 879  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4, 10  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	055 EA1.05	_____
	Importance Rating	3.3	_____

Ability to operate and monitor the following as they apply to a Station Blackout: Battery, when approaching fully discharged.

Proposed Question: Common 10

Unit 2 is in a station blackout condition. DC loads have been minimized.

Which ONE (1) of the choices correctly completes the following statement regarding SIAS if the blackout lasts for several hours?

As 125 VDC battery voltage lowers, SIAS

- A. will initiate automatically.
- B. may be manually actuated ONLY.
- C. will be automatically blocked on undervoltage to prevent spurious actuations.
- D. must be manually blocked to prevent spurious actuations.

Proposed Answer: A

Explanation (Optional):

- A. Correct. SIAS is a "fail safe system" that will initiate on loss of power.
- B. Incorrect. SIAS will not fail "as-is".
- C. Incorrect. Some components (AFAS) may isolate on UV but SIAS will not.
- D. Incorrect. Will not manually block signals.

Technical Reference(s): 2-ARP-01-B50 (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X \_\_\_\_\_  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7 \_\_\_\_\_  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	056 AK3.02	_____
	Importance Rating	4.4	_____

Knowledge of the reasons for the following responses as they apply to Loss of Offsite Power: Actions contained in EOP for loss of offsite power.

Proposed Question: Common 11

A Loss of Off-Site Power has occurred on Unit 1.

Which ONE (1) of the following describes the minimum action required and reason for the action to ensure the Maintenance of Vital Auxiliaries safety function is satisfied in accordance with 1-EOP-09, Loss of Off-Site Power?

- A. Verify both vital 4.16 KV buses and both vital DC buses are energized to allow control and monitoring of all other safety functions.
- B. Verify at least one vital 4.16 KV bus AND one vital DC bus energized to ensure RCP seal cooling is maintained to prevent loss of RCS inventory.
- C. Verify at least one vital 4.16 KV bus AND one vital DC bus energized to allow control and monitoring of all other safety functions.
- D. Verify both vital 4.16 KV buses and both vital DC buses are energized to ensure RCP seal cooling is maintained to prevent loss of RCS inventory.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Only 1 train of AC and DC vital power are required to meet minimum safety function.
- B. Incorrect. Reason is for maintenance of all other safety functions. Isolation of RCP seal cooling is a priority of station blackout, not LOOP.
- C. Correct.
- D. Incorrect. Number of buses and reason for performing the action are incorrect.

Technical Reference(s): EOP-9, LOOP/LOFC Basis (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702835-04 (As available)

Question Source: Bank # \_\_\_\_\_ Added reason to Stem & Distractors.  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 5, 10  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	057 AA2.01	_____
	Importance Rating	3.7	_____

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: Safety Injection Tank pressure and level indicators

Proposed Question: Common 12

Unit 2 was at 100% power, all systems in normal configuration when the following events occurred:

- Numerous secondary annunciators in alarm.
- Generator megawatts decreasing.
- Steam Generator levels decreasing.
- DEH operator auto light OFF.

Which ONE (1) of the following describes the failure that, by itself, has caused the current plant condition?

Loss of:

- A. DC Bus 2A/2AA.
- B. the SUPS 120 VAC Vital bus.
- C. the 120 VAC Instrument Bus 2MB.
- D. 480 V MCC AB.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Loss of DC Bus would cause alarms but would not cause total loss of power to SUPS .
- B. Correct.
- C. Incorrect. Would cause secondary alarms, but not loss of megawatts.
- D. Incorrect. Would lose preferred source to SUPS, but DC would back up.

Technical Reference(s): 2-ONP-49.01, SUPS Non-Safety Vital AC or Fire and Security Inverter Malfunction (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 1956  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7, 10  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	058 AK1.01	_____
	Importance Rating	2.8	_____

Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: Battery charger equipment and instrumentation.

Proposed Question: Common 13

How can an operator determine if a Unit 1 vital battery bus is powered from the battery instead of the battery charger?

- A. An ammeter on RTGB 101 shows a discharge rate when on the battery.
- B. A white light on RTGB 101 is lit only when the battery charger is in service.
- C. A voltmeter on RTGB 101 shows a lowering voltage.
- D. An ammeter on RTGB 101 shows a discharge rate and a voltmeter on RTGB 101 shows lowering voltage.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. No ammeter exists on Unit 1. Correct for Unit 2
- B. Incorrect. Plausible if candidate thinks that the light is potential supplied from the battery charger. This is a DC bus potential light.
- C. Correct.
- D. Incorrect. No ammeter exists on Unit 1. Correct for Unit 2

Technical Reference(s): 0711503, 125 VDC System (Attach if not previously provided)  
2-ONP-0030136, Loss of Safety Related DC Bus

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702503-02 (As available)

Question Source: Bank # 783 Made question Unit specific.

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge   X    
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41   7    
55.43 \_\_\_\_\_

Comments:  
From 0711503, 125 VDC System

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	062 AA2.06	_____
	Importance Rating	2.8	_____

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The length of time after the loss of Service Water flow to the component before that component is damaged

Proposed Question: Common 14

Unit 2 is at 100% power when a loss of ICW Header 2A occurs.

The crew has been unable to restore ICW to the header.

Which ONE (1) of the following describes action that will be required to extend the time before damage to plant equipment occurs, in accordance with ONOP 2-0640030, ICW Off Normal?

- A. Reduce Main Generator MVARs as necessary and reduce Turbine load as necessary to maintain Cold Gas temperature within limits.
- B. Close the TCW Heat Exchanger cross-tie, SB13139, and open the 'A' TCW Heat Exchanger shell side isolation valve, SB13147, to maximize TCW Cooling
- C. Maximize CCW flow through the unaffected CCW Heat Exchanger by manually throttling flow to no greater than 11,000 gpm.
- D. If SG Blowdown is in service, ensure the Open Blowdown Heat Exchanger is aligned to the unaffected header

Proposed Answer: A

Explanation (Optional):

- A. Correct per step 1 RNO
- B. Incorrect. TCW would be cross connected with the affected HX shell side closed.
- C. Incorrect. Cooling is maximized by manually throttling closed on the affected HX.
- D. Incorrect. Blowdown is isolated with all SGBD TCVs manually closed

Technical Reference(s): ONOP 2-0640030 (Attach if not previously provided)  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: None

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	065 AK3.08	_____
	Importance Rating	3.3	_____

Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Actions contained in EOP for loss of instrument air

Proposed Question: Common 15

Unit 2 is at 100% power when a loss of Instrument Air occurs. Instrument air pressure is currently 60 psig and lowering.

Which ONE (1) of the following is the required operator action in accordance with ONP 2-1010030, Loss of Instrument Air, and why?

- A. Trip the Reactor and Turbine due to inability to maintain Steam Generator levels.
- B. Commence a controlled unit downpower due to VCT diverting to Radwaste.
- C. Open the Service Air to Instrument Air cross-tie valve to maintain Main Feed Isolation Valve position.
- D. Manually open the Unit 1 to Unit 2 Instrument Air cross-tie bypass valve to supply Unit 1 air to Unit 2.

Proposed Answer: A

Explanation (Optional):

- A. Correct. ONP directs plant trip at 60# and decreasing. With pressure < 75# the SG levels may not be maintained as the valves fail as is.
- B. Incorrect. At 75 psig a downpower should be considered. Plausible if candidate thinks that VCT diverts to Radwaste.
- C. Incorrect. This valve should have already been opened. Plausible if candidate thinks that the valves fail closed as they fail as is.
- D. Incorrect. Valve closes automatically at 85 psig. Plausible if candidate thinks that valve should be opened to maintain pressure

Technical Reference(s): 2-1010030, Loss of Instrument Air (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702860-06 (As available)

Question Source: Bank # 1772  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 5, 10  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	CEE02 EA1.2	_____
	Importance Rating	3.3	_____

Ability to operate and / or monitor the following as they apply to Reactor Trip Recovery: Operating behavior characteristics of the facility.

Proposed Question: Common 16

Unit 1 was tripped from 70% power due to rising backpressure in the Main Condenser.

During the performance of SPTAs, the RCO determines that Condenser Backpressure has stabilized at 20 inches Hg.

Assuming NO action has been taken by the crew, which ONE (1) of the following describes the value of Tave and how it is being maintained?

- A. 532-535°F, maintained by one ADV on each SG
- B. 532-535°F, maintained by 2 ADVs on each SG
- C. 540-545°F, maintained by intermittent MSSV operation
- D. 550-555°F, maintained by intermittent MSSV operation

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Valves must be operated manually on Unit 1 Unit 2 has auto operation
- B. Incorrect. Valves must be operated manually on Unit 1
- C. Correct. Low set valves are set to maintain 1000 psia (approx 544 deg F)
- D. Incorrect. Temperature will be held at a lower value, approximately the setpoint of the low set SV

Technical Reference(s): EOP-01, Main Steam SD (Attach if not previously provided)  
Steam Tables

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank #         X          
 Modified Bank #                          (Note changes or attach parent)  
 New   

Question History: Last NRC Exam                         

Question Cognitive Level: Memory or Fundamental Knowledge                           
 Comprehension or Analysis         X        

10 CFR Part 55 Content: 55.41     6      
 55.43                 

Comments:

WTSI Bank (Similar to other bank items in St Lucie Bank)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	CE05 EG2.4.31	
	Importance Rating	3.3	

Knowledge of annunciator alarms and indications and use of the response instructions (Excess Steam Demand).

Proposed Question: Common 17

Given the following conditions:

Unit 2 reached 100% power 1 hour ago after a load increase following Refueling.

The following indications are occurring:

- Annunciator, K-25, REACTOR T-AVG/T-REF TEMP LOW
- Annunciator L-17, REACTOR POWER LVL HI CHNL PRE-TRIP

Which ONE (1) of the following is the cause of these indications, and what action is required?

- Xenon concentration is rising. Adjust Tavg by withdrawing CEAs.
- Xenon concentration is lowering. Adjust Tavg by RCS boration.
- An ESD is occurring. Reduce turbine load to match Tavg and Tref.
- An ESD is occurring. Reduce reactor power by inserting CEAs.

Proposed Answer: C

Explanation (Optional):

- Incorrect. If Xenon was rising, power would be lowering
- Incorrect. Boration is appropriate for a power anomaly, but xenon lowering would be inconsistent with a load increase ended with 1 hour ago.
- Correct. Low Tavg and High power indicates an excess steam demand. Reducing load would raise Tavg and lower steam demand (power).
- Incorrect. Inserting CEAs would reduce SDM for this event. Temperature would continue to lower and power would continue to increase

Technical Reference(s): Alarm L-17 (Attach if not previously provided)  
Alarm K-25

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	CE06 EK2.2	
	Importance Rating	3.5	

Knowledge of the interrelations between the (Loss of Feedwater) and Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Proposed Question: Common 18

Which ONE (1) of the following describes how RCS pressure will initially respond to a Loss of Main Feedwater, and why?

- A. increase, because the RCS  $\Delta T$  power increases until the reactor trip occurs.
- B. increase, because the RCS temperature increases due to elevated Steam Generator temperatures.
- C. decrease, because the increased boiling rate in the Steam Generator tube bundle region decreases  $T_{avg}$ .
- D. decrease, because the Steam Generator level initially increases, causing a contraction of the RCS inventory.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Plausible if candidate thinks that the differential temperature across the SG rises which equates to a higher  $\Delta T$  power.
- B. Correct.
- C. Incorrect. Plausible if candidate thinks less feedwater implies greater boiling in tube bundle.
- D. Incorrect. Plausible if candidate associates increase in SG level due to heatup implies a greater heat transfer area exists in the SG with a subsequent contraction of the RCS.

Technical Reference(s): EOP-06, Loss of Feedwater (Attach if not previously provided)  
LP 0702827, Loss of Feedwater Event

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702827-02 (As available)

Question Source: Bank # 1074  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5  
55.43 \_\_\_\_\_

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	001 AK2.06	
	Importance Rating	3.0	

Knowledge of the interrelations between the Continuous Rod Withdrawal and the following: Tave / Tref deviation meter.

Proposed Question: Common 19

During a Unit 1 reactor startup, power has been stable for one hour at 15%.

- CEAs are at 110" on group 7.
- The turbine is on line.
- The CEDS control is placed in Manual Individual mode to withdraw one CEA that is 4" below the group.

If a continuous rod withdrawal were to occur when the RCO initially withdraws the rod, which ONE (1) of the following will occur?

- A. Tave and Tref will increase as power rises; the CEA withdrawal will stop when steam bypass demand begins.
- B. Tave and Tref will increase as power rises; the CEA withdrawal will stop when any of the cold leg temperatures exceed 549°F.
- C. Tave will increase as power rises; Tref will remain approximately the same; the CEA withdrawal will stop when Tave is 6.6°F greater than Tref.
- D. Tave will increase as power rises; Tref will remain approximately the same; the CEA withdrawal will stop when a group deviation occurs.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. The Turbine is normally operated in the IMP OUT mode. Plausible if candidate thinks that a Control Withdrawal Prohibit has occurred.
- B. Incorrect. The Turbine is normally operated in the IMP OUT mode. Plausible if candidate thinks that a Control Withdrawal Prohibit has occurred, however, this occurs at 552°F.
- C. Incorrect. Plausible if candidate thinks that an Control Withdrawal Prohibit has occurred.
- D. Correct. The turbine is operated in the IMP OUT mode; therefore, changes in Tave will make minor changes in steam pressure which has a minor effect on Tref (Turbine impulse pressure). CEA Motion Inhibit Circuitry stops the withdrawal on group deviation.

Technical Reference(s): 1-ONP-0110030, CEA Off- (Attach if not previously provided)  
Normal Operation and  
Realignment  
0711405, CEDS SD

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702405-09 (As available)

Question Source: Bank # 2222  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 1, 5  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	005 AK1.02	_____
	Importance Rating	3.1	_____

Knowledge of the operational implications of the following concepts as they apply to Inoperable / Stuck Control Rod: Flux tilt.

Proposed Question: Common 20

Unit 1 is conducting a downpower from 80% to 60% when CEA #41 FAILS to insert during insertion of Group 7.

Assuming CEA #41 is trippable, which ONE (1) of the following will be adversely affected if Group 7 rod insertion continues?

- A. Core power distribution and shutdown margin.
- B. Shutdown margin and power defect.
- C. Power defect and critical heat flux.
- D. Critical heat flux and Core power distribution.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Because the CEA is trippable, SDM is not affected; however, core power distribution is correct.
- B. Incorrect. Because the CEA is trippable, SDM is not affected and power defect is a function of fuel and moderator temperature.
- C. Incorrect. Power defect is a function of fuel and moderator temperature however, critical heat flux is correct.
- D. Correct. Core power distribution is affected by axial and radial flux redistribution and CHF is affected by the axial flux peak adjacent to the inserted rod.

Technical Reference(s): From LP 0702405, CEDS (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702405-09 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # X (See comments)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 1  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	024 AA1.26	_____
	Importance Rating	3.3	_____

Ability to operate and / or monitor the following as they apply to Emergency Boration: Boric acid storage tank.

Proposed Question: Common 21

Given the following Unit 2 conditions:

- An ATWS has occurred.
- CEDM MG sets were de-energized by opening their Load Center supply breakers.
- The RCO has started an emergency boration using V2514, emergency boration valve.
- SIAS has NOT actuated.
- RCS pressure is 2210 psia and trending DOWN.
- Tcold is 555°F and slowly trending DOWN.

