

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	003 A4.08	
	Importance Rating	3.2	

Ability to manually operate and/or monitor in the control room: RCP Cooling Water Supply

Proposed Question: Common 1

Given the following plant conditions:

- Unit 2 operating at 100% power
- CCW pump 2P-025 in service and aligned to Train B for single train operation
- A ground fault causes a Loss of 4KV Bus 2A06
- CCW Train A is in Standby

What operator actions are required to restore CCW to the RCPs?

Manually start CCW Pump...

- A. 2P-024 and transfer the Non-Critical Loop.
- B. 2P-024 and SWC pump 2P-114.
- C. 2P-026 and SWC pump 2P-114.
- D. 2P-026 and transfer the Non-Critical Loop.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. P-114 is wrong SWC pump
- C. Incorrect. P-026 and P-024 are powered from A06
- D. Incorrect. P-026 is powered from A06

Technical Reference(s): SO23-13-7 (Attach if not previously provided)
SD-SO23-400

Proposed references to be provided to applicants during examination: _____

Learning Objective: 55542 (As available)

Question Source: Bank # X(N56847)
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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	003 K4.03	
	Importance Rating	2.8	

Knowledge of RCPS design feature(s) and/or interlock(s) which provide for the following: Adequate lubrication of the RCP

Proposed Question: Common 2

Given the following conditions

RCP Lift Oil Pump P-266 on RCP 2P004 is in the NORMAL position:

Which ONE (1) of the following describes the operation of P-266 when the RCP STOP pushbutton is depressed?

- A. Automatically starts after a 15 second time delay.
- B. Automatically starts in 15 seconds ONLY if the STANDBY Lift Oil Pump fails to start.
- C. Automatically starts when the RCP speed is less than 90%.
- D. Will not AUTO start but may be started manually when RCP speed is less than 90%.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Would start after 15 seconds if witch in STBY and NORM pump failed to start
- B. Incorrect. Opposite switch positions from actual operation
- C. Correct.
- D. Incorrect. Does not have to be started manually if pump is in NORM

Technical Reference(s): SD-SO23-360 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 2XAR02 Obj. 2 (As available)

Question Source: Bank # _____

Modified Bank # X (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>004 K2.01</u>	<u> </u>
	Importance Rating	<u>2.9</u>	<u> </u>

Knowledge of bus power supplies to the following: Boric Acid Makeup Pumps

Proposed Question: Common 3

Which ONE (1) of the following describes the power supplies to the Boric Acid Makeup (BAMU) Pumps?

	<u>BAMU P-174</u>	<u>BAMU P-175</u>
A.	2B04	2B06
B.	2B06	2B04
C.	2B04	2B04
D.	2B06	2B06

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. P-175 powered from B04(BY15)
- B. Incorrect. P-174 powered from B04(BY14)
- C. Correct.
- D. Incorrect. Both pumps powered from opposite bus (B04)

Technical Reference(s): SD-SO23-390 (Attach if not previously provided)
SD-SO23-120

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 AnalysisX

10 CFR Part 55 Content:

55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	004 A3.13	
	Importance Rating	3.4	

Ability to monitor automatic operation of the CVCS, including: RCS temperature and pressure

Proposed Question: Common 4

Given the following conditions:

- Unit 3 at 100% power.
- All control systems are in AUTO.
- Charging Pump 3P-191 is RUNNING.
- A transient causes RCS temperature to rise.

What effect will these conditions have on the Letdown Flow Control Valve, Backpressure Control Valve and Charging flow?

- A. Letdown Flow Control Valve will OPEN further, Backpressure control Valve will OPEN slightly and Charging flow will remain the same.
- B. Letdown Flow control Valve will FULLY OPEN, Backpressure control Valve will FULLY OPEN and Charging flow will DECREASE to minimum.
- C. Letdown Flow Control Valve will FULLY OPEN, Backpressure Control Valve will FULLY OPEN and Charging flow will remain the same.
- D. Letdown Flow Control Valve will OPEN further, Backpressure Control Valve will CLOSE slightly and Charging flow will DECREASE to minimum.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Charging flow will not automatically decrease. One charging pump is in operation and will remain in operation
- C. Incorrect. Charging flow does remain constant, but letdown flow and pressure control valves will not fully open on a temperature increase. An additional failure would have to occur
- D. Incorrect. Charging flow will remain the same, and pressure control will open, not close, to maintain pressure

Technical Reference(s): SD-SO23-390 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2

Group #

1

K/A #

005 A1.01

Importance Rating

3.5

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: Heatup/cooldown rate

Proposed Question: Common 5

Which of the following is "Throttled Closed" to reduce the RCS cooldown rate with ONE train of Shutdown Cooling in service?

- A. Shutdown Cooling Heat Exchanger Outlet Valve (HV-8150 or HV-8151).
- B. Shutdown Cooling Heat Exchanger CCW Cooling Valve (HV-6500 or HV-6501).
- C. Shutdown Cooling Heat Exchanger Inlet Valve (HV-8152 or HV-8153).
- D. SDC HX Bypass Normal Flow Control Valve (HV-8160).

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. CCW valves are normally in a set position open. Not used for throttling
- C. Incorrect. HX inlet valve used for isolation, not throttling
- D. Incorrect. Throttling this valve open would reduce cooldown rate by raising the HX bypass flow.

Technical Reference(s): SO23-3-2.6 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: 53010 (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 X
55.43 _____

Comments:

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

Knowledge of the operational implications of the following concepts as they apply the RHRS: Dilution and boration considerations

Proposed Question: Common 6

Given the following conditions:

- Unit 2 is in Mode 6. Fuel is in the reactor vessel.
- Shutdown Cooling loop 'A' is in service using Low Pressure Safety Injection Pump 2MP015.
- 23.5 feet of water above the reactor vessel flange.
- It is desired to stop Shutdown Cooling for approximately 30 minutes to move lighting and equipment in the refueling cavity
- No Core Alterations or movement of Irradiated Fuel Assemblies, are in progress.

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

- A. The RCS must be 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 temperature limit is 140
- B. Incorrect. Action for radiation level rising in containment
- C. Correct.
- D. Incorrect. 23 feet is the level requirement

Technical Reference(s): TS 3.9.4 (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 X
55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	006 A1.16	
	Importance Rating	4.1	

Ability to predict and/or monitor changes in parameters RCS temperature, including superheat, saturation, and subcooled

Proposed Question: Common 7

The following conditions exist on Unit 2:

- The plant tripped from 100% power due to a LOCA
- The crew is checking SI Throttle / Stop criteria
- S/G E088 Level is 63% NR with AFW flow available
- E088 ADV is throttled open
- E088 Pressure is 940 psia
- S/G E089 Level is 12% NR, with no AFW flow available
- E089 ADV is closed
- E089 Pressure is 940 psia
- CET temperature is 537°F
- Pressurizer Pressure is 1000 psia
- Pressurizer Level is 98% and stable
- Reactor Vessel Head Level is 20% as read on QSPDS
- Reactor Vessel Plenum Level is 100% as read on QSPDS

Which ONE (1) of the following parameters must be RAISED prior to performing SI Throttle / Stop?

- A. SG Pressure.
- B. Pressurizer Level.
- C. RCS Subcooling.
- D. Reactor Vessel Head Level.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Raising SG Pressure would lower subcooling due to RCS heatup
- B. Incorrect. Pressurizer level is above the requirement, although due to a vapor space break
- C. Correct. 537 temp and 1000 psi pressure is less than 20 degrees subcooling
- D. Incorrect. Plenum level 100% satisfies the requirement, although head is less than 100%

Technical Reference(s): SO23-12-11, FS-7 (Attach if not previously provided)

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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	007 A4.10	
	Importance Rating	3.6	

Ability to manually operate and/or monitor in the control room: Recognition of a leaking PORV/code safety.

Proposed Question: Common 8

The following stable plant conditions exist following a normal reactor shutdown:

- PZR level = 52%
- PZR pressure = 1400 psia
- Quench Tank level = 50%
- Quench Tank pressure = 15 psig

What tail pipe temperature would be expected for a leaking PZR code safety valve under these conditions?

- A. 193°F
- B. 234°F
- C. 272°F
- D. 306°F

Proposed Answer: C

Explanation (Optional):

Isenthalpic process results in ~270°F for 30 psia (must use absolute pressure on Mollier diagram vice gage pressure); 193, 234, and 306 are T_{sat} for 10 psia, 24.4 psia, and 1200 psia respectively.

Technical Reference(s): 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 # 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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 A2.01	
	Importance Rating	3.3	

Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCW pump

Proposed Question: Common 9

Given the following plant conditions:

- Unit 2 has tripped due to a LOCA. SIAS and CIAS have actuated.
- Pressurizer pressure is 1100 psia and lowering.
- All equipment responds as designed.
- Subsequently, CCW P-025, running on Train B, trips on overcurrent.

Which ONE (1) of the following describes the impact on plant operation, and the actions that are required?