Which ONE (1) of the following correctly describes conditions resulting from emergency boration?

- A. Boric Acid Makeup Tank level will drop at a rate approximately equal to charging flow.
- B. Volume Control Tank level will drop at a rate approximately equal to charging flow.
- C. Refueling Water Tank level will drop at a rate approximately equal to charging flow.
- D. Pressurizer level will rise at a rate approximately equal to charging flow.

Proposed Answer: A

Explanation (Optional):

- A. Correct. The Boric Acid Makeup Tank will be supplying borated water.
- B. Incorrect. VCT level may actually rise because there is no outflow, and letdown may still be flowing.
- C. Incorrect. Charging flow can have an effect on RWT level, however, the valve opened is not in this alignment.
- D. Incorrect. In an ATWS, Pressurizer level is also in a transient state due to RCS volume changing from temperature changing.

Technical Reference(s): 2-ONP-02.02, Emergency Boration (Attach if not previously provided)

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\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702205-07 (As available)

Question Source: Bank # X

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

55.43 \_\_\_\_\_

Comments: WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	028 AK1.01	_____
	Importance Rating	2.8	_____

Knowledge of the operational implications of the following concepts as they apply to Pressurizer Level Control Malfunctions: PZR reference leak abnormalities

Proposed Question: Common 22

Unit 1 is at 100% power

A leak has developed in the reference leg for Pressurizer level transmitter LT-1110X, the selected level transmitter.

Which ONE (1) of the following describes the response of indicated level on LT-1110X and actual pressurizer level?

- A. Indicated pressurizer level will rise. Actual pressurizer level will rise.
- B. Indicated pressurizer level will rise. Actual pressurizer level will lower.
- C. Indicated pressurizer level will lower. Actual pressurizer level will rise.
- D. Indicated pressurizer level will lower. Actual pressurizer level will lower.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Actual level will lower
- B. Correct.
- C. Incorrect. Opposite of actual effect
- D. Incorrect. Indicated level will rise

Technical Reference(s): 0711205, PZR Level and Pressure SD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702206-11 (As available)

Question Source: Bank # X  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 8, 10  
55.43 \_\_\_\_\_

Comments:  
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	032 AA2.05	_____
	Importance Rating	2.9	_____

Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: Nature of abnormality, from rapid survey of control room data

Proposed Question: Common 23

A Unit 2 startup is in progress.

Which ONE (1) of the following group of indications can be used to determine a loss of Wide Range Channel instrumentation?

- A. Count per second and % power meters drop to zero  
Loss of audible countrate in the Control Room  
LOG LED is extinguished; LOG TROUBLE LED is lit
- B. % power meter drops to zero  
Zero Power Mode Bypass LED is illuminated  
LOG LED is extinguished; LOG TROUBLE LED is lit
- C. Count per second and % power meters drop to zero  
Zero Power Mode Bypass LED is illuminated  
LOG LED is illuminated; LOG TROUBLE LED is extinguished
- D. % power meter drops to zero  
Loss of audible countrate in the Control Room  
LOG LED is illuminated; LOG TROUBLE LED is extinguished

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Unit 2 does not have CPS indication and audible countrate is provided by the Startup Channels.
- B. Correct. These are Unit 2 loss of Wide Range Channel indications.
- C. Incorrect. LOG TROUBLE LED would be lit and LOG LED extinguished and Unit 2 does not have CPS indication.
- D. Incorrect. Audible countrate is provided by the Startup Channels and the LOG TROUBLE LED would be lit and LOG LED extinguished.

Technical Reference(s): 0711403, NIS SD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 6

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	036 AG2.1.20	_____
	Importance Rating	4.3	_____

Ability to execute procedure steps.

Proposed Question: Common 24

Given the following in the Unit 2 Containment:

- Fuel movement is in progress.
- A fuel assembly is inadvertently dropped and badly damaged.

ALL of the following are IMMEDIATE ACTIONS in accordance with 2-ONP-1600030, Accidents Involving New or Spent Fuel, EXCEPT:

- Evacuate the Containment Building.
- Notify Health Physics personnel.
- Sound the Containment Evacuation Alarm.
- Stop HVE-8A, and HVE-8B, Containment Purge Fans.

Proposed Answer: D

Explanation (Optional):

- Incorrect. This is an immediate action for accidents inside Containment.
- Incorrect. Requirement is to notify Health Physics to check personnel for contamination not just a supervisor.
- Incorrect. This is an immediate action for accidents inside Containment.
- Correct.

Technical Reference(s): 2-ONP-1600030, Accidents Involving New or Spent Fuel (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702861-06 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	059 AA2.03	_____
	Importance Rating	3.1	_____

Ability to determine and interpret the following as they apply to the Accidental Liquid Radwaste Release: Failure modes, their symptoms, and the causes of misleading indications on a radioactive-liquid monitor.

Proposed Question: Common 25

A liquid release of Waste Monitor Tank 1A is in progress on Unit 1 when the high radiation alarm is received on liquid monitor channel 43. Which ONE (1) of the following describes a potential cause for this alarm?

- A. Flow control valve FCV-6627X has failed closed.
- B. An unexplained level decrease in Waste Monitor Tank 1B.
- C. Low level setpoint in Waste Monitor Tank 1A.
- D. A Circulating Water Pump has tripped.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Low flow would not cause a high radiation reading.
- B. Correct. Inadvertently releasing the other WMT could cause a higher than expected radiation.
- C. Incorrect. Low level in the WMT does not increase the radiation level. Could cause the pump to trip.
- D. Incorrect. Discharge canal flow rate would not affect the radiation level seen by the detector.

Technical Reference(s): 1-NOP-0601, Controlled Release to the CW Discharge (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New  X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis  X

10 CFR Part 55 Content: 55.41  13   
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	2	_____
	K/A #	068 AK2.07	_____
	Importance Rating	3.3	_____

Knowledge of the interrelations between the Control Room Evacuation and the Emergency Diesel Generator.

Proposed Question: Common 26

2-ONP-100.02, Control Room Inaccessibility is being performed.

The following conditions exist:

- Appendix A, RCO A Subsequent Actions are complete.
- Appendix B, RCO B Subsequent Actions are complete.
- Appendix C, Unit Supervisor Subsequent Actions are complete.
- Appendix D, SNPO Subsequent Actions are complete.
- The 2A EDG overspeed trip levers have **not** been placed in TRIP.
- Offsite power is available.

Which ONE (1) of the following describes the condition of Emergency Diesel Generator 2A and Bus 2A3 if offsite power is lost?

- A. EDG 2A is running. Bus 2A3 is de-energized.
- B. EDG 2A is running. Bus 2A3 is energized.
- C. EDG 2A is NOT running. Bus 2A3 is de-energized.
- D. EDG 2A is started prior to Control Room evacuation. Bus 2A3 is energized.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Bus 2A3 remains de-energized because of the position of the NORMAL/ISOLATE switches.
- B. Incorrect. Bus 2A3 is de-energized because of the position of the NORMAL/ISOLATE switches.
- C. Incorrect. The EDG is running, has not been disabled or isolated
- D. Incorrect. The EDG is not started from the C/R

Technical Reference(s): 2-ONP-100.02, Control Room Inaccessibility (Attach if not previously provided)

\_\_\_\_\_

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7 \_\_\_\_\_

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	CE13AG2.1.28	
	Importance Rating	3.2	

Knowledge of the purpose and function of major system components and controls used for natural circulation.

Proposed Question: Common 27

Unit 1 is performing a natural circulation cooldown with the following conditions:

- RCS pressure 1250 psia.
- CET: 555°F.
- Reactor Vessel Head temperature (QSPDS Pg. 211): 572°F.
- Reactor Vessel Level indicates 2 segments voided.
- Pressurizer level is 60% and rising rapidly

Which ONE (1) of the following actions will stabilize pressurizer level in accordance with 1-0120039, Natural Circulation Cooldown, and why?

- Stop the Backup Charging Pumps to minimize Charging flow.
- Operate additional Pressurizer heaters to increase RCS pressure.
- Initiate Auxiliary Spray flow to reduce RCS pressure.
- Increase Letdown flow to maximum to maintain pressurizer level less than 70%.

Proposed Answer: B

Explanation (Optional):

- Incorrect. If Charging flow is minimized, the void will be allowed to grow
- Correct. Increasing pressure will collapse the void, level will go down.
- Incorrect. Reactor head void will increase causing level to go up because PZR pressure will be lowering.
- Incorrect. Same effect as starting additional charging pumps.

Technical Reference(s): 1-0120039 Natural Circulation (Attach if not previously provided)

Cooldown,  
\_\_\_\_\_  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X \_\_\_\_\_

10 CFR Part 55 Content: 55.41 3, 14

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	003.K6.02	_____
	Importance Rating	2.7	_____

Knowledge of the effect of a loss or malfunction of the RCP seals and seal water supply will have on the RCPs.

Proposed Question: Common 28

Unit 2 is at 100% power with the following indications on the 2B1 Reactor Coolant Pump:

- Controlled Bleedoff (CBO) temperature is 225°F.
- CBO flow is 2.5 gpm.
- Vapor seal cavity (bleedoff cavity) pressure is 80 psig.
- Upper seal cavity pressure is 2235 psig.
- Middle seal cavity pressure is 2235 psig.
- RCS pressure is 2235 psig.

Which ONE (1) of the following describes the status of 2B1 RCP, and what action is required?

- A. CBO temperature is above the limit; requires power reduction and 2B1 RCP shutdown when the TCBs are open.
- B. 2 seals have failed; requires power reduction and 2B1 RCP shutdown when the TCBs are open.
- C. CBO temperature is above the limit; requires immediate reactor trip and 2B1 RCP shutdown.
- D. 3 seals have failed; requires immediate reactor trip and 2B1 RCP shutdown.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Partially correct. CBO >250°F for 10 minutes requires reactor trip.  
 B. Correct. Failure of two seals requires a unit shutdown and RCP trip.  
 C. Incorrect. Partially correct.  
 D. Incorrect. Partially correct. This action is required when three seals have failed.

Technical Reference(s): 2-ONP-0120034, RCP (Attach if not previously provided)  
 \_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702859-08 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10  
 55.43 \_\_\_\_\_

Comments:



Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge   X    
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41   7    
55.43 \_\_\_\_\_

Comments: CVCS SD page 13 of 99

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	005 K3.06	_____
	Importance Rating	3.1	_____

Knowledge of the effect that a loss or malfunction of the Residual Heat Removal System will have on the Containment Spray System.

Proposed Question: Common 30

Given the following:

- Unit 1 has been in EOP-03, Loss of Coolant Accident for 5 hours.
- The crew is performing Appendix O, Simultaneous Hot and Cold Leg Injection.
- LPSI is unavailable for alignment using the most preferred method.
- 1A HPSI Pump has tripped and CANNOT be restarted.
- The US determines that the second alternate method of Simultaneous Hot and Cold Leg Injection must be used.

Which ONE (1) of the following describes the equipment alignment required to perform Appendix O?

- HPSI Pump 1B through the auxiliary sprays.
- HPSI Pump 1B through the opposite train hot leg suction.
- Containment Spray Pump 1A or 1B through the auxiliary sprays.
- Containment Spray Pump 1A or 1B through the opposite train hot leg suction.

Proposed Answer: D

Explanation (Optional):

- Incorrect. Only 1A HPSI is used for alternate injection
- Incorrect. Only 1A HPSI is used for alternate injection, and would be through Aux Sprays
- Incorrect. Containment Spray alignment would be through opposite hot leg suction
- Correct.

Technical Reference(s): 1-EOP-99, Appendices / (Attach if not previously provided)

Figures / Tables / Data Sheets,  
Appendix O

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis     X    

10 CFR Part 55 Content: 55.41     4, 10    

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	006.K5.01	_____
	Importance Rating	2.8	_____

Knowledge of the operational implications of the following concepts as they apply to ECCS: Effects of temperatures on water level indications.

Proposed Question: Common 31

Given:

- A small break LOCA has occurred inside Containment on Unit 2
- SIAS has actuated.
- Containment pressure increased from 0 to 3.5 psig.
- Pressurizer Level indicates 32% and rising slowly.
- RCS subcooling is 102 degrees F.
- Secondary Heat Sink is being maintained.
- The RO has determined HPSI Throttle Criteria has been met.

Which ONE of the following describes the relationship between indicated and actual pressurizer level and the effect on HPSI Throttle Criteria?

Actual Pressurizer level is...

- A. LOWER than indicated level because of the direct effect of elevated containment pressure. The indicated level for throttle criteria accounts for level error.
- B. LOWER than indicated level because the reference leg fluid density decreases. The indicated level for throttle criteria accounts for level error.
- C. HIGHER than indicated level because of the direct effect of elevated containment pressure, ensuring adequate RCS inventory prior to throttling HPSI.
- D. HIGHER than indicated level because the reference leg fluid density decreases, ensuring adequate RCS inventory prior to throttling HPSI.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Containment Pressure effect is negligible because the reference leg is not open to containment, although level indication is correct
- B. Correct. Level is lower than indicated because DP will show higher indicated level. EOP analysis takes this indication error into account, requiring PZR level >30% indicated for throttle criteria.
- C. Incorrect. Actual level will be lower than indicated, not because of containment pressure, although reason (adequate inventory) is correct.
- D. Incorrect. Actual level lower than indicated, but for correct reasons

Technical Reference(s): EOP-03, LOCA (Attach if not previously provided)  
PSL-ENG-SEIS-01-046, EOP  
Setpoint Basis Document

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702824-07 (As available)

Question Source: Bank # 1024  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5  
 55.43 \_\_\_\_\_

Comments:



Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New  X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge  X   
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41  3   
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	008 G2.1.30	_____
	Importance Rating	3.9	_____

Ability to locate and operate components including local controls for Component Cooling Water.

Proposed Question: Common 33

Given:

- Unit 2 is operating at 100% power.
- CCW Pumps 2B and 2C are running.
- CCW Pump 2A is tagged out for maintenance.
- Annunciator S-32, 2B CCW PUMP OVRLD/TRIP is in alarm.

Attempts to restart CCW Pump 2B are NOT successful.

What action is required to be performed per 2-ONP-0310030, Component Cooling Water Off-Normal?

- Close all "B" Train N Header isolation valves.
- Increase ICW cooling to the operating CCW HX to maximum.
- Align the 2C CCW Pump suction and discharge headers to the 2B header.
- Ensure all N Header isolation valves are open and then isolate unnecessary loads.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. The cooling for the B Train is being supplied from the A train through the N header isolation. Plausible if candidate thinks that they want to isolate to protect the operable train.
- B. Incorrect. Only going to the operable train. Plausible if candidate thinks that now everything is being supplied from a single train. Not an off-normal action. Cooling is automatically controlled.
- C. Incorrect. Plausible if candidate thinks if the valves were opened you would be able to supply both HXs.
- D. Correct.

Technical Reference(s): 2-ONP-0310030, CCW (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 934

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	010 A3.01	_____
	Importance Rating	3.0	_____

Ability to monitor automatic operation of the PZR PCS including PRT temperature and pressure during PORV testing.

Proposed Question: Common 34

Given the following Unit 1 conditions:

- Plant is in Mode 3 when the PORV inadvertently lifts during I&C testing.
- Pressurizer pressure is 2000 psia.
- RCS temperature is 500°F.
- PORV tailpipe temperature is 230°F.
- Containment pressure is 0.5 psig.