- A. Train B components have lost CCW flow. Ensure the Non-Critical Loop is aligned to Train A.
- B. Train B components have lost CCW flow. Start CCW P026 or evaluate the need for continued operation of ECCS equipment supplied from Train B CCW.
- C. CCW flow is maintained to all components because CCW pump P026 started on low header pressure. Ensure temperatures of components cooled by CCW remain within limits.
- D. CCW flow is maintained to all components because CCW pump P026 started on the SIAS signal. Ensure temperatures of components cooled by CCW remain within limits.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Non-Critical loop not aligned because RCPs are tripped on CIAS (NCL is isolated)
- B. Correct.
- C. Incorrect. Auto start on low pressure has been removed
- D. Incorrect. If P025 was running on SIAS, P026 would not be running. It must be manually started

Technical Reference(s): SO23-13-7, pg 5 of 105 (Attach if not previously provided)
SO23-12-1

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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 K5.01	
	Importance Rating	3.5	

Knowledge of the operational implications of the following concepts as they apply to the PZR PCS: Determination of condition of fluid in PZR, using steam tables

Proposed Question: Common 10

Given the following conditions:

- The Pressurizer is SOLID; a bubble is being drawn.
- RCS pressure is 350 psia with the Letdown Backpressure Control Valve in AUTO.
- Pressurizer temperature is 380°F and rising at 1°F per minute.

Which ONE (1) of the following is the approximate time before a bubble is formed in the Pressurizer?

- A. 0 - 15 minutes.
- B. 15 - 30 minutes.
- C. 30 - 45 minutes.
- D. 45 - 60 minutes.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Incorrect.
- D. Correct. At 350 psia the saturation temperature 431.73 deg F. A bubble is formed when the pressurizer reaches saturation, so $431 - 380 = 51$ deg F. With a 1 deg F per minute heatup, it will take 51 minutes to reach saturation.

Technical Reference(s): 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 # X (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 X
55.43 _____

Comments:

WTSI Exam Bank – BVPS 2005 NRC Exam

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 G2.2.22	
	Importance Rating	3.4	

Equipment Control Knowledge of limiting conditions for operations and safety limits.

Proposed Question: Common 11

Given the following conditions:

- Unit 2 is at 100% power.
- ONE (1) pressurizer spray valve has failed OPEN in AUTO.
- The CRO closes the spray valve in MANUAL.
- RCS Pressure stabilizes at 2000 psia.

Which ONE (1) of the following describes the parameter related to an RCS safety limit that is MOST affected by this failure?

- A. DNBR
- B. RCS flow
- C. Linear Heat Rate
- D. Peak Centerline Temperature

Proposed Answer: A

Explanation (Optional):

- A. Correct. LCO for DNBR would not be met. TSAS entered at 2025 psia
- B. Incorrect. RCS flow also inputs to DNBR
- C. Incorrect. Inputs to safety limit for fuel
- D. Incorrect. Same as LHR, different name

Technical Reference(s): TS 3.4.1 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 K2.01	
	Importance Rating	3.0	

Knowledge of bus power supplies to the following: PZR heaters

Proposed Question: Common 12

Which ONE (1) of the following correctly describes the power supplies to the Unit 2 Pressurizer heaters?

	Backup Heater Train A (E128)	Backup Heater Train B (E129)	Proportional Heater (E122)
A.	2B04	2B06	2B02
B.	2B06	2B04	2B02
C.	2B02	2B04	2B06
D.	2B04	2B02	2B06

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. E128 and E129 swapped
- C. Incorrect. E128, E129, E122 all wrong supplies.
- D. Incorrect. E129 and E122 are swapped

Technical Reference(s): SD-SO23-360 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 55417 (As available)

Question Source: Bank # _____

Modified Bank # X (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	012 K2.01	
	Importance Rating	3.3	

Knowledge of bus power supplies to the following: RPS channels, components, and interconnections

Proposed Question: Common 13

Given the following conditions:

- Unit 2 is at 100% power.
- Pressurizer Level Control is selected to Channel X
- Pressurizer Pressure Control is selected to Channel X

Which ONE (1) of the following describes a result from a loss of Vital Instrument Bus 2Y02?

- A. CEAC 1 failure.
- B. All Pressurizer Heaters energize.
- C. All 3 Charging Pumps automatically start.
- D. Reactor trip due to a CPC channel B Aux Trip.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Would be correct for channel Y loss of power (2Y01)
- C. Incorrect. Would be correct for channel Y loss of power (2Y01)
- D. Incorrect. Need more than 1 channel to trip to generate reactor trip on a CPC Aux Trip. Only 1 channel trips

Technical Reference(s): SO23-13-18 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 55180 (As available)

Question Source: Bank # _____
Modified Bank # X (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 K3.01	
	Importance Rating	4.4	

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

Proposed Question: Common 14

Given the following conditions:

- A LOCA has occurred.
- RCS pressure is 100 psig.
- All LPSI pumps are tripped.
- HPSI Pump P-018 is operating as designed.
- All other HPSI pumps are tripped.
- Rx Vessel Plenum Level is 20%

If this condition continues, which ONE (1) of the following describes the effect on the fuel assemblies?

- A. Fuel failure will not occur. Minimum safety function requirements are met.
- B. Fuel failure will not occur. SIT injection will maintain core cooling.
- C. Fuel failure may occur. Minimum safety function requirements are NOT met.
- D. Fuel failure may occur. Minimum safety function requirements are met, but the break is too large for a HPSI pump to provide core cooling.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Safety Function requires 1 full train of ECCS
- B. Incorrect. SIT Injection design basis is for refill on a LBLOCA with LOOP. For this event, they have already performed their design function
- C. Correct.
- D. Incorrect. Minimum SF are NOT met with less than 1 full train of ECCS

Technical Reference(s): _____ (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 A4.01	
	Importance Rating	3.6	

Ability to manually operate and/or monitor in the control room: CCS fans

Proposed Question: Common 15

Given the following sequence of events (the below items are listed in chronological order):

- T = 0 sec - Unit 2 was at 100% power when a reactor trip occurred.
- T = 0 sec - An Excess Steam Demand Event (ESDE) inside containment is in progress.
- T = 30 sec - Safety Injection Actuation System (SIAS) has automatically actuated.
- T = 35 sec - Reserve Auxiliary Transformer 2XR1 relays on sudden pressure.
- T = 38 sec - Diesel Generator 2G003 started and is loaded on bus 2A06.
- T = 38 sec - Diesel Generator 2G002 started and tripped.

Which Containment Emergency Cooling Units are performing the containment cooling function 2 minutes after event initiation?

- A. Only Train A.
- B. Only Train B.
- C. Both Train A and B.
- D. Neither Train A nor Train B.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Train A cooling is not available with LOOP and loss of G002
- B. Correct. Train B cooling is available if 2XR1 relays, causing a LOOP. G003 is running loaded. Automatic SIAS starts ECUs with power available
- C. Incorrect. Train A unavailable
- D. Incorrect. Train B is available because G003 is available

Technical Reference(s): SD-SO23-720 (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 X
55.43 _____

Comments:

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 CSS controls including: Containment temperature

Proposed Question: Common 16

Given the following conditions:

- A LOCA has occurred.
- SIAS/CCAS did NOT actuate automatically or manually. All other required actions have occurred.
- Bus 2A06 is locked out.
- RCS pressure is 600 psig.
- Containment pressure is 26 psig and rising.
- Containment temperature is 220°F.

Which ONE (1) of the following describes the MINIMUM actions required to reduce containment parameters?

- A. Manually actuate a Containment Spray Actuation signal (CSAS).
- B. Start Containment Spray Pump P-012.
- C. Open Containment Spray Pump discharge isolation.
- D. Start all available ECU's, Spray Pump P-012, and open Containment Spray Pump discharge isolation.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Will not start a Cnmt Spray Pump by actuating CSAS
- B. Correct. Did not start because SIAS is NOT actuated
- C. Incorrect. Will already be open because CSAS has occurred
- D. Incorrect. No need to open valve

Technical Reference(s): SD-SO23-720 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 G2.1.30	
	Importance Rating	3.9	

Conduct of Operations: Ability to locate and operate components, including local controls.

Proposed Question: Common 17

Which ONE (1) of the following describes the sequence of actions necessary to locally operate a SG ADV?

- A. Remove clevis pin.
Isolate air and N₂.
Open valve.
- B. Remove clevis pin.
Isolate air and N₂.
Re-install clevis pin.
Open valve.
- C. Isolate air and N₂.
Remove clevis pin.
Rotate shaft to re-install clevis pin.
Open valve.
- D. Isolate air and N₂.
Remove clevis pin.
Open valve.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Isolate air first
- B. Incorrect. Isolate air first
- C. Correct.
- D. Incorrect. Clevis pin must be installed

Technical Reference(s): SO23-13-2, Attachment 23 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	059 K3.02	
	Importance Rating	3.6	

Knowledge of the effect that a loss or malfunction of the MFW will have on the following: AFW system

Proposed Question: Common 18

15 minutes ago a complete loss of off-site power occurred, resulting in a unit trip from full power.

NO operator actions have been taken, and all systems have functioned as designed.

How are the S/Gs being automatically maintained as a heat removal path?

- A. AFW supplying S/Gs; steaming out Main Steam Safety Valves
- B. AFW supplying S/Gs; steaming using the Atmospheric Dump Valves.
- C. MFW supplying S/Gs; steaming using the Atmospheric Dump Valves.
- D. AFW supplying S/Gs; steaming using the SBCS.