Which ONE (1) of the following describes the expected pressure in the Quench Tank?

- A. ~2 psig
- B. ~5 psig
- C. ~20 psig
- D. ~35 psig

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Normal QT pressure.
- B. Correct. Saturation pressure for 230°F is 20.5 psia or 5 psig.
- C. Incorrect. Plausible if candidate uses gage pressure instead of absolute pressure when reading the Steam Tables.
- D. Incorrect. Plausible if candidate adds atmospheric pressure to value from Steam Tables.

Technical Reference(s): ABB Steam Tables (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5, 14  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	012 K3.04	_____
	Importance Rating	3.6	_____

Knowledge of the effect that a loss or malfunction of the RPS will have on the following: ESFAS.

Proposed Question: Common 35

Given the following:

- Unit 1 is at 100% power.
- PT-07-2A, Containment pressure transmitter fails high.
- NO action has been taken to bypass PT-07-2A.
- A loss of the MD instrument bus occurs.

Which ONE (1) of the following Engineered Safety Features Actuation signals will actuate?

- A. SIAS, CSAS, MSIS and CIAS.
- B. CSAS and SIAS.
- C. SIAS, MSIS and CIAS.
- D. SIAS and CIAS.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. CSAS energized to actuate.
- B. Incorrect. CSAS energized to actuate.
- C. Incorrect. MSIS does not actuate on high Containment pressure on Unit 1, only on Unit 2. Plausible if candidate confuses the Unit configuration.
- D. Correct.

Technical Reference(s): 0711401, ESFAS LP (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702401-08 (As available)

Question Source: Bank # 2004  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments: 0711401, ESFAS LP; page 29 of 57

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>          </u>
	Group #	<u>1</u>	<u>          </u>
	K/A #	<u>013 A4.03</u>	<u>          </u>
	Importance Rating	<u>4.5</u>	<u>          </u>

Ability to manually operate and/or monitor in the control room: ESFAS initiation.

Proposed Question: Common 36

Given the following conditions on Unit 2:

- A large break LOCA is in progress.
- All ESF actuations have occurred as required.
- RCS pressure is 200 psig.
- Containment pressure is 16 psig.
- Refueling Water Tank level is 3.5 feet.

Which ONE of the following describes the equipment alignment for the current plant conditions?

- A. HPSI Pumps running with Mini-Flow isolation valves open.
- B. HPSI Pumps off with Mini-Flow isolation valves closed.
- C. LPSI pumps running with Mini-Flow isolation open
- D. LPSI pumps off with Mini-Flow isolation valves closed.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. RAS is actuated. Mini-Flows closed
- B. Incorrect. HPSI will still be running. LPSI will be tripped
- C. Incorrect. After RAS, LPSI off with HPSI running
- D. Correct. Pumps and valves aligned correctly for conditions given in the stem

Technical Reference(s): 2-EOP-99, Appendices / (Attach if not previously provided)

Figures / Tables/Data Sheets,  
Table 4

2-EOP-04, LOCA

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis     X    

10 CFR Part 55 Content: 55.41     7      
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 A1.02	
	Importance Rating	3.6	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Containment Cooling System controls including: Containment pressure.

Proposed Question: Common 37

Unit <sup>2</sup>~~1~~ was operating in MODE 1 when a LOCA occurred inside Containment.  
↓

The following conditions are noted:

- The reactor has tripped. A Loss of Off-Site Power has occurred.
- RCS pressure is 1750 psia and lowering slowly.
- Containment Pressure is 3.6 psig and rising slowly.
- <sup>2</sup>~~1~~A DG FAILED to start.
- All other equipment is functioning as designed.

Which ONE (1) of the following describes the operation of the Containment Fan Coolers (CFCs)?

- A. ~~1~~<sup>2</sup>A and ~~1~~<sup>2</sup>D CFCs are running in FAST speed.
- B. ~~1~~<sup>2</sup>B and ~~1~~<sup>2</sup>D CFCs are running in FAST speed.
- C. ~~1~~<sup>2</sup>C and ~~1~~<sup>2</sup>D CFCs are running in SLOW speed.
- D. ~~1~~<sup>2</sup>B and ~~1~~<sup>2</sup>D CFCs are running in SLOW speed.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. SIAS conditions are met on Containment Pressure rise. CFCs shift to slow
- B. Incorrect. C and D are supplied from ~~1B~~ DG
- C. Correct. 2
- D. Incorrect. C and D are supplied from ~~D~~ DG B

Technical Reference(s): 0711602, Containment System SD (Attach if not previously provided)

\_\_\_\_\_

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702602-01 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5, 7

55.43 \_\_\_\_\_

Comments: From 0711602, Containment System SD; page 7 of 83

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	026.A1.02	
	Importance Rating	3.6	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Containment Spray System controls including: Containment temperature.

Proposed Question: Common 38

Given the following conditions:

- A LOCA has occurred.
- CSAS did NOT actuate automatically or manually.
- All other required actions have occurred.
- Bus 2B3 is locked out.
- RCS pressure is 600 psig.
- Containment pressure is 6 psig and rising.
- Containment temperature is 220°F.

Which ONE (1) of the following describes the MINIMUM actions required to reduce containment temperature in accordance with EOP-01, SPTAs?

- A. Start Containment Spray Pump 2A and open its Spray Header Valve. Verify at least 1 Containment Fan Cooler running.
- B. Start Containment Spray Pumps 2A and 2B and open their Spray Header Valves. Verify at least 1 Containment Fan Cooler running.
- C. Start Containment Spray Pump 2A and open its Spray Header Valve. Verify 2 Containment Fan Coolers are running.
- D. Start Containment Spray Pump 2A and 2B and open their Spray Header Valves. Verify 2 Containment Fan Coolers are running.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. 2 CFCs should be running and are required (1 full train)
- B. Incorrect. 2B Spray Pump has no power
- C. Correct.
- D. Incorrect. 2B Spray pump has no power

Technical Reference(s): 2-EOP-03, LOCA (Attach if not previously provided)  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702207-10 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5, 7  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 K1.02	
	Importance Rating	3.3	

Knowledge of the physical connections and/or cause/effect relationships between the MRSS and the following systems:  
Atmospheric dump valves.

Proposed Question: Common 39

Given the following:

- Unit 2 is at 2% power.
- ADV controls for BOTH Steam Generators are in AUTO/AUTO, set at 900 psia.
- A Loss of offsite power (LOOP) occurs resulting in a reactor trip.
- Both EDGs start and re-energize their respective buses.

How will the Atmospheric Dump Valves for the 2A Steam Generator respond to control Main Steam Header pressure?

- A. fail closed and then re-open to control pressure at 900 psia
- B. fail as is and must be manually reset prior to automatic operation to control SG pressure
- C. fail as is and then throttle to control pressure at 900 psia upon EDG loading
- D. fail closed and must be manually reset prior to automatic operation to control SG pressure

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Correct for Unit 1 valves
- B. Incorrect. Manual reset is not required
- C. Correct
- D. Incorrect. Manual reset is not required

Technical Reference(s): 0711304, Mains Steam SD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702304-04 (As available)

Question Source: Bank # 2621  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4  
55.43 \_\_\_\_\_

Comments: From 0711304, Mains Steam SD; page 11 of 81

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	059 K4.18	_____
	Importance Rating	2.8	_____

Knowledge of MFW design feature(s) and/or interlock(s) which provide for automatic feedwater reduction on plant trip.

Proposed Question: Common 40

Given the following:

- 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1 is in progress.
- The unit is in Mode 2 with Main Feedwater in service maintaining Steam Generator levels.
- Main Turbine trip testing is in progress.
- The Main Turbine is latched and then manually tripped.
- NO operator actions are taken after the turbine trip.

Which ONE (1) of the following describes the response of the feedwater system and Steam Generator level?

The 2A 15% feedwater bypass valve will:

- A. position to its 5% flow post-trip feed position and Steam Generator A level will rise.
- B. position to its 5% flow post-trip feed position and Steam Generator A level will lower.
- C. Remain in its current position and Steam Generator A level will rise.
- D. Remain in its current position and Steam Generator A level will lower.

Proposed Answer:           A

Explanation (Optional):

- A.   Correct. More feedwater available than steaming requirements dictate, therefore, SG levels will rise.
- B.   Incorrect. More feedwater available than steaming requirements dictate. Plausible if candidate does not recognize power level or that main feed is still in operation.
- C.   Incorrect. Valve goes to the 5% position post-trip.
- D.   Incorrect. Valve goes to the 5% position post-trip.

Technical Reference(s):   2-GOP-201, Reactor Plant                   (Attach if not previously provided)  
  Startup – Mode 2 to Mode 1  
  \_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective:        0702801-01                   (As available)

Question Source:           Bank # \_\_\_\_\_  
  Modified Bank #   1758                   (Note changes or attach parent)  
  New                                   \_\_\_\_\_

Question History:         Last NRC Exam                   \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge   \_\_\_\_\_

  Comprehension or Analysis                     X  

10 CFR Part 55 Content:  55.41     7    
  55.43   \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	061.A3.01	_____
	Importance Rating	4.2	_____

Ability to monitor automatic operation of the AFW, including: AFW startup and flows.

Proposed Question: Common 41

The following conditions exist on Unit 2:

- Unit tripped from 80% power.
- 2A and 2B Steam Generator levels decreased to 10% narrow range and have recovered to 30% narrow range on all channels.

Assuming NO operator action, which ONE (1) of the following describes the status of the Auxiliary Feedwater system?

- The 2A, 2B and 2C Auxiliary Feedwater pumps are feeding at full flow.
- The 2A and 2B Auxiliary Feedwater pumps are feeding at 220 gpm each.
- The 2A, 2B and 2C Auxiliary Feedwater pumps have stopped and their discharge valves closed.
- The 2A, 2B and 2C Auxiliary Feedwater pumps are running and their discharge valves closed.

Proposed Answer: D

Explanation (Optional):

- Incorrect. Plausible if candidate does not recognize that reset criteria is met.
- Incorrect. Valves are throttled to 220 gpm. Plausible if candidate thinks they are in the post-trip configuration and that reset criteria is met.
- Incorrect. Plausible if candidate think that AFAS reset performs all of these functions.
- Correct.

Technical Reference(s): 0711412, AFW and AFAS SD (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 2664  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4, 7  
 55.43 \_\_\_\_\_

Comments: From 0711412, AFW and AFAS SD; page 47/48 of 101

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	062 G2.1.32	_____
	Importance Rating	3.4	_____

Ability to explain and apply all system limits and precautions.

Proposed Question: Common 42

Unit 1 is Cross-tying the 1A2 Load Center to the 1B2 Load Center with 1B2 supplying.

Which Containment Coolers should be removed from service and why?

- A. HVS-1A & HVS-1C to minimize single EDG loading should a loss of off-site power occur.
- B. HVS-1A & HVS-1B to minimize the loading on the crosstie cables.
- C. HVS-1B & HVS-1D to minimize single EDG loading should a loss of off-site power occur.
- D. HVS-1C & HVS-1D to minimize the loading on the crosstie cables.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Should remove HVS-1A but not HVS-1C. The Train B HVS (HVS-1C & HVS-1D) should remain in service. Plausible if candidate thinks 1A & 1C are powered from the same Train.
- B. Correct. Removing the Train A Containment Coolers (HVS-1A & HVS-1B ) in this configuration minimize the loading on the crosstie cables and minimize single EDG loading should a loss of off-site power occur.
- C. Incorrect. The reason is correct but the wrong coolers are being removed from service. Should remove HVS-1B but not HVS-1D. The Train B HVS (HVS-1C & HVS-1D) should remain in service. Plausible if candidate thinks 1B & 1B are powered from the same Train.
- D. Incorrect. These coolers need to remain in service. Plausible if candidate does not understand the basis for cross tying as this would not minimize load on cross-tie cables.

Technical Reference(s): 1-NOP-47.01, Crosstyng / Removal / Restoration of 480V (Attach if not previously provided)

Buses  
\_\_\_\_\_  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702502-6 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 9  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	063 A2.01	_____
	Importance Rating	_____	_____

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. Grounds

Proposed Question: Common 43

Unit 2 is at 100% power.

The following alarm is received in the control room:

- A-40, BUS/BATT CHGR 2AB GROUND

An NPO is sent to determine if there is a ground on Bus 2AB.  
Bus 2AB is NOT cross-tied to Bus 2A/2AA or 2B/2BB

Which ONE (1) of the following describes the indication that will exist if the POSITIVE side of the DC Bus has a ground, and the action that will be taken if a ground exists?

The ground test light will be:

- dimmer than the negative light. Isolate supplies to the DC Bus to determine if the Charger or Battery is causing the ground
- dimmer than the negative light. Isolate individual DC Bus loads to determine which load is causing the ground.
- brighter than the negative light. Isolate supplies to the DC Bus to determine if the Charger or Battery is causing the ground
- brighter than the negative light. Isolate individual DC Bus loads to determine which load is causing the ground.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Supplies are not isolated for ground
- B. Correct.
- C. Incorrect. Grounded side would have lower resistance to ground, lower voltage drop, dimmer light. Isolate loads
- D. Incorrect.

Technical Reference(s): 2-ONP-50.01 (Attach if not previously provided)

ARP A-40

2-ONP-50.04

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702863-08 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	064 K2.02	_____
	Importance Rating	2.8	_____

Knowledge of electrical power supplies to the following: Fuel oil pumps.

Proposed Question: Common 44

Which ONE (1) of the following describes the Unit 2 Emergency Diesel Generator Diesel Fuel Oil Transfer Pump power supplies?

- A. 480V MCC 2A5/2B5.
- B. 480V MCC Bus 2A7/2B7.
- C. 120 VAC Bus 2MA/2MC.
- D. 125 VDC Bus 2A/2B.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect.
- B. Correct.
- C. Incorrect.
- D. Incorrect.

Technical Reference(s): 0711501, EDG SD page 37 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge   X    
Comprehension or Analysis \_\_\_\_\_10 CFR Part 55 Content: 55.41   10    
55.43 \_\_\_\_\_

Comments: Original question below.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	073 K1.01	
	Importance Rating	3.6	

Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following: Those systems served by PRMS.

Proposed Question: Common 45

If a valid high radiation alarm is received on the 2B Steam Generator Blowdown Radiation Monitor on Unit 2, which ONE (1) of the following automatic actions will occur?

- A. The SG blowdown isolation valves and the blowdown sample isolation valves for both SGs will close.
- B. The SG blowdown isolation valve and the blowdown sample isolation valve for the 2B SG will close.
- C. Only the SG blowdown isolation valve for the 2B SG will close, the SG blowdown sample isolation valves for both SGs close.
- D. Only the SG blowdown isolation valve for the 2B SG will close, the SG blowdown sample valves remain open.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Only the blowdown and sample isolations for the affected SG close. Plausible if candidate thinks that both SGs are affected.
- B. Correct.
- C. Incorrect. SG sample isolation valve on the unaffected SG does not close. Plausible if candidate thinks that both sample isolation valves close.
- D. Incorrect. SG sample isolation valve on the affected SG will close. Plausible if candidate thinks that only the blowdown isolation valve closes.

Technical Reference(s): 2-ONP-26.01, Process Radiation (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702411-08 (As available)

Question Source: Bank # 2067  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 11  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	076 A1.02	_____
	Importance Rating	2.6	_____

Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including: Reactor and turbine building closed cooling water temperatures.