Proposed Answer: A

Explanation (Optional):

- A. Correct. MSRs are isolated, so only steam path would be through MSSVs
- B. Incorrect. ADV setpoints are manually adjusted. Without action, they remain closed.
- C. Incorrect. With a LOOP, MFW is unavailable
- D. Incorrect. With a LOOP, Circ Water is lost, meaning SBCS is unavailable

Technical Reference(s): 2TA708 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6816 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061 K6.01	
	Importance Rating	2.5	

Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners

Proposed Question: Common 19

Given the following conditions:

- The unit tripped from 100% power 20 minutes ago.
- Both Steam Generator levels lowered to 17% (NR) and have recovered to 26% (NR).
- The operator depressed the "Override" pushbuttons for the AFW valves and continued to feed both steam generators at 200 GPM each.

Subsequently:

- Steam Generator E088 pressure decreases to 700 psia.
- Steam Generator E089 pressure decreases to 850 psia.

Which ONE (1) of the following conditions will exist based upon the above conditions? (Assume no further operator actions.)

- A. Both steam generators E088 and E089 will be fed.
- B. E088 will be fed and E089 will be isolated.
- C. Neither steam generator E088 nor E089 will be fed.
- D. E089 will be fed and E088 will be isolated.

Proposed Answer: A

Explanation (Optional):

AFW control valves already overridden open do not respond to subsequent EFAS or MSIS signals. AFW pumps are not affected by MSIS. If not in override, the SG with the higher pressure (E089) would be fed, so in this configuration, it is possible to feed a SG with low pressure

Technical Reference(s): SDF-SO23-780 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6512 (As available)

Question Source: Bank # X(8048)
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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	062 G2.4.6	
	Importance Rating	3.1	

Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.

Proposed Question: Common 20

Given the following conditions:

- A Station Blackout has occurred.
- The diesel generators have both failed to start.
- SO23-12-1 Standard post trip Actions steps 1 through 10 have been completed.
- Diagnosis of Station Blackout has been verified.
- Actions have been taken to notify the Shift Manager of the situation.
- The Emergency plan has been initiated.

Of the following actions, which ONE (1) will be performed FIRST In accordance with SO23-12-8, Station Blackout?

- A. Isolate Letdown to conserve RCS Inventory.
- B. Initiate SO23-12-11, Attachment 8, Restoration of Offsite Power.
- C. Restore and maintain at least one (1) S/G level between 30% and 80% NR.
- D. Bleed steam as necessary to maintain S/G pressure 1100 psia using ADV's.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Performed after restoration is initiated
- B. Correct.
- C. Incorrect. SG level is maintained, but at a minimum of 40%
- D. Incorrect. 1100 psig is too high. Pressure would be maintained at 1000 psia

Technical Reference(s): SO23-12-8 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	063 A4.01	
	Importance Rating	2.8	

Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses

Proposed Question: Common 21

EDG 2G002 is being operated in parallel with normal power when the Diesel Generator output breaker control power fuses blow. In this configuration, the generator output breaker:

- A. Will immediately trip open.
- B. Can be opened from the control room.
- C. Will trip open on a loss of generator excitation.
- D. Can only be opened manually at the breaker cubicle.

Proposed Answer: D

Explanation (Optional):

On a loss of breaker control power the breaker cannot be operated remotely. It will not open on most generator trip signals, including loss of field. It will remain closed unless manually tripped from the breaker cubicle.

Technical Reference(s): DWG 30328 (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 4/2005Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	064 K1.03	
	Importance Rating	3.6	

Knowledge of the physical connections and/or cause-effect relationships between the ED/G system and the following systems:
Diesel fuel oil supply system

Proposed Question: Common 22

Which ONE (1) of the following conditions requires entry into a Technical Specification action statement while Unit 2 is at normal operating temperature and pressure?

- A. Diesel Generator 2G002 Fuel Oil Day Tank level is 32 inches.
- B. Fuel Oil Storage Tank 2T035 level is 45,200 gallons.
- C. Tcold is 544°F.
- D. Charging Pump 2P191 is tagged out for repairs.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Day Tank minimum TS level is 30 inches.
- B. Correct. Fuel Oil Storage Tank minimum TS level is 45,662 gal.
- C. Incorrect. Minimum Tcold is 541
- D. Incorrect. If 2P191 is OOS, would only be in a TSAS if nother Charging Pump was OOS

Technical Reference(s): TS 3.8.3 (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 4/2005Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

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 the PRM system and the following systems:
Those systems served by PRMs

Proposed Question: Common 23

The Plant Vent Stack/Containment Purge Radiation Monitor, 2RE-7865, is currently aligned to the plant vent stack.

Which ONE (1) of the following actions will occur upon alarm of 2RE-7865?

- A. Continuous Exhaust Fans A310, A311, A312 stop.
- B. Containment Purge Isolation Signal is initiated.
- C. Outside Containment Purge Isolation valves receive a close signal.
- D. Waste Gas Discharge Isolation Valve, HV-7202, receives a close signal.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. If the fans tripped, then 7202 would close,
- B. Incorrect. Aligned to Plant Vent, CPIS will not be generated
- C. Incorrect. Valves would not receive an input from RE7865 if it was aligned to the plant vent
- D. Correct.

Technical Reference(s): SD-SO23-690, 660 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 7582 (As available)

Question Source: Bank # X(3139)
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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	073 K4.01	
	Importance Rating	4.0	

Knowledge of PRM system design feature(s) and/or interlocks which provide for the following: Release termination when radiation exceeds setpoint

Proposed Question: Common 24

Given the following conditions:

- Unit 2 is in MODE 6.
- During fuel inspection activities, the fuel inspection device was raised out of the Spent Fuel Pool.
- Airborne radiation levels as sensed by the Fuel Handling Building Vent Airborne Monitors RE-7822 & RE-7823 have exceeded the alarm/trip setpoint.
 - RE-7822 is in bypass
 - RE-7823 is in normal operation

Based on these conditions, which of the following statements represents correct system response?

- A. FHIS actuation, Train 'A'.
- B. FHIS actuation, Train 'B'.
- C. FHIS actuation, Trains 'A' and 'B'.
- D. No FHIS actuation occurs.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Train A is initiated by 7822, which is in BYPASS

B. Correct.

C. Incorrect. No cross train trip on FHIS, so only 7823 will provide a trip to it's own train

D. Incorrect. 1 out of 2, each gets it's own. Does not require 2 of 2 logic to isolate

Technical Reference(s): SD-SO23-690 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(864)
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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	076 A3.02	
	Importance Rating	3.7	

Ability to monitor automatic operation of the SWS, including: Emergency heat loads

Proposed Question: Common 25

Given the following conditions:

- Following a CCW system failure, CCW and SWC are transferred from Train A to Train B operation.
- All equipment has been shifted to Train B and the ACO depresses the SWC Pump P112 STOP Pushbutton.
- NO other action is taken on SWC Pump P112.

Subsequently:

- An automatic SIAS signal is generated

Which ONE (1) of the following describes the subsequent operation of SWC Pump P112?

- Immediately starts automatically. SWC Pump P112 flow will be aligned to Train "B" CCW.
- Starts automatically in approximately 20 seconds. SWC Pump P112 flow will be aligned to Train "A" CCW.
- Must be manually started, and will start 5 seconds after the START Pushbutton is depressed. SWC Pump P112 flow will be aligned to Train "B" CCW.
- Must be manually started if no CCW pump starts. SWC Pump P112 flow will be aligned to Train "A" CCW.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. No immediate start for SWC on SIAS.
- B. Correct. Train A SWC will align to Train A CCW
- C. Incorrect. Will auto start, although would get an auto start signal 5 seconds after CCW starts
- D. Incorrect. Will auto start on sequenced safeguards signal

Technical Reference(s): SD-SO23-410 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6253 (As available)

Question Source:	Bank #	<u>X</u>	
	Modified Bank #	<u> </u>	(Note changes or attach parent)
	New	<u> </u>	

Question History: Last NRC Exam

Question Cognitive Level:	Memory or Fundamental Knowledge	<u> </u>
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	<u>X</u>
	55.43	<u> </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>078 K4.01</u>	<u> </u>
	Importance Rating	<u>2.7</u>	<u> </u>

Knowledge of IAS design feature(s) and/or interlock(s) which provide for the following: Manual/automatic transfers of control

Proposed Question: Common 26

The following conditions exist on Unit 3:

- Instrument Air Compressor C002 is out of service.
- Instrument Air Compressor C001 has tripped on overcurrent.
- Local Instrument Air Pressure Gage 3PI5363 at L102 indicates 105 psig and LOWERING.
- Instrument Air Compressor C003 READY light is illuminated.
- Instrument Air Compressor C003 is NOT running.

Which ONE (1) of the following describes the reason that Instrument Air Compressor C003 has NOT started?

- A. C003 has tripped and must be manually reset.
- B. C003 local control switch is selected to OFF.
- C. C003 local control switch is selected to LAG-1.
- D. C003 control room start switch must be depressed.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Ready light would be off
- B. Incorrect. Ready light would be off
- C. Correct. If in LAG-1, the compressor will not start until pressure reaches approximately 95 psig
- D. Incorrect. Compressor is set up for auto operation, no start switch must be depressed

Technical Reference(s): SO23-1-1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(A8096)
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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 K3.01	
	Importance Rating	3.1	

Knowledge of the effect that a loss or malfunction of the IAS will have on the following: Containment air system

Proposed Question: Common 27

Instrument Air will automatically ISOLATE if an Instrument Air rupture develops, in which of the following areas?