Proposed Question: Common 46

The following conditions exist on Unit 2:

- The Unit has experienced a Safety Injection Actuation.
- Manual action was required to place ICW to TCW supply valves, MV-21-2 and MV-21-3, in their proper position.
- The SIAS signal has been reset.
- NO other actions are taken

What is the effect on Turbine Cooling Water (TCW) with the configuration of Intake Cooling Water (ICW) at this time?

TCW temperature is:

- A. steady or rising while ICW flow is being supplied to the essential and non-essential headers.
- B. lowering while ICW flow is being supplied to the essential header only.
- C. lowering while ICW flow is being supplied to the essential and non-essential headers.
- D. steady or rising while ICW flow is being supplied to the essential header only.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Correct if SIAS not present. Plausible if candidate thinks that the ICW to TCW valves are open or re-open automatically when SIAS was reset.
- B. Incorrect. Valves are closed therefore temperature will not lower. Plausible if candidate thinks that the TCW valves are open following an SIAS.
- C. Incorrect. Correct if SIAS not present. Plausible if candidate thinks that the ICW to TCW valves are open or re-open automatically when SIAS was reset.
- D. Correct.

Technical Reference(s): 2-EOP-99 Appendices / Figures (Attach if not previously provided)  
/ Tables / Data Sheets,  
Appendix P

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Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # 1943 Modified stem and distractors to  
address change in TCW  
temperature. See Comments.  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis  X

10 CFR Part 55 Content: 55.41  4   
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 K2.02	
	Importance Rating	3.3	

Knowledge of electrical power supplies to the following: Emergency air compressor.

Proposed Question: Common 47

Which ONE (1) of the following supplies power to the Unit 2 Instrument Air Compressor Emergency Cooling Pump and Fan?

- A. MCC-2C
- B. MCC-2A5
- C. MCC-2AB
- D. MCC-2B5

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Turbine building MCC. Plausible as this MCC is in the same building as the Air Compressors
- B. Incorrect. Reactor MCC. Plausible as this is a safety related MCC.
- C. Correct.
- D. Incorrect. Reactor MCC. Plausible as this is a safety related MCC.

Technical Reference(s): 2-1010030, Loss of Instrument Air, Appendix A (Attach if not previously provided)  
0711413, Plant Air Systems

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New

X

Question History:

Last NRC Exam

\_\_\_\_\_

Question Cognitive Level:

Memory or Fundamental Knowledge  
Comprehension or Analysis

X

\_\_\_\_\_

10 CFR Part 55 Content:

55.41 7

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	103 K3.03	_____
	Importance Rating	3.7	_____

Knowledge of the effect that a loss or malfunction of the (Containment System) will have on the following: Loss of containment integrity under refueling operations.

Proposed Question: Common 48

Unit 2 is in Mode 6 performing fuel movement.

Which ONE (1) of the following conditions requires fuel movement to be stopped?

- A. Equipment Hatch is open and capable of closure in 35 minutes.
- B. Open Containment Purge Makeup air manual isolation valves are open with administrative controls (Open PEN Log).
- C. Only one personnel airlock door is capable of being closed.
- D. Only one individual is stationed at the Personnel Airlock Door with the doors open.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative control.
- C. Incorrect. Only one door required to be closed. Plausible if candidate thinks both airlock doors must be closed.
- D. Incorrect. Only one individual is required, although two are stationed at the Personnel Airlock Doors.

Technical Reference(s): Unit 2 Technical Specifications (Attach if not previously provided)  
3.9.4

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0902723-01 (As available)

Question Source: Bank # 2098  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam 2002

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 9  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 A2.03	
	Importance Rating	4.1	

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: PORV failures.

Proposed Question: Common 49

Given the following conditions:

- Unit 2 is at 35% power.
- All pressurizer heaters are "ON".
- Green lights for Pressurizer Spray valves PCV-1100E & F are illuminated.
- RCS pressure is 1880 psig and lowering slowly.
- Pressurizer tailpipe temperature is 220°F.
- RED and GREEN lights for Pressurizer PORV V-1474 are illuminated.
- PORV V-1474 control switch is in OVERRIDE.

Based upon current plant conditions, which ONE (1) of the following describes the MINIMUM set of actions required?

- A. Continue performing actions of 2-0120036, Pressurizer Relief/Safety Valve. Close block valve V-1476 and verify temperature decrease on TIA-1110. Remove power from V-1476.
- B. Trip the reactor. Enter EOP-01, Standard Post Trip Actions, and close block valve V-1476.
- C. Close block valve V-1476 verify temperature decrease on TIA-1110. Refer to 2-1-0120031, Excessive Reactor Coolant System Leakage.
- D. Trip the reactor, initiate Safety Injection, and Enter EOP-01, Standard Post Trip Actions.

Proposed Answer: **B**

Explanation (Optional):

- A. Incorrect. This is a required action for a lower tailpipe temperature. Valve would be closed in an effort to stop the depressurization.
- B. Correct
- C. Incorrect. This is a required action for a lower tailpipe temperature.
- D. Incorrect. Not below SI setpoint and would be required if the PORV could not be isolated.

Technical Reference(s): 2-ONP-0120036, PZR Relief/Safety Valve (Attach if not previously provided)

\_\_\_\_\_

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	063 A4.02	_____
	Importance Rating	2.8	_____

Ability to manually operate and/or monitor in the control room: Battery voltage indicator.

Proposed Question: Common 50

With 2A DC bus battery charger placed in the EQUALIZING mode, which ONE (1) of the following will occur?

- A. Charger output voltage immediately rises to the equalize setting, battery voltage will slowly rise and amps will lower as the battery charges.
- B. Charger output voltage remains the same, battery voltage will slowly rise and amps will lower as the battery charges.
- C. Charger output voltage and battery voltage immediately rise to the equalize setting and amps lower as the battery charges.
- D. Charger output voltage lowers to the equalize setting, battery voltage will slowly lower and amps will lower as the battery discharges.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Plausible if candidate does not recognize that the charger output must rise for the battery voltage to rise.
- C. Incorrect. Plausible if candidate does not recognize that the battery must charge before voltage increases.
- D. Incorrect. Plausible if candidate does not recognize significance of an equalizing charge.

Technical Reference(s): 0711503, 125 VDC (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702503-05 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	062 A2.11	
	Importance Rating	3.7	

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 operations: Aligning standby equipment with correct emergency power source (D/G).

Proposed Question: Common 51

Unit 2 was operating at 100% power when an electrical transient occurs.

Given the following events and conditions:

- All Intake Cooling Water (ICW) Pumps are running while swapping ICW pumps.
- 2AB buses are aligned to the 'A' Train.
- The 2B3 bus becomes deenergized and is now powered from the 2B Emergency Diesel.
- All other electrical buses remain energized.

Which ONE (1) of the following is a complete list of running ICW pumps and what action is required to restore equipment to its correct emergency power source?

- 2A and 2C ICW pumps;  
Remain in this alignment until bus 2AB is aligned to bus 2A2.
- 2C ICW pump;  
Start the 2A ICW pump and restore bus 2B3 to bus 2B2.
- 2A and 2B ICW pumps;  
Start the 2C ICW Pump and stop the 2A ICW Pump.
- 2A, 2B and 2C ICW pumps;  
Secure the 2C ICW pump and place in pull-to-lock.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. The 2C ICW pump would not be running. Plausible action if candidate thinks that the 2C ICW pump should be realigned to 'A' Train.
- B. Incorrect. The 2C ICW pump would not be running. Plausible if candidate thinks that starting the 2A ICW pump would now support both trains of CCW and TCW.
- C. Incorrect. The 2C ICW pump is running and will remain running.
- D. Correct. All ICW pumps would be running. "B" pump will restart on the EDG after a 9 second time delay.

Technical Reference(s): 0704201, Cooling Water Systems SD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # 2387 Modified by changing Stem to convert to an A2 question.

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis  X

10 CFR Part 55 Content: 55.41  4, 7

55.43 \_\_\_\_\_

Comments:

Comments: From 0704201, Cooling Water Systems; page 27/28 of 92

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>          </u>
	Group #	<u>1</u>	<u>          </u>
	K/A #	<u>008 A4.08</u>	<u>          </u>
	Importance Rating	<u>3.1</u>	<u>          </u>

Ability to manually operate and/or monitor in the control room: CCW pump control switch.

Proposed Question:           Common 52

The 2C Component Cooling Water Pump is aligned to automatically start on an SIAS.

For this to occur, the 2B CCW Pump is configured with its:

- A.     RTGB control switch in the "Pull-to-Lock" position.
- B.     Breaker in the "Racked Out" position.
- C.     Breaker DC control power fuses removed.
- D.     NORMAL/ISOLATE switch in the ISOLATE position.

Proposed Answer:           A

Explanation (Optional):

- A.     Correct.
- B.     Incorrect. Plausible if candidate thinks that the breakers interlock must be satisfied to start the 2C CCW Pump.
- C.     Incorrect. Plausible if candidate thinks that the DC control power fuses act as an interlock to start the 2C CCW Pump.
- D.     Incorrect. Plausible if candidate does not recognize that the position of the NORMAL/ISOLATE switch for the 2B CCW Pump does not impact the 2C pump.

Technical Reference(s):   0711209, CCW System SD   (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective:       0702209-09                   (As available)

Question Source:	Bank #	4	Minor rearrangement of Stem to clean up distractors.
	Modified Bank #	_____	(Note changes or attach parent)
	New	_____	
Question History:	Last NRC Exam	_____	
Question Cognitive Level:	Memory or Fundamental Knowledge	<u>  X  </u>	
	Comprehension or Analysis	_____	
10 CFR Part 55 Content:	55.41	<u>  7  </u>	
	55.43	_____	

Comments: From 0711209, CCW System; Page 12 of 69

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	076 K4.03	_____
	Importance Rating	2.9	_____

Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following: Automatic opening features associated with SWS isolation valves to CCW heat exchangers.

Proposed Question: Common 53

Which ONE (1) of the following describes the function of the 1A & 1B CCW Heat Exchanger Outlet Valves (TCV-14-4A & 4B)?

- A. Controls ICW flow through the CCW heat exchanger to maintain CCW Heat Exchanger CCW outlet temperature at 115°F.
- B. Controls CCW flow through the CCW heat exchanger to maintain CCW Heat Exchanger CCW outlet temperature at 115°F
- C. Controls CCW flow through the CCW heat exchanger to maintain CCW Heat Exchanger CCW outlet temperature at 100°F
- D. Controls ICW flow through the CCW heat exchanger to maintain CCW Heat Exchanger CCW outlet temperature at 100°F

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. 100 deg F not 115
- B. Incorrect. Controls ICW flow through HX at 100 deg F
- C. Incorrect. Controls ICW flow, not CCW flow
- D. Correct.

Technical Reference(s): 1-NOP-21.12, ICW System Alignment; Appendix A (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New  X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge  X   
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41  4, 7   
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 K4.06	
	Importance Rating	3.1	

Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following: Containment isolation system.

Proposed Question: Common 54

Assume a Large Break LOCA raises containment pressure to 11 psig.

Compare the automatic response of the Main Steam Isolation Valves (MSIVs) for this LOCA on Unit 1 to that on Unit 2.

On Unit 1, the MSIVs \_\_\_\_\_; On Unit 2, the MSIVs \_\_\_\_\_.

- A. close; close
- B. close, remain open
- C. remain open; close
- D. remain open; remain open

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. No MSIS on Containment pressure. Plausible if candidate thinks that the Unit 1 MSIVs go closed.
- B. Incorrect. Unit 2 has closure on MSIS, Unit 1 does not. Plausible if candidate thinks that the Unit 2 MSIVs stay open.
- C. Correct.
- D. Incorrect. Unit 2 has closure on MSIS. Plausible if candidate thinks that the Unit 2 MSIVs stay open.

Technical Reference(s): 0711304, Main Steam System (Attach if not previously provided)  
SD

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702824-11 (As available)

Question Source: Bank # 1008  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 9  
55.43 \_\_\_\_\_

Comments: From 0711304, Main Steam System; Page 21 of 81

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	005 K5.09	_____
	Importance Rating	3.2	_____

Knowledge of the operational concepts as they apply to the RHRS: Dilution and Boration considerations

Proposed Question: Common 55

Given the following conditions:

- Unit 2 is in Mode 6. Fuel is in the reactor vessel.
- RCS temperature is 105°F
- Shutdown Cooling loop 'A' is in service using Low Pressure Safety Injection Pump 2A.
- 23.5 feet of water above the reactor vessel flange.
- NO Core Alterations or movement of Irradiated Fuel Assemblies are in progress.
- It is desired to stop Shutdown Cooling for approximately 30 minutes to move lighting and equipment in the refueling cavity

Which ONE (1) of the following correctly describes the requirement associated with this evolution?

- A. The RCS must be reduced to less than 100°F.
- B. Immediately close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.
- C. Activities involving reduction of RCS boron concentration are not permitted.
- D. Cavity level must be raised to greater than 25 feet above the reactor vessel flange.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Mode 6 requires temperature < 140
- B. Incorrect. Actions are for radiation monitor indications increasing
- C. Correct. With no RHR loop in operation, dilution or reduction in boron concentration is not allowed.
- D. Incorrect. Cavity level >23 feet if <2 RHR loops are operable

Technical Reference(s): TS 3.9.8.1 (Attach if not previously provided)  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 2

Comments:  
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	011 K2.02	_____
	Importance Rating	3.1	_____

Knowledge of electrical power supplies to the following: PZR heaters.

Proposed Question: Common 56

The pressurizer heaters are supplied power from 480 Volt Load Center

- A. A1/B1 which is directly supplied from 4160 volt Bus A2/B2.
- B. A1/B1 which is directly supplied from 4160 volt Bus A3/B3.
- C. A3/B3 which is directly supplied from 4160 volt Bus A2/B2.
- D. A3/B3 which is directly supplied from 4160 volt Bus A3/B3.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Wrong Load Center and buses.
- B. Incorrect. Partially correct, however, wrong Load Center selected.
- C. Incorrect. Partially correct, however, wrong buses selected.
- D. Correct.

Technical Reference(s): 0711206, PZR Pressure and Level Control (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702206-05 (As available)

Question Source: Bank # 252  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments: From 0711206, PZR Pressure and Level Control; Page 14 of 135

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	015 A3.04	_____
	Importance Rating	3.3	_____

Ability to monitor automatic operations of the Nuclear Instrumentation including: Maximum disagreement allowed between channels.

Proposed Question: Common 57

Unit 1 is in Mode 1.

Annunciator L-20, REACTOR POWER RANGE SUBCHANNEL DEVIATION, is received.

Which ONE (1) of the following describes the cause of the alarm and the setpoint for the alarm?

- A. Wide Range Power channels deviate by 0.5 decades
- B. Wide Range Power channels deviate by 1.0 decade
- C. Linear Range channels deviation setpoint 6%
- D. Linear Range channels deviation setpoint 2%

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. WR do not have deviation from each other
- B. Incorrect.
- C. Correct.
- D. Incorrect. Max power change during calorimetric.

Technical Reference(s): L-20 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702403-08 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 6, 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	016 K5.01	_____
	Importance Rating	2.7	_____

Knowledge of the operational implications of the following concepts as they apply to the Non-Nuclear Instrumentation: Separation of control and protection circuits.

Proposed Question: Common 58

If a fire in the Unit 1 Cable Spreading Room burns for 45 minutes before it is extinguished, which ONE (1) of the following instruments can be relied on for plant control?

- A. Pressurizer Pressure Safety Channel Indicator PI-1102A.
- B. Pressurizer Pressure Safety Channel Indicator PI-1102B.
- C. Pressurizer Pressure Control Channel Indicator PIC-1100X.
- D. Pressurizer Pressure Low Range Pressure Indicator PI-1103.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Train B is available for appendix R instrumentation
- B. Correct.
- C. Incorrect. Control channel would not be available, not protected.
- D. Incorrect. Low Range 1103 not protected. 1104 is protected

Technical Reference(s): ONP 100.02 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702864-08 (As available)

Question Source: Bank # 970  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 6  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	056 GG2.2.25	
	Importance Rating	2.5	

Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

Proposed Question: Common 59

Which ONE (1) of the following describes the basis for the size difference between the Unit 1 and Unit 2 Condensate Storage Tanks (CST)?

Unit 2 CST volume:

- A. was designed to supply a specified amount of makeup to Unit 1 in the event of total loss of AC power to Unit 1.
- B. was designed to supply a specified amount of makeup to Unit 1 in the event of damage to Unit 1 CST.
- C. is analyzed for a 8 hour HOT STANDBY period following a Loss of Offsite Power, Unit 1 is analyzed for a 4 hour period.
- D. is analyzed for a cooldown to Shutdown Cooling entry conditions following a period of HOT STANDBY, Unit 1 is analyzed for HOT STANDBY only.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Wrong reason for the amount of makeup.
- B. Correct. Unit 2 has a concrete shield on top of the CST to protect from damage.
- C. Incorrect. Unit 1 is analyzed for 8 hours
- D. Incorrect. Both are analyzed for a cooldown.

Technical Reference(s): Unit 2 Tech Spec Bases: (Attach if not previously provided)  
3/4.7.1.3

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 1942  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 4  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	029 A2.03	_____
	Importance Rating	2.5	_____

Ability to (a) predict the impacts of the following on the Containment Purge and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Purge System Startup

Proposed Question: Common 60

A Containment Purge to maintain Containment Pressure within Technical Specification limits is planned on Unit 2.

All prerequisites, precautions, and limitations of NOP-25.02, Continuous Containment/Hydrogen Purge System Operation, are met.

Which ONE (1) of the following describes the correct sequence of action to initiate the purge?

- A. Adjust the setpoint of FCV 25-9, Control Valve Filter Inlet, to the flow rate prescribed on the release permit  
Place the control switches for Continuous Ctmt Purge Makeup Valves FCV-25-26 and FCV 25-36 in OPEN;  
Start BOTH Continuous Containment/H2 Purge Fans, HVE-7A AND HVE-7B;
- B. Adjust the setpoint of FCV 25-9, Control Valve Filter Inlet, to the flow rate prescribed on the release permit  
Place the control switches for Continuous Ctmt Purge Makeup Valves FCV-25-26 and FCV 25-36 in OPEN;  
Start ONE Continuous Containment/H2 Purge Fan, HVE-7A OR HVE-7B;
- C. Place the control switches for Continuous Ctmt Purge Makeup Valves FCV-25-26 and FCV 25-36 in OPEN;  
Start ONE Continuous Containment/H2 Purge Fan, HVE-7A OR HVE-7B;  
Open and adjust FCV 25-9, Control Valve Filter Inlet, to the flow rate prescribed on the release permit
- D. Place the control switches for Continuous Ctmt Purge Makeup Valves FCV-25-26 and FCV 25-36 in OPEN;  
Start BOTH Continuous Containment/H2 Purge Fans, HVE-7A AND HVE-7B;  
Open and adjust FCV 25-9, Control Valve Filter Inlet, to the flow rate prescribed on the release permit

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Filter inlet flow rate is set after the fan is started and makeup valves are verified open. Only 1 fan is run
- B. Incorrect. Fans started before flow rate is adjusted
- C. Correct.
- D. Incorrect. Only 1 fan is started

Technical Reference(s): NOP 25.02 (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 11  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	034 A1.02	_____
	Importance Rating	2.9	_____

Ability to predict and/or monitor changes in parameters associated with operating the Fuel Handling Equipment controls including: Water level in the refueling canal.

Proposed Question: Common 61

Unit 1 has been in a refueling outage for 14 days, with a total core offload in progress.

Which ONE (1) of the following requires immediate suspension of refueling operations?

- A. Loss of two of the four operable Wide Range neutron flux monitors.
- B. A Containment electrical penetration is removed for repairs under administrative controls.
- C. Refueling cavity level is 22 feet above the top of fuel assemblies that are seated in the reactor.
- D. Refueling cavity level is 22 feet above the top of the reactor flange.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Unit 1 uses the Wide Range channels for monitoring, however, the Tech Spec is met.
- B. Incorrect. Reason this can be performed is because we are not in the recently irradiated fuel (72 hours is recently irradiated). Allowed per Tech Specs as long as Admin controls are in place.
- C. Correct. This is correct for Unit 1 only.
- D. Incorrect. This is correct for Unit 2 only.

Technical Reference(s): Unit 1 Tech Spec 3.9.10 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 2079  
 Modified Bank # \_\_\_\_\_ Changed outage time and  
 replaced Distractors A & B.  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 9, 10  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>          </u>
	Group #	<u>2</u>	<u>          </u>
	K/A #	<u>041.K4.17</u>	<u>          </u>
	Importance Rating	<u>3.7</u>	<u>          </u>

Knowledge of SDS design feature(s) and/or interlock(s) which provide for the following: Reactor trip

Proposed Question: Common 62

Given the following conditions:

- Unit 2 is operating at 45% power.
- The SBCS Valve Permissive switch is in MANUAL.
- SBCS Valve Controllers are in AUTO.
- A reactor trip occurs.

Which ONE (1) of the following describes the SBCS response?

- A. SBCS Valves Quick Open.
- B. SBCS Valves Modulate Open.
- C. SBCS Valves remain closed. Atmospheric Dump Valves must be manually opened.
- D. SBCS Valves remain closed. Atmospheric Dump Valves will throttle open automatically.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Quick Open will only occur at higher Tave associated with higher power levels.
- B. Correct. At 45% power, Tavg will be low enough that the Quick Open feature of SBCS will not actuate on a trip
- C. Incorrect. With permissive in manual, valves will still operate in auto. ADVs would be manually throttled if required
- D. Incorrect. ADVs can throttle in Auto, but they are operated manually. Also, SBCS is available on a trip with Permissive in manual

Technical Reference(s): OSP for SBCS functional diagram (Attach if not previously provided)

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\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702406-02 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	055 K3.01	_____
	Importance Rating	2.5	_____

Knowledge of the effect that a loss or malfunction of the Condenser Air Removal will have on the following: Main condenser.

Proposed Question: Common 63

Given the following:

- Unit 1 is at 100% power.
- Tave has slowly INCREASED 0.2°F in the last 5 minutes.
- Main Generator output has DECREASED 6 MWe.

Which ONE (1) of the following describes the cause of the above indications?

- SG Safety Valve leakage.
- Condenser Air Ejector malfunction.
- Inadvertent RCS dilution.
- Inadvertent Control Rod withdrawal.

Proposed Answer: B

Explanation (Optional):

If an Air Ejector malfunctions, non-condensable gases will build in Main Condenser. As gases build, vacuum will decrease. If vacuum decreases, then backpressure is rising, which will cause a decrease in steam flow (Delta P from SGs to condenser lowers). When Steam flow through the turbine is reduced, electrical load will also be reduced. In this case, the steam flow change is transmitted back to the RCS, causing Tave to rise

Technical Reference(s): 0711301, Condensate, Feedwater, Heater Vent and Drains (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank #     X      
Modified Bank #                      (Note changes or attach parent)  
New                     

Question History: Last NRC Exam                     

Question Cognitive Level: Memory or Fundamental Knowledge                       
Comprehension or Analysis     X    

10 CFR Part 55 Content: 55.41     4      
55.43                     

Comments:  
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	2	_____
	K/A #	079 K1.01	_____
	Importance Rating	3.0	_____

Knowledge of the physical connections and/or cause-effect relationships between Station Air System and the following: IAS

Proposed Question: Common 64

Due to a loss of instrument air, Unit 2 Instrument Air System has been cross-tied with the Station Air System and pressure has stabilized at 100 psig.

Which ONE (1) of the following actions must be taken within 1 hour in accordance with ONP-2-1010030, Loss of Instrument Air?

- A. Initiate a controlled downpower and take the Unit off the line.
- B. Cross tie Construction Air to augment Station Air.
- C. Blow down the Instrument Air header drains to remove oil, water, and crud build-up.
- D. Isolate the Station Air cross-tie and open the Unit 1 cross-tie to the Unit 2 Instrument Air System.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Not necessary, the Station Air System can supply Instrument Air.
- B. Incorrect. Not necessary, the Station Air System can supply Instrument Air.
- C. Correct.
- D. Incorrect. Unit 1 cross-tie opens automatically when Instrument Air pressure is decreasing.

Technical Reference(s): ONP 2-1010030, Loss of Instrument Air (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702860-8 (As available)

Question Source: Bank # 1767  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	001 K6.14	
	Importance Rating	4.0	

Knowledge of the effect that a loss or malfunction of the following will have on the Control Rod Drive: Location and interpretation of reactor trip breaker.

Proposed Question: Common 65

Which ONE (1) of the following would result upon loss of 120V Vital AC instrument bus MA?

- A. 2 TCBs open, no reactor trip.
- B. 2 TCBs open, reactor trips.
- C. 4 TCBs open, no reactor trip.
- D. 4 TCBs open, reactor trips.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Plausible if candidate thinks loss of K relay only
- B. Incorrect. Plausible if candidate thinks and don't understand the parallel paths to the CEDM
- C. Correct.
- D. Incorrect. Always lose 2 of the logic matrix relays for this configuration. Plausible if candidate thinks

Technical Reference(s): 2-ONP-0970030, 120 VAC Instrument Bus (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702503-05 (As available)

Question Source: Bank # 798

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History:

Last NRC Exam \_\_\_\_\_

Question Cognitive Level:

Memory or Fundamental Knowledge

  X  

Comprehension or Analysis

\_\_\_\_\_

10 CFR Part 55 Content:

55.41   6  

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.20	
	Importance Rating	4.3	

Ability to execute procedure steps.

Proposed Question: Common 66

Which ONE (1) of the following procedural words or phrases allows an operator to reposition a valve during performance of a Normal Operating Procedure?

- A. Verify
- B. Check
- C. Ensure
- D. Implement

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Investigate reason for status prior to performing action
- B. Incorrect. Perform a comparison without the status.
- C. Correct.
- D. Incorrect. Used for procedures. Signifies the requirement to perform a procedure by name

Technical Reference(s): Ops Policy 523, Procedure Compliance and Implementation (Attach if not previously provided)  
ADM 11.01

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702802-06 (As available)

Question Source: Bank # 882

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge   X    
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41   10    
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	1	_____
	K/A #	G2.1.11	_____
	Importance Rating	3.0	_____

Knowledge of less than one hour technical specification action statements for systems.

Proposed Question: Common 67

Given the following:

- Unit 2 is in Mode 3.
- RCS pressure is 1800 psia.

Which ONE (1) of the following, if declared *inoperable*, requires Technical Specification ACTION within ONE (1) hour?

- Refueling Water Tank.
- 1 CEA Reed Switch Position Indicator.
- One Main Steam Isolation Valve.
- One Main Steam Line Code Safety Valve.

Proposed Answer: A

Explanation (Optional):

- Correct. Immediate action required
- Incorrect. 4 hours to restore
- Incorrect. 4 hours to restore.
- Incorrect. .4 hours to restore

Technical Reference(s): Unit 2 Tech Spec 3.1.2.8, 3.5.4 (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 2120  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_Question History: Last NRC Exam 2002Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	1	_____
	K/A #	G2.1.31	_____
	Importance Rating	4.2	_____

Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the required plant lineup.

Proposed Question: Common 68

The following conditions exist on Unit 1 after a LOCA occurred from full power:

- The 1A1 SIT isolation valve V-3614 is OPEN.
- RCS pressure is 600 psia and slowly dropping.
- SIAS has NOT been RESET.
- The supply breaker to the 1A1 SIT isolation valve is ON.

Which ONE (1) of the following describes the 1A1 SIT isolation valve V-3614 response to placing the RTGB hand switch for the 1A1 SIT in the PIC BYPASS CLOSE position?

- A. V-3614 immediately CLOSES.
- B. V-3614 will CLOSE when RCS pressure drops below 276 psia.
- C. V-3614 remains OPEN; the SIAS must be reset for it to CLOSE.
- D. V-3614 remains OPEN; RCS pressure must be below 325 psia for the valve to close.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. SIAS must be reset
- B. Incorrect. Normal Unit 2 pressure for valve closure during plant shutdown
- C. Correct. Interlocks for closure are SIAS RESET and power to the valve
- D. Incorrect. Unit 1 value for plant pressure for SIT Isolation during plant shutdown.

Technical Reference(s): ECCS SD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 263  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	2	_____
	K/A #	G2.2.1	_____
	Importance Rating	3.7	_____

Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

Proposed Question: Common 69

During a reactor startup it becomes apparent that the reactor will become critical approximately 700 pcm earlier than the ECC calculation.

Which ONE (1) of the following describes the correct course of action in accordance with 2-GOP-302, Reactor Plant Startup – Mode 3 to Mode 2?

- A. Stop the CEA withdrawal, maintaining present rod height, and verify 1/M predicted rod position greater than minimum rod height for criticality.
- B. Stop the CEA withdrawal. Ensure CEAs are inserted to a position equivalent to -500 pcm from the apparent critical position.
- C. Stop the CEA withdrawal. Borate the RCS until criticality is predicted within the proper band. Recalculate the ECC prior to continuing CEA withdrawal.
- D. Continue the CEA withdrawal to within 500 pcm from the apparent critical position, maintaining this rod height until the RE determines the appropriate CEA movement actions.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Plausible if candidate thinks this action is sufficient to control core reactivity.
- B. Correct.
- C. Incorrect. Would not borate to ECC target band in the middle of a startup with a reactivity anomaly. Boration/Dilution is performed earlier in the startup process
- D. Incorrect. Partially correct (stop the CEA withdrawal and notify RE). Plausible if candidate thinks this action is sufficient to control core reactivity.

Technical Reference(s): GOP-302 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702841-19 (As available)

Question Source: Bank # 1744  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
 55.43 \_\_\_\_\_

Comments:



Question Source: Bank # 1915  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	2	_____
	K/A #	G2.2.24	_____
	Importance Rating	2.6	_____

Ability to analyze the affect of maintenance activities on LCO status.

Proposed Question: Common 71

Unit 2 is operating in Mode 1.

Which ONE (1) of the following Maintenance activities requires entry into a Technical Specification LCO action statement?

- A. I&C Monthly Functional Test of the 2A Plant Vent Radiation Monitor (PIG)
- B. Repair of 2C Intake Cooling Water Pump
- C. I&C Monthly Functional Test of the 2A Hydrogen Analyzer
- D. Monthly Code Run of the 2A Auxiliary Feedwater Pump

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Wide Range Gas Monitor satisfies the TS.
- B. Incorrect. Only 2 required
- C. Correct. Required by TS 3.6.4.1 to be operable. Functional Test requires LCO entry
- D. Incorrect. Test does not require entry to LCO as it is a required surveillance. No valve manipulations, so not OOS

Technical Reference(s): TS 3.6.4.1 (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702205-11 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis     X    10 CFR Part 55 Content: 55.41     2      
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	3	_____
	K/A #	G2.3.4	_____
	Importance Rating	2.5	_____

Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

Proposed Question: Common 72

Given the following:

- A large break LOCA has occurred on Unit 1.
- HPSI Pump 1A has developed a 40 gpm leak on the pump suction.
- Attempts to isolate HPSI Pump 1A have failed.
- RAS has actuated.
- An Emergency Team member who is 49 has volunteered to close HPSI Pump 1A suction valve locally.