- A. Penetration Area.
- B. Fuel Handling Building.
- C. Radwaste Building.
- D. Containment.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Must be manually located and isolated
- B. Incorrect. Must be manually located and isolated
- C. Incorrect. Must be manually located and isolated
- D. Correct. Excess flow check valve

Technical Reference(s): SD-SO23-570 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(27855)
 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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 K3.01	
	Importance Rating	3.3	

Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under shutdown conditions

Proposed Question: Common 28

Which ONE (1) of the following conditions would be considered a "Loss of Containment Integrity" with the plant in MODE 6? (Core Alterations are in progress)

- A. One door in each air lock becomes inoperable.
- B. Equipment hatch being held closed by two (2) bolts.
- C. One Containment Purge Isolation valve fails closed.
- D. One Containment Emergency Cooling Unit Containment Isolation Valve becomes inoperable.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Mode 6, only 1 door in each airlock is required
- B. Correct. Minimum of 4 bolts required
- C. Incorrect. If Purge Isolation failed open, would potentially be a loss of integrity
- D. Incorrect. ECU CIV inop does not constitute a loss of integrity. Valves fail closed.

Technical Reference(s): TS 3.9.3 (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 X
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>001 K6.13</u>	<u> </u>
	Importance Rating	<u>3.6</u>	<u> </u>

Knowledge of the effect of a loss or malfunction on the following CRDS components: Location and operation of RPIS

Proposed Question: Common 29

50A38, CEA Group Deviation is in alarm.

Which ONE (1) of the following describes the source of the alarm and the indication used to validate it?

<u>SOURCE</u>	<u>VALIDATION</u>
A. Plant Monitoring System	Core Operating Limit Supervisory System
B. Plant Monitoring System	CEAC 1 and 2
C. CEAC 1 and 2	Plant Monitoring System
D. CEAC 1 and 2	Core Operating Limit Supervisory System

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. COLSS not used for backup indication. COLSS does monitor parameters that would be affected by a CEA deviation
- B. Correct.
- C. Incorrect. Opposite of actual
- D. Incorrect. CEAC is backup. COLSS not used for this alarm

Technical Reference(s): ARP 50A38 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	011 K5.09	
	Importance Rating	2.6	

Knowledge of the operational implications of the following concepts as they apply to the PZR LCS: Reason for manually controlling PZR level

Proposed Question: Common 30

The plant is operating at 50% power.

The selected Pressurizer level SETPOINT fails high.

- The Pressurizer Level Control System responds as designed.
- The CRO places the Pressurizer Level controller, LIC-0110, to MANUAL.

What ADDITIONAL action must be taken to minimize the change in Pressurizer level resulting from the SETPOINT failure?

- A. Secure two Charging Pumps to maintain pressurizer level on program.
- B. Reduce Letdown flow to minimum to prevent uncover of pressurizer heaters.
- C. Isolate Letdown to prevent uncover of pressurizer heaters.
- D. Manually start Charging Pumps as necessary to maintain pressurizer level on program.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Letdown flow will already be at minimum
- C. Incorrect. Would not be required to isolate, because an actual low level does not exist
- D. Incorrect. A false low level exists, not an actual low level.

Technical Reference(s): ARP 50A12 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(N57474)
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 X
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>014 A2.04</u>	<u> </u>
	Importance Rating	<u>3.4</u>	<u> </u>

Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Misaligned rod

Proposed Question: Common 31

The following conditions exist:

- Unit 2 is at 65 % power and CEA recovery of a dropped CEA, # 20, is in progress.
- Group 6 is at 149 inches withdrawn.
- CEA # 20 (a Group 6 CEA) is at 100 inches withdrawn.
- CEA # 1 (a Group 2 CEA) drops into the core, indicating 6 inches withdrawn.

Which ONE (1) of the following describes the impact of this condition and the correct required action(s)?

- A. Power peaking limits may be exceeded if the conditions are allowed to continue. Continue realigning CEA # 20, then align CEA # 1 with their respective groups in accordance with SO23-13-13, Misaligned or Immovable Control Element Assembly.
- B. Shutdown Margin requirements CANNOT be met in this condition. Realign CEA # 1, then continue aligning CEA # 20 with their respective groups in accordance with SO23-13-13, Misaligned or Immovable Control Element Assembly.
- C. Power peaking limits may be exceeded if the conditions are allowed to continue. Manually trip the reactor and enter SO23-12-1, Standard Post Trip Actions.
- D. Shutdown Margin requirements CANNOT be met in this condition. Initiate a rapid downpower in accordance with SO23-5-1.7, Power Operations.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. More than 1 CEA misaligned requires a reactor trip
- B. Incorrect. More than 1 CEA does not have to be dropped, only misaligned, to require a reactor trip
- C. Correct.
- D. Incorrect. Correct action for 1 CEA misaligned

Technical Reference(s): SO23-13-13 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	015 K4.06	
	Importance Rating	3.9	

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

Proposed Question: Common 32

Given the following conditions:

- Unit 2 is at 100% power.
- RPS Channel 1 Hi Log Power is in BYPASS for I&C testing.
- RPS Channel 2 Hi Log Power is operating erratically and must be taken out of service.