The MAXIMUM allowed CDE (thyroid) exposure the Emergency Coordinator can authorize the Emergency Team member to receive while performing this evolution is:

- A. 25 REM.
- B. 50 REM.
- C. 100 REM.
- D. No upper limit for CDE exposure.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect. Performance of actions that would not directly mitigate the event, minimize escalation, or minimize effluent releases
- C. Correct. Performance of actions that mitigate the escalation to the event, rescue persons from a non-life threatening situation, minimize exposures or minimize effluent releases.
- D. Incorrect. Applies to rescue of person from a life-threatening situation.

Technical Reference(s): HP-201 (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 2701  
 Modified Bank # \_\_\_\_\_ Changed values based on  
 procedure revision.  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 12  
 55.43 \_\_\_\_\_

Editorial Mods to distractors

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.11	
	Importance Rating	2.7	

Ability to control radiation releases.

Proposed Question: Common 73

A shutdown is required due to Dose Equivalent I-131 level of five microcuries/gram.

Which ONE (1) of the following is the reason for reducing Tave to less than 500°F following the reactor shutdown?

- A. Prevents the direct release of activity should a Steam Generator Tube Rupture occur.
- B. Slows the release of noble gas to the Reactor Coolant, reducing the source term of the activity.
- C. Minimizes the temperature related degradation of the CVCS demineralizers while RCS clean-up is in progress.
- D. Minimizes the magnitude of the iodine spiking phenomena caused by the unit shutdown.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Not in accordance with Tech Spec bases.
- C. Incorrect. Not in accordance with Tech Spec bases.
- D. Incorrect. Not in accordance with Tech Spec bases.

Technical Reference(s): Unit 1 Tech Spec Bases 3.4.8 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # 18425 INPO (See comments)  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 5  
55.43 \_\_\_\_\_

Comments: Changed Tcold to Tavg in Stem for St. Lucie.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	4	_____
	K/A #	G2.4.9	_____
	Importance Rating	3.3	_____

Knowledge of low power / shutdown implication in accident (e.g. LOCA or loss of RHR) mitigation strategies.

Proposed Question: Common 74

The following conditions exist:

- Mode 3 performing a controlled cooldown.
- RCS Tave: 450°F.
- Steam Generator pressure: 413 psia.
- RCS pressure: 1280 psia.

Fifteen minutes after the turnover the following condition exist:

- RCS pressure and pressurizer level are falling.
- RCS temperature is falling.
- Steam Generator pressure is falling.

What procedure and mitigation strategy should be implemented?

- A. ONP-01.01, Plant Condition 1 - SG Heat Removal LTOP not in effect.  
Attempt to isolate the affected SG.  
Maintain RCS subcooling 20-200°F.
- B. ONP-01.02, Plant Condition 2 - SG Heat Removal LTOP in effect.  
Manually actuate MSIS and SIAS.  
Stabilize RCS temperature and pressure.
- C. EOP-05, Excess Steam Demand.  
Manually actuate MSIS.  
Maintain RCS subcooling 20-200°F.
- D. EOP-15, Functional Recovery.  
Emergency borate and attempt to isolate the affected SG.  
Stabilize RCS temperature and pressure.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Conditions not met for LTOP. Plausible if candidate misdiagnoses the event and thinks that ESFAS actuations are required.
- C. Incorrect. In this condition SIAS is blocked, therefore, EOPs don't apply. Plausible if candidate recognizes ESD but don't realize SIAS is blocked.
- D. Incorrect. In this condition SIAS is blocked, therefore, EOPs don't apply. Plausible if candidate thinks multiple conditions exist to enter the FR.

Technical Reference(s): 1-GOP-305, Reactor Plant (Attach if not previously provided)  
Cooldown - Hot Standby to Cold  
Shutdown

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Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # 1864 (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	_____
	Group #	4	_____
	K/A #	G2.4.10	_____
	Importance Rating	3	_____

Knowledge of annunciator response procedures.

Proposed Question: Common 75

Given:

- Unit 1 is operating at 100% power.
- Only the 1B Charging Pump is running.
- Annunciator M-31 "1B CHARGING PUMP TROUBLE" goes into alarm.
- All other alarms are clear

Which ONE (1) of the following describes the status of 1B Charging Pump, and the action that is required in accordance with the ARP?

- Pump is tripped on low Seal Tank level; start the standby charging pump or isolate letdown.
- Pump is running with low Seal Tank level; stop charging pump 1B, isolate letdown, and start the backup charging pump.
- Pump is running with low Reducing Unit oil level; start the standby charging pump, and stop charging pump 1B.
- Pump is tripped on low Reducing Unit oil level; start the standby charging pump.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Alarm is not actuated by anything that would trip the pump on Unit 1
- B. Incorrect. No need to isolate Letdown. However, Low seal tank level could actuate the alarm.
- C. Correct. If the alarm is due to low oil level, then the action is to start the backup pump and stop the running pump
- D. Incorrect. Pump would not be tripped

Technical Reference(s): 1-ARP-02-M31 (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702205-03 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # 2171  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7  
 55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	015 AA2.08	
	Importance Rating	_____	3.5

Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on high bearing temperature.

Proposed Question: SRO 76

Given the following:

- Power ascension is in progress on Unit 2.
- RCO reports the 2A1 RCP upper thrust bearing at 185°F and rising at approximately 1 °F per minute.
- 2A1 lower thrust bearing is 160 °F and rising at 1 °F every 3 minutes.
- 2A1 upper and lower guide bearings are at 160 °F and rising at 1 °F per minute.

Which ONE (1) of the following describes the plant condition and action required?

- An RCP bearing temperature limit has been exceeded. Stop the power ascension and determine the cause in accordance with 2-NOP-01.02, RCP Operation.
- An RCP bearing temperature limit has been exceeded. Trip the reactor and turbine, and stop RCP 2A1 in accordance with ONP-2-0120034, Reactor Coolant Pump Off Normal.
- An RCP bearing temperature limit will be exceeded in approximately 15 minutes. When the limit is exceeded, stop the power ascension and determine the cause in accordance with 2-NOP-01.02, RCP Operation.
- An RCP bearing temperature limit will be exceeded in approximately 15 minutes. When the limit is exceeded, trip the reactor and turbine, and stop RCP 2A1 in accordance with ONP-2-0120034, Reactor Coolant Pump Off Normal.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Limit is 200 for thrust bearing, and 185 for guide bearing. Would be in ARP or ONP
- B. Incorrect. Limit has not been exceeded.
- C. Incorrect. Would be in ONP or ARP for this condition
- D. Correct.

Technical Reference(s): 2-ARP-01-J6, Annunciator Panel J (Attach if not previously provided)

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2-ONP-0120034, Reactor Coolant Pump

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Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis     X    

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43     5    

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	029 EA2.09	
	Importance Rating	_____	4.5

Ability to determine and interpret the following as they apply to (Emergency Plant Evolution): Occurrence of a main turbine/reactor trip.

Proposed Question: SRO 77

Given the following Unit 1 plant conditions:

- The crew is performing the actions of 1-EOP-01, Standard Post Trip Actions.
- CEAs have FAILED to insert.
- Reactor power indicates 65%.
- Actions for Reactivity Control are being carried out.
- The crew determines that the following occurs in rapid succession:
  - RCS temperature and pressure rising.
  - Pressurizer PORVs indicate open.
  - Quench Tank temperature, pressure, and level are rising.

Which ONE (1) of the following has occurred and what procedure entry is required?

- A. The turbine has tripped; enter 1-EOP-15, Functional Recovery.
- B. The turbine has tripped; remain in 1-EOP-01, Standard Post Trip Actions.
- C. The reactor has tripped; remain in 1-EOP-01, Standard Post Trip Actions.
- D. The reactor has tripped; enter 1-EOP-15, Functional Recovery.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Do not enter EOP-15 until SPTAs are complete
- B. Correct. When the turbine trips, the secondary transient causes temperature and pressure to rise in the RCS. SBCS is only capable of accommodating a 45% load rejection. Remain in EOP-01 until transition is required.
- C. Incorrect. Indications are for a load rejection. Correct procedure use
- D. Incorrect. Indications are of a load rejection, not a reactor trip. Remain in EOP -01.

Technical Reference(s): Transient & Accident Analysis (Attach if not previously provided)  
SPTAs

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 5

Comments:  
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	040 AG2.4.6	_____
	Importance Rating	_____	4

Knowledge of symptom based EOP mitigation strategies.

Proposed Question: SRO 78

Given the following plant conditions:

- Unit 1 tripped due to a 300 gpm Loss of Coolant Accident (LOCA).
- The Optimal Recovery Procedure for a LOCA, EOP-03, has been entered.
- RCS pressure is 1550 psig and lowering slowly
- RCS temperature is 515 degrees F and stable
- Five minutes later, the following conditions are observed:
  - SG 1A pressure is indicating 450 psig and lowering
  - RCS temperature is 440 deg F and lowering
  - RCS pressure is 1350 psig and lowering

Which ONE (1) of the following describes the strategy for the current plant conditions?

- A. Remain in EOP-03. ECCS flow is causing the RCS cooldown.
- B. Go to the ESD Optimal Recovery Procedure, EOP-05, to isolate the 1A SG and stabilize RCS temperature.
- C. Go to the Functional Recovery Procedure, EOP-15, and isolate the 1A SG by use of the appropriate RCS Inventory Control Success Path.
- D. Go to the Functional Recovery Procedure, EOP-15, and isolate the 1A SG by use of the appropriate RCS Heat Removal Success Path.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. SGs are leading RCS temperature
- B. Incorrect. If no LOCA was in progress, would go to ESD
- C. Incorrect. Heat Removal is the correct success path for this event
- D. Correct.

Technical Reference(s): SFSC for EOP-03 (Attach if not previously provided)  
EOP-15 HR-2

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702826-09 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	<u>057 AG2.1.33</u>	_____
	Importance Rating	_____	<u>4.0</u>

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications (Loss of Vital AC bus)

Proposed Question:           SRO 79

Given the following:

- Unit 2 is in Mode 1.
- An electrical transient has occurred.
- Bistables are lit for Channel C RPS and ESF actuations.
- Instrument Bus 2MC indicates 0 volts.

Which ONE (1) of the following describes the Technical Specification implications of this failure?

- A. Action is required in accordance with Tech Spec 3.3.1, Reactor Protective Instrumentation, within 1 hour.  
Action is required in accordance with Tech Spec 3.8.3.1, Onsite Distribution Systems, within 1 hour.
- B. Action is required in accordance with Tech Spec 3.3.1, Reactor Protective Instrumentation, within 1 hour.  
Action is required in accordance with Tech Spec 3.8.3.1, Onsite Distribution Systems, within 2 hours.
- C. Action is NOT required in accordance with Tech Spec 3.3.1, Reactor Protective Instrumentation, because all bistables are in their 'fail' positions.  
Action is required in accordance with Tech Spec 3.8.3.1, Onsite Distribution Systems, within 1 hour.
- D. Action is NOT required in accordance with Tech Spec 3.3.1, Reactor Protective Instrumentation, because all bistables are in their 'fail' positions.  
Action is required in accordance with Tech Spec 3.8.3.1, Onsite Distribution Systems, within 2 hours.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. 2 hours to restore the instrument bus inverter to its DC bus and re-energize the Instrument Bus
- B. Correct.
- C. Incorrect. TS 3.3.1 applies. Bistables must be verified. Wrong time for 3.8.3
- D. Incorrect. TS 3.3.1 applies, but correct amount of time for 3.8.3 action

Technical Reference(s): TS 3.3.1, TS 3.8.3 (Attach if not previously provided)  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702401-03 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	062 AG2.4.45	
	Importance Rating		3.6

Ability to prioritize and interpret the significance of each annunciator or alarm

Proposed Question:           SRO 80

Given the following:

- Unit 1 is at 100% power.
- The AB Bus is aligned to the 'B' side.
- Annunciator E-30, ICW HEADERS PRESS LOW, has just alarmed and locked in.
- Annunciator E-7, 1B ICW PUMP OVRD/TRIP, has just alarmed and locked in.
- PIS-21-8A, ICW header 1A indicates 44 psig
- PIS-21-8B, ICW header 1B indicates 0 psig.
- 1A ICW Pump is running.
- 1B ICW Pump amps indicate 0.
- 1C ICW Pump is Pull to Lock.
- One attempt to restart 1B ICW Pump was unsuccessful.

Which ONE (1) of the following actions should the control room operators perform next in accordance with ONP 1-0640030, ICW Off-Normal?

- A.
  - Notify electrical to meet the SNPO at the 1C ICW Pump breaker.
  - Reset any relays associated with the 1AB 4.16 kV bus.
  - Start 1C ICW Pump.
- B.
  - Notify electrical to meet the SNPO at the 1B ICW Pump breaker.
  - Reset any relays associated with the 1B3 4.16 kV bus.
  - Start 1B ICW Pump.
- C.
  - Align or ensure the 1C ICW pump is aligned to the 1B ICW header per the ICW ONP.
  - Instruct the ANPO to CLOSE the 1C ICW pump discharge valve and then throttle 10 turns open.
  - Start 1C ICW Pump.
- D.
  - Attempt one more start of the 1B ICW Pump.
  - If the pump does not start, then instruct the ANPO to CLOSE the 1B ICW pump discharge valve and then throttle 10 turns open.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Standby pump is required to be throttled to avoid water hammer on a depressurized header.
- B. Incorrect. Only one re-start is allowed per the ONP and the pump is required to be throttled to avoid water hammer on a depressurized header.
- C. Correct.
- D. Incorrect. Only one re-start is allowed per the ONP then the standby pump is aligned.

Technical Reference(s): ONP-1-0640030, ICW System (Attach if not previously provided)

1-NOP-21.03, ICW System Operation

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702862-08 (As available)

Question Source: Bank # 1823 Added procedure reference to Distractors.

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	<u>065 AG2.4.4</u>	
	Importance Rating	_____	<u>4.3</u>

Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Proposed Question: SRO 81

Given the following:

- Unit 1 is at 100% power.
- The following indications are received.
  - Alarm F-21, Instrument Air Compressor Auto Start.
  - Alarm F-5, Instrument Air High or Low Pressure.
  - Instrument Air Pressure indication PI-18-9 indicates 88 psig, lowering slowly.
  - 1C and 1D Instrument Air Compressors are running.

Which ONE (1) of the following describes the action required?

- A. Enter ONP 1-1010030, Loss of Instrument Air, due to the low instrument air pressure condition, and bypass the air dryer package, if required.
- B. Trip the reactor and enter EOP-01, Standard Post Trip Actions, due to lowering Instrument Air pressure with both air compressors running.
- C. Verify the proper operation of Main Feedwater Regulating Valves and MFIVs in accordance with the applicable Annunciator Response procedures.
- D. Begin a plant shutdown to Hot Standby in accordance with 1-GOP-123, Turbine Shutdown – Full Load to Zero Load in anticipation of possible feedwater system anomalies.

Proposed Answer: A

Explanation (Optional):

- A. Correct. ARPs direct entry to the ONP if air pressure is low
- B. Incorrect. Trip reactor below 60 psig.
- C. Incorrect. When lowering air pressure is identified after auto start of backup air compressor, go to ONP. MFRVs and MFIVs will be affected at lower pressures
- D. Incorrect. Below 75 psig, MFRVs will lock up at their current position but there is no direction to reduce load until below that pressure

Technical Reference(s): 1-1010030, Loss of Instrument Air (Attach if not previously provided)

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Annunciator F-5

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Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis     X    

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43     5    

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	2
	K/A #	003 AG2.4.49	
	Importance Rating	_____	4

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Proposed Question: SRO 82

Unit 1 is operating at 100% power (MOC condition) when a dropped CEA on Unit 1 results in the in-core detectors remaining in alarm after Tref is matched to Tavg.

If four in-core detectors remain in alarm, what, if any, operator action is required per Technical Specifications?

- A. No action is currently required since the alarms will clear after the CEA is restored to its normal position.
- B. Maintain reactor power at the current value until Reactor Engineering evaluates core conditions using BEACON.
- C. Initiate actions within 15 minutes to reduce the linear heat rate to within acceptable values within one hour.
- D. Initiate action within 1 hour to determine that all other CEAs in the group with the dropped CEA are above the Long Term Steady State Insertion Limit.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Plausible if candidate thinks that if the alarms were not present prior to the rod dropping then there should be no alarms when the rod is re-positioned.
- B. Incorrect. Plausible if candidate recognizes that the BEACON program will identify power distribution issues associated with the dropped CEA.
- C. Correct. Required by Tech Specs.
- D. Incorrect. Excore instrumentation may be used with CEA position to ensure linear heat rate is within acceptable limits. This is done once per 12 hours

Technical Reference(s): Unit 1 Tech Specs, 3.2.1 (Attach if not previously provided)  
1-ONP-0110030, CEA Off-  
Normal Operation and  
Realignment

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702204-06 (As available)

Question Source: Bank # 198  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 2

Comments:

Significant editorial mods. Changed D

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	005 AG2.4.50	
	Importance Rating		3.3

Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Proposed Question:           SRO 83

The following conditions exist on Unit 1:

- Reactor power is 20% during a plant startup.
- Group 7 is being withdrawn at 120 inches when it is noticed that two CEAs in the group have stopped moving.
- Annunciator K-18, CEA POSITION DEVIATION (DCS) is in alarm.
- Annunciator K-24, CEA POSITION DEVIATION MOTION BLOCK (CEAPDS) is in alarm
- All CEA motion is IMMEDIATELY stopped.
- The highest CEA in Group 7 indicates 122 inches.
- The two misaligned CEAs are determined to be IMMOVABLE

Which ONE (1) of the following describes the position of the LOWEST stuck CEA and the actions that will be required?

- A. 116 inches. Immediately initiate emergency boration, verify Shutdown Margin within 1 hour, and be in Hot Standby within 6 hours.
- B. 118 inches. Insert Group 7 CEAs to the position of the stuck CEAs. Restore the stuck CEAs to OPERABLE status within 1 hour or be in Hot Standby within the following 6 hours.
- C. 116 inches. Maintain current power. Operation in Mode 1 may continue indefinitely if the remainder of the Group 7 CEAs are within 7.0 inches of the stuck CEAs
- D. 118 inches. Immediately trip the reactor and ensure the reactor trip breakers are open.

Proposed Answer:           A

Explanation (Optional):

- A. Correct. 122-116 is a 6 inch difference. CEA motion block alarms at >5.5 inches
- B. Incorrect. Plausible if candidate misapplies immovable not due to friction. CEA position would be for the first alarm K-18
- C. Incorrect. Plausible if candidate thinks that the only issue is that the CEA is out of alignment. Correct position
- D. Incorrect. Initiating SIAS on Unit 1 does not start an emergency boration. Plausible if candidate thinks that this action will restore SDM. Incorrect CEA position

Technical Reference(s): 1-0110030, CEA Off-Normal Operation and Realignment (Attach if not previously provided)

\_\_\_\_\_

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0902723-01 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # 1262 (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43 2

Comments:

Modified by adding a condition to the stem and asking for position indication

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	2
	K/A #	032 AA2.06	
	Importance Rating	_____	4.1

Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: Confirmation of reactor trip.

Proposed Question: SRO 84

Given the following:

- A Unit 2 Reactor startup is in progress.
- Reactor Power is 5E-4%.
- Wide Range Power Channel 'C' has failed.
- Functions provided by the channel were placed in TRIP.
- The startup has been stopped to determine the cause of the failure.
- The Reactor Control Operator reports the following information:
  - Wide Range Power Channel 'A' has risen 1 decade in the last 10 seconds and continues to rise.
  - Wide Range Power Channels 'B' and 'D' are stable.

Which ONE (1) of the following actions is required by the crew?

- A. Stabilize power and Bypass Channel 'C' in accordance with ONP- 99.01, Loss of Tech Spec Instrumentation
- B. Verify the reactor has tripped or trip the reactor and perform EOP-01, SPTAs.
- C. Bypass Channels 'A' and 'C' prior to raising reactor power above 10%.
- D. Reduce power to below 10-4% and return BOTH Channels 'A' and 'C' to operable status prior to resuming reactor startup.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. With 2 channels tripped, a reactor trip should occur
- B. Correct. .
- C. Incorrect. .Cannot bypass more than 1 channel. If a second channel is placed in bypass, the first channel would trip
- D. Incorrect. TS requirement starts at 10-4%

Technical Reference(s): EOP-01 (Attach if not previously provided)  
RPS SD

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 6

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	2
	K/A #	060 AA2.03	_____
	Importance Rating	_____	3.9

Ability to determine and interpret the following as they apply to Abnormal Plant Evolution: the steps necessary to isolate a given radioactive-gas leak, using P&IDs.

Proposed Question: SRO 85

Given the following:

- Unit 1 is in Mode 4 with a Reactor Coolant System degasification in progress.
- Waste Gas Compressor 1A is in service and aligned to Waste Gas Decay Tank (WGDT) 1B.
  - 1B WGDT pressure is 15 psig.
- Waste Gas Decay Tank 1A was recently filled (< 24 hours ago) and is currently isolated.
  - 1A WGDT pressure is 155 psig.
- Waste Gas Decay Tank 1C has sufficiently decayed (> 6 months) and is currently aligned for release via V6565.
  - 1C WGDT pressure is 150 psig.

Shortly after the release is started the following occurs:

- Annunciator N-38, WASTE GAS DISCH RAD HIGH goes into alarm.
- The SNPO reports WGDT pressures as follows: 1A 140 psig; 1B 20 psig; 1C 140 psig.
- Area radiation levels have remained constant.

What is the cause of the accidental gas release and what action is required to secure the release?

- A.
  1. Waste Gas Compressor 1A is discharging into Waste Gas Decay Tank 1A and 1C.
  2. Ensure the following valves are closed: V6579, V6597, V6701, V6582, V06825
- B.
  1. Waste Gas Compressor 1A is discharging into Waste Gas Decay Tanks 1A & 1B.
  2. Ensure the following valves are closed: V6565, V6745, V06823, V6579, V6592, V6582
- C.
  1. Waste Gas Decay Tank 1A is cross connected to Waste Gas Decay Tank 1C.
  2. Ensure the following valves are closed: V6565, V6588, V6599, V6584, V6580, V6598
- D.
  1. Waste Gas Decay Tank 1A relief valve is lifting.
  2. Ensure the following valves are closed: V6547, V6579, V6599, V6588, V6584

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. With 2 WGDTs cross connected the Waste Gas Compressor will discharge to the tank with the lowest pressure (WGDT B). Plausible if candidate thinks that the WGDT are cross-connected allowing A & C to decrease and B to increase. Proposed alignment does not isolate cross-connected tanks.
- B. Incorrect. This would not cause V6565 to trip on high radiation. Plausible if candidate thinks that when the Waste Gas Compressor is aligned to WGDTs A & B, WGDT A pressure could decrease while the WGDT C pressure rises. Proposed alignment does not isolate tanks.
- C. Correct. Once the release is started, the radiation alarm (due to the short-lived precursors in WGDT A) along with the equalized pressures between WGDTs A & C implies that these two tanks are cross-connected. This alignment effectively isolates WGDT A from WGDT C.
- D. Incorrect. A leaking relief would cause area radiation levels to increase due to leakage past the relief valve stem. Plausible if candidate thinks that the lifting relief will lower the pressure in the A WGDT without causing area radiation levels to rise.

Technical Reference(s): 8770-G-078, Sheet 163A (Attach if not previously provided)Proposed references to be provided to applicants during examination: 8770-G-078, Sheet 163A

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43 4

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	003 A2.05	
	Importance Rating	_____	2.8

Ability to (a) predict the impacts of the following on the Reactor Coolant Pump and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Effects of VCT pressure on RCP seal leakoff flows.

Proposed Question: SRO 86

While purging the Volume Control Tank (VCT), level was increased to 75% without any concurrent adjustment in VCT pressure as level was raised.

Which ONE (1) of the following describes the effect on RCP Controlled Bleedoff flow and the action(s) required to mitigate the effect?

- A. CBO flow decreases. Venting the VCT will be required.
- B. CBO flow decreases. Aligning CBO flow to the Quench Tank will be required.
- C. CBO flow increases. Throttle closed CBO Throttle Valve V2198 to raise CBO pressure.
- D. CBO flow increases. Throttle open CBO Throttle Valve V2198 to lower CBO pressure.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Aligning CBO to QT is emergency operation
- C. Incorrect. CBO flow decreases
- D. Incorrect. CBO flow decreases

Technical Reference(s): 0711202, RCP System Description, Figure 9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis     X    

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43     5    

Comments: From 0711202, RCP System Description, Figure 9

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>1</u>
	K/A #	062 A2.05	
	Importance Rating	_____	<u>3.3</u>

Ability to (a) predict the impacts of the following malfunctions or operations on the AC Distribution System and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal operation: Methods for energizing a dead bus.

Proposed Question: SRO 87

Given the following:

- Unit 1 is in a Station Blackout (SBO) condition.
- Unit 2 has 2 DGs running.
- The decision has been made to cross tie Unit 2 to Unit 1 power in accordance with EOP-99, Appendix V, Receiving Power From Unit 2 Using SBO Cross-Tie.

Which ONE (1) of the following describes the direction the Unit Supervisor will give to energize the preferred train on Unit 1 in accordance with EOP-99, Appendix V?

- Energize Bus 1AB; Strip all Train 'B' loads; Energize Bus 1B.
- Strip all Train 'B' 4160V loads; Energize Bus 1AB; Energize Bus 1B.
- Energize Bus 1AB; Strip all Train 'A' 4160V loads; Energize Bus 1A.
- Strip all Train 'A' 4160V loads; Energize Bus 1AB; Energize Bus 1A.

Proposed Answer: B

Explanation (Optional):

- Incorrect. Wrong sequence
- Correct.
- Incorrect. Wrong preferred side
- Incorrect. Wrong preferred side

Technical Reference(s): EOP-99, Appendices / Figures / Tables / Data Sheets, Appendix V (Attach if not previously provided)

0711502, AC Distribution SD;  
pages 28-29

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702502-07 (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 5

Comments: From 0711502, AC Distribution SD; Pages 28-29

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	006 A2.02	
	Importance Rating		4.3

Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b), based on those malfunctions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of Flow Path

Proposed Question: SRO 88

Unit 2 has sustained a 200 gpm LOCA and EOP-03, Loss of Coolant Accident, has been entered.

All HPSI pumps have TRIPPED and CANNOT be restarted.

Which ONE (1) of the following describes the correct actions required?

- A. Continue use of EOP-03 until an alternate procedure is designated by the Safety Function Status Check, because the Inventory Control Safety Function Status will be UNSAT.
- B. Continue the use of EOP-03 since the event has been diagnosed as a LOCA and all of the Safety Function Status Checks will remain SATISFIED.
- C. Return to the Diagnostic Flowchart in EOP-01, Standard Post Trip Actions; continue in the LOCA procedure since SI Tanks remain available for Inventory Control.
- D. Return to the Diagnostic Flowchart in EOP-01, Standard Post Trip Actions; continue in the LOCA procedure since LPSI remains available for Inventory Control.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Safety Function Status Check will determine which SF must be addressed.
- B. Incorrect. For SBLOCA, HPSI is required. If minimum flow requirements are not met, then must transition to FR procedure
- C. Incorrect. Returning to the diagnostic chart would yield the same transition as it did the first time it was addressed. It is true that SITs are available, but RCS pressure is too high for them to be effective
- D. Incorrect. LPSI available, but will not provide flow during a SBLOCA because RCS pressure is above LPSI shutoff head

Technical Reference(s): EOP-03 SFSC (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702860-08 (As available)

Question Source: Bank # X Changed Distractor B.  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 5

Comments: WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	103 G2.4.11	
	Importance Rating		3.6

Knowledge of abnormal condition procedures.

Proposed Question: SRO 89

Unit 2 reactor power is 82%. Reactor Cavity Cooling Fan HVS-2B has just tripped due to an electrical fault.

Which ONE (1) of the following describes the required operator actions regarding HVS-2A, Reactor Cavity Cooling Fan?

- A. HVS-2A must be started within 30 minutes or a reactor trip is required per 2-ONP-25.01, Loss of Reactor Containment Building Cooling Fans.
- B. HVS-2A must be started within 45 minutes or a reactor trip is required per 2-ONP-25.01, Loss of Reactor Containment Building Cooling Fans.
- C. HVS-2A must be started within 30 minutes or reactor power must be reduced to less than 30% per 2-NOP-25.05, Containment Ventilation Systems.
- D. HVS-2A must be started within 45 minutes or reactor power must be reduced to less than 30% per 2-NOP-25.05, Containment Ventilation Systems.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Procedure correct. Plausible if candidate thinks that the time limit is 30 vice 45 minutes.
- B. Correct.
- C. Incorrect. Wrong time for action, and wrong procedure.
- D. Incorrect. A rapid downpower is required but an eventual cooldown is imposed. Plausible if candidate thinks that the downpower is all that is required.

Technical Reference(s): ONP-2-25.01, Loss of RCB Cooling Fans (Attach if not previously provided)  
0711602, Containment & Shield Building Ventilation Systems

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702862-08 (As available)

Question Source: Bank # 946  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	064 GG2.1.32	
	Importance Rating	_____	3.8

Ability to explain and apply all system limits and precautions for Emergency Diesel Generators.

Proposed Question: SRO 90

Unit 2 conditions:

- 100% power.
- 2A Diesel Generator (EDG) will be tested in accordance with 2-2200050A, 2A Diesel Generator Periodic Test and General Operating Instructions.

Which ONE (1) of the following correctly describes the status of 2A EDG while paralleled to the grid?

- Operable because it is capable of automatically separating from the grid if emergency loading is required.
- Operable because the 86 relay provides electrical protection against grid problems.
- Inoperable because the Start Circuit Switch (Norm/Isolate #3) is in ISOLATE.
- Inoperable because the LOOP undervoltage relay protection scheme is blocked.