Which ONE (1) of the following describes the action that is required for taking the channel out of service?

- A. Channel 2 must be placed in TRIP.
- B. Channel 2 must be placed in BYPASS for testing for up to 2 hours.
- C. Channel 2 must be placed in BYPASS. One Channel must be returned to service within 1 hour, or one channel placed in TRIP.
- D. Channel 2 must NOT be placed in TRIP or BYPASS until Channel 1 is returned to service.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Cannot have 2 channels in bypass at the same time. Placing a channel in bypass will insert a trip on the other channel
- C. Incorrect. May not place in bypass if a channel is already in bypass
- D. Incorrect. Channel may be placed in TRIP

Technical Reference(s): SO23-3-2.12 (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 X
55.43 _____

Comments:

Learning Objective: _____ (As available)

Question Source: Bank # X(N5743)
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 X
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>029 K3.01</u>	<u> </u>
	Importance Rating	<u>2.9</u>	<u> </u>

Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following: Containment parameters

Proposed Question: Common 34

Given the following:

- The plant is in Mode 4.
- A Containment Mini-Purge is in progress.
- The Containment Mini-Purge Exhaust Isolation valve fails closed.
- NO other components reposition.

Which ONE (1) of the following describes the containment parameter MOST affected by this failure?

- A. Pressure
- B. Temperature
- C. Radiation Level
- D. Humidity Level

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Temperature will remain constant since the Purge system does not provide a cooling function
- C. Incorrect. Radiation levels would only rise to cause a purge isolation, they would not rise because of an isolation
- D. Incorrect. Humidity is a function of the containment temperature and dewpoint, which are unaffected by purge control operation.

Technical Reference(s): SD-SO23-770 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	035 A2.04	
	Importance Rating	3.6	

Ability to (a) predict the impacts of the following mal-functions or operations on the S/GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Steam flow/feed mismatch

Proposed Question: Common 35

Given the following conditions on SG E088:

- Steam flow is greater than Feed flow.
- Narrow Range level is lowering.
- FWCS master controller output is lowering.
- FWCV is closing.
- Both Feedwater Pump Speeds are stable.

Which ONE (1) of the following actions is required?

- A. Place E088 Master Controller in Preferred Manual and attempt to raise level in accordance with SO23-13-24, Feedwater Control System Malfunctions.
- B. Place E088 FWCV in manual and attempt to raise output in accordance with SO23-9-6, Feedwater Control System Operations.
- C. Place K-006 or K-005 EAP/MSD in manual and attempt to raise output in accordance with SO23-13-24, Feedwater Control System Malfunctions.
- D. Reevaluate determination of affected SG or ensure system is operating in automatic as required in accordance with SO23-9-6, Feedwater Control System Operations.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. FWCV is performing its required function
- C. Incorrect. Feed Pump speed control is not the cause of the problem. Would perform if master does not function
- D. Incorrect. Determination can be made from the indications available. Would perform if indications were not clear

Technical Reference(s): SO23-13-24 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 55123 (As available)

Question Source: Bank # _____
Modified Bank # X (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	041 K5.01	
	Importance Rating	2.9	

Knowledge of the operational implications of the following concepts as they apply to the SDS: Relationship of no-load T-ave. to saturation pressure relief setting on valves

Proposed Question: Common 36

Given the following conditions:

- The plant is in Mode 3.
- SBCS is maintaining steam pressure at 1000 psig in AUTO.
- All SBCS valves have subsequently failed closed.

Approximately how far will RCS temperature rise prior to reaching the lift setpoint of the low set SG safety valves?

- A. 2°F
- B. 5°F
- C. 8°F
- D. 11°F

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Corresponds to normal modulating range of SBCS with allowance for psig/psia errors
- B. Incorrect. See above
- C. Incorrect. See above
- D. Correct. No Load temperature is approximately 544 deg F at 1000 psig. Low set safety valve is at 1100 psig, corresponding to approximately 555 deg F

Technical Reference(s): 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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	045 K4.42	
	Importance Rating	2.8	

Knowledge of MT/G system design feature(s) and/or inter-lock(s) which provide for the following: Operation of SDS (turbine bypass) in event of load loss or plant trip

Proposed Question: Common 37

Given the following conditions:

- Unit 3 is at 40% power.
- All control systems in AUTO.
- The Main Turbine Generator trips on a voltage regulator card failure.

Assuming no operator action, which ONE (1) of the following describes the secondary plant response immediately following the occurrence?

- A. SBCS valves quick open.
- B. SBCS valves modulate open.
- C. ADVs modulate open.
- D. Main Steam Safety Valves lift.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Quick open if