Proposed Answer: D

Explanation (Optional):

- Incorrect. The technical statement is correct but a procedure NOTE specifies that the EDG is inoperable while tied to the grid.
- Incorrect. While it may provide some level of protection, there is no sensing from the grid.
- Incorrect. Switch is only in ISOLATE during the manual roll.
- Correct. The LOOP UV relay protection scheme is blocked while paralleled.

Technical Reference(s): 2-2200050A, 2A Diesel Generator Periodic Test and General Operating Instructions pg. 20, NOTE prior to Step 27 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	027 A2.01	_____
	Importance Rating	_____	3.3

Ability to (a) predict the impacts of the following on the Containment Iodine Removal System and (b) based on those predictions, use procedure to correct, control, or mitigate the consequences of those abnormal operation: High temperature in the filter system.

Proposed Question: SRO 91

Unit 1 was shutdown for two months following a LOCA inside Containment.

- The containment Iodine removal system has been in continuous operation for one month to clean up the containment atmosphere in preparation for reentry.
- Iodine Removal System fan HVE-1 is in operation.
- 2 Containment Fan Coolers are in operation.
- Containment temperature is 90 degrees F.

The following alarm is received:

- P-37, AIRBORNE ACT HVE-1/2 ADSORB TEMP HIGH

The RCO determines that the alarm is valid.

Which ONE (1) of the following describes the actions required?

- Start and run all available Containment Fan Coolers until the alarm clears. Notify Chemistry to sample the Charcoal Filter.
- Stop HVE-1 and bypass the charcoal filter train. Restart HVE-1 and ensure proper air flow. Notify Maintenance to replace the Charcoal Filter.
- Stop HVE-1 and place HVE-2 in service. Notify Maintenance to replace the charcoal filter
- With HVE-1 running, start HVE-2 to raise airflow to clear the alarm. Notify Chemistry to sample the Charcoal Filter

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. First action is to ensure CFCs are operating so that Ctmt temperature can be eliminated as cause. But if the ctmt is only 90 deg F, CFCs are not a problem
- B. Incorrect. Do not bypass the filter train. Notify Maint. Is correct
- C. Correct.
- D. Incorrect. Stop HVE-1 prior to starting HVE-2. Starting HVE-2 would not clear an alarm on HVE-1

Technical Reference(s): Alarm P-37 (Attach if not previously provided)  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702602-20 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43 4, 5

Comments: From 711602, Containment & Shield Bldg Ventilation; Pages 29-30

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	075 A2.02	_____
	Importance Rating	_____	2.7

Ability to (a) predict the impacts of the following on the Circulating Water System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Loss of circulating water pumps.

Proposed Question: SRO 92

Unit 1 was operating at 60% power. The following conditions exist:

- Seawater temperature is 85°F.
- Condenser  $\Delta T = 20^\circ\text{F}$ .

A differential current lockout occurs on the 1A2 4.16 KV Bus.

Which ONE (1) of the following statements correctly describes the plant response and the required action?

- The 1A and 1B Condenser will lose equal amount of circulating water flow. Trip the unit if condenser backpressure exceeds 5.5 inches of Hg abs.
- The 1A and 1B Condenser will lose equal amount of circulating water flow. Trip the unit if condenser backpressure exceeds 3.5 inches of Hg abs.
- The 1A Condenser will lose all circulating water flow. Trip the unit if high differential pressure between condensers exceeds 2.5 inches of Hg abs.
- The 1A Condenser will lose all circulating water flow. Trip the unit if condenser backpressure exceeds 5.5 inches of Hg abs.

Proposed Answer: A

Explanation (Optional):

- A. Correct. The units cannot be maintained on line with only 2 circ water pumps above 30% power. They will have to be tripped when condenser backpressure exceeds 5.5" Hg if power is > 30%.
- B. Incorrect. The units cannot be maintained on line with only 2 circ water pumps above 30% power. 3.5 "Hg is the trip criteria when < 30% power. Plausible if candidate recognizes the unit loses equal amounts of flow to each condenser.
- C. Incorrect. Incorrect: One pump is lost to each condenser - one pump continues to supply flow to each condenser. Plausible if candidate thinks the pumps were lost to one side, the unit would have to be tripped on differential pressure between the A and B side.
- D. Incorrect. One pump is lost to each condenser - one pump continues to supply flow to each condenser. Plausible if candidate thinks the units can be maintained on line with 2 circ water pumps above 30% power.

Technical Reference(s): 1-NOP-21.02, CW System Operation (Attach if not previously provided)

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0704201, Cooling Water Systems; page 23

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Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0704201-03 (As available)

Question Source: Bank # 2395

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	056 G2.1.34	_____
	Importance Rating	_____	2.9

Ability to maintain primary and secondary plant chemistry within allowable limits.

Proposed Question: SRO 93

A Secondary Chemistry transient has occurred on Unit 2.

The Unit Supervisor has entered ONP 2-0610030, Secondary Chemistry-Off Normal.

Chemistry has determined that an Action Level 3 condition exists. Plant Management concurs with the recommended action and time frame.

Which ONE (1) of the following describes the action required for the Chemistry Action Level?

- A. Ensure Feedwater Hydrazine is maintained greater than 8 times Condensate dissolved oxygen and that feedwater dissolved oxygen is < 5 ppb.
- B. Commence a downpower to 28-32% power at a rate of 10-15 MW/min in accordance with 2-ONP-22.01, Rapid Downpower.
- C. Return the chemistry parameter to below the Action Level 3 threshold within 100 hours, or reduce power as recommended by Chemistry to perform a hot soak of the SGs to promote removal of contaminants.
- D. Shutdown to at least Mode 2 in accordance with 2-ONP-22.01, Rapid Downpower, at a rate of 10-15 MW/min, regardless of the duration of the excursion into Action Level 3.

Proposed Answer: D

Explanation (Optional):

Incorrect. Action level 1

Incorrect. Action level 2

Incorrect. Combination of actions for action level 2

Incorrect.

Technical Reference(s): ONP 2-0610030 (Attach if not provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702412-06 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	1
	K/A #	G2.1.10	_____
	Importance Rating	_____	3.9

Knowledge of conditions and limitations in the facility license.

Proposed Question: SRO 94

What ONE (1) of the following is the MOST RESTRICTIVE event associated with Technical Specification requirements for Shutdown Margin?

- A. Excessive cooldown resulting from a Main Steam Break at end of core life from 0% power conditions.
- B. Positive reactivity addition resulting from a Rod Ejection event at end of core life from 100% power conditions.
- C. Positive reactivity addition resulting from a Rod Ejection event beginning of core life from 0% power conditions.
- D. Excessive cooldown resulting from a Main Steam Break at beginning of core life from 100% power conditions.

Proposed Answer: A

Explanation (Optional):

- A. Correct. From 0% power, there is more mass in the SG. End of cycle conditions have the most negative MTC. Therefore, the reactivity transient is most severe.
- B. Incorrect. PDILs are based on Rod Ejection event
- C. Incorrect. PDILs are based on Rod Ejection event
- D. Incorrect. MTC less negative and less mass for boil-off.

Technical Reference(s): TS Basis 3.4.1.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New  X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis  X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43  1

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	1
	K/A #	G2.1.25	
	Importance Rating	_____	3.1

Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

Proposed Question: SRO 95

Unit 2 is in a refueling outage. The following plant conditions exist:

- RCS is at 152°F and atmospheric pressure.
- 2A LPSI Pump is running with cross-tie valve V3545 open.
- Pressurizer level is 10% cold calibrated.
- Reactor has been subcritical for 130 hours.
- CCW temperature is 85°F.
- LPSI flow indicates 3400 GPM

Which ONE (1) of the following describes the plant condition, and action, if any, required, in accordance with 2-NOP-03.05, Shutdown Cooling?

- A. Total Shutdown Cooling flow and LPSI Pump 2A flow are within limits. No action is required.
- B. Total Shutdown Cooling flow is within limits. LPSI Pump 2A flow must be reduced to within limits.
- C. Total Shutdown Cooling flow must be reduced to within limits. LPSI Pump 2A flow is within limits.
- D. Total Shutdown Cooling flow and LPSI Pump 2A flow BOTH must be reduced to within limits.

Proposed Answer: B

Explanation (Optional):

Incorrect.

Correct. Total SDC flow and LPSI Pump 2A flow requirements are determined from figure 1A with PZR level at 10%

Incorrect.

Incorrect.

Technical Reference(s): 2-NOP-03.05, Shutdown Cooling (Attach if not previously provided)

Proposed references to be provided to applicants during examination: 2-NOP-03.05, Appendix C (all)

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # 2562 (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.34	
	Importance Rating		3.2

Knowledge of the process for determining the internal and external effects on core reactivity.

Proposed Question: SRO 96

Core Reload is in progress on Unit 2.

32 Fuel Assemblies have been loaded into the core.

During insertion of the 33<sup>rd</sup> assembly, count rate increases from 110 CPS to 245 CPS.

Which ONE (1) of the following describes the condition that exists and the action required in accordance with POP-3200090, Refueling Operation?

- A. This is an EXPECTED condition during core reload. Direct Reactor Engineering to validate the reading and renormalize the 1/M.
- B. This is an EXPECTED condition during core reload. Direct Reactor Engineering to validate the reading and ensure the 1/M does NOT extrapolate to 0 prior to any additional fuel movement.
- C. This is an UNEXPECTED condition during core reload. Stop all fuel movement, leave the assembly grappled, verify Shutdown Margin, and direct Reactor Engineering to evaluate plant conditions prior to resuming fuel movement.
- D. This is an UNEXPECTED condition during core reload. Withdraw the assembly, verify Shutdown Margin, and direct Reactor Engineering to evaluate plant conditions prior to resuming fuel movement.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Only expected for first 8-15 assemblies  
 B. Incorrect. Only expected for first 8-15 assemblies  
 C. Incorrect. Would not leave the assembly in the core  
 D. Correct.

Technical Reference(s): POP-3200090 (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 6

Comments: WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.6	
	Importance Rating		3.3

Knowledge of the process for making changes in procedures as described in the safety analysis.

Proposed Question: SRO 97

Given the following:

- You are the On-Shift Unit Supervisor.
- You have been designated as the SRO Approval Authority for a Temporary Procedure Change (TC) to an Operations Dept. surveillance procedure.
- The Qualified Reviewer has determined that a 10CFR50.59 Safety Evaluation is NOT required for the TC.
- The TC does NOT change the intent of the procedure.

Which ONE (1) of the following describes the administrative requirements associated with the approval of the TC in accordance with ADM-11.03, Temporary Change to Procedures?

- You may be designated as Independent Reviewer as well as approval authority since it is an Operations Dept. procedure.
- You may be designated as the Management Member as well as the approval authority since it is an Operations Dept. procedure.
- You are required to verify that all other reviews and approvals for the TC have been obtained. You may have no other responsibilities related to the TC.
- You may review the TC as the Management Member but final approval must be obtained from the Shift Manager.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. NO concurrent responsibilities  
 B. Incorrect. NO concurrent responsibilities  
 C. Correct.  
 D. Incorrect. SRO licensed employee may approve a TC. Does NOT have to be SM

Technical Reference(s): ADM 11.03, Temporary Change to Procedures, Section 6.1 (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702841-27 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 3

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>3</u>
	K/A #	<u>G2.3.9</u>	_____
	Importance Rating	_____	<u>3.4</u>

Knowledge of the process for performing a containment purge.

Proposed Question: SRO 98

Given the following conditions:

- Unit 2 is in Mode 4.
- A 12 hour Containment Mini-Purge is planned.

Which ONE (1) of the following describes the requirement for issuance of a Release Permit in accordance with OP 2-0530021, Controlled Gaseous Batch Release to Atmosphere?

- A. A Gaseous Batch Release Permit must be issued for the release. The release is accounted for as a Continuous Release after 10 hours.
- B. A Gaseous Batch Release Permit must be issued for the release. After 10 hours, a new Gaseous Batch Release Permit must be issued to continue the release.
- C. A 12 hour Mini-Purge is considered a continuous release and a Gaseous Batch Release Permit is NOT required if all required Radiation Monitoring instrumentation is operable.
- D. A 12 hour Mini-Purge is considered a continuous release and a Gaseous Batch Release Permit is NOT required UNLESS a Gas Decay Tank release is in progress.

Proposed Answer: A

Explanation (Optional):

- A. Correct. The release is a batch release for 10 hours. Continuous after 10 hours  
 B. Incorrect. After 10 hours, permit will not be required  
 C. Incorrect. If all rad monitors are operable, then alternative sampling does not have to be performed, but a release permit is required for all batch releases  
 D. Incorrect. Precaution in procedure recommends not releasing a decay tank and containment simultaneously

Technical Reference(s): 2-NOP-25.02, Continuous Containment / Hydrogen Purge System Operation (Attach if not previously provided)  
 \_\_\_\_\_  
 OP-2-0530021, Controlled Gaseous Batch Release to Atmosphere  
 \_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0702602-04 (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X \_\_\_\_\_

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge X \_\_\_\_\_  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 4 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>4</u>
	K/A #	<u>G2.4.47</u>	_____
	Importance Rating	_____	<u>3.7</u>

Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate Control Room reference material.

Proposed Question:        SRO 99

Unit 2 is operating at 100% power when the following occurs:

- Loss of Off-Site Power
- Reactor Trip

Subsequently ten minutes after the trip, the following conditions exist:

- AFW is feeding BOTH SGs
- SG 2A Pressure is 950 psia and stable
- SG 2B Pressure is 950 psia and stable
- All RCPs are OFF
- PZR Pressure is 2200 psia and slowly rising
- Thot is approximately 565 °F in both loops and stable
- REPCET is 587 °F
- Tcold is approximately 550 °F in both loops and stable
- Reactor Vessel Level is 100% (Head)

Which ONE (1) of the following describes the status of RCS Heat Removal and the action required, if any?

- A. Natural Circulation exists. The SBCS control valves are maintaining heat removal.
- B. Natural Circulation does not exist. Heat removal may be established by opening the SBCS control valves.
- C. Natural Circulation exists. ADVs are maintaining heat removal.
- D. Natural Circulation does not exist. Heat removal may be established by opening the ADVs.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. SBCS is unavailable with No Circ Water
- B. Incorrect. SBCS is unavailable with no Circ Water
- C. Incorrect. Rep CET and Th are more than 20 degrees off.
- D. Correct.

Technical Reference(s): 1-EOP-09, LOOP/LOFC (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source:	Bank #	<u>X</u>	INPO
	Modified Bank #	_____	(Note changes or attach parent)
	New	_____	

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	_____
	55.43	<u>5</u>

Comments:  
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G2.4.44	
	Importance Rating		4

Knowledge of emergency plan protective action recommendations.

Proposed Question: SRO 100

A General Emergency has been declared.

All Emergency Response Facilities are operational and all turnovers have been completed.

Which ONE (1) of the following describes the person responsible to make Protective Action Recommendations in accordance with EPIP-08, Off-Site Notifications and Protective Action Recommendations?

- A. Shift Manager
- B. Emergency Coordinator
- C. Technical Support Center Coordinator
- D. Recovery Manager

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Initial Responsibility
- B. Incorrect. Starts as SM, then becomes TSC on turnover
- C. Incorrect. Makes PAR after turnover from SM, but provides turnover to EOF
- D. Correct.

Technical Reference(s): EPIP-08, Offsite Notifications and PARs (Attach if not previously provided)

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: 0902701-07 (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New     X    

Question History: Last NRC Exam \_\_\_\_\_

Question Cognitive Level: Memory or Fundamental Knowledge     X      
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43     5    

Comments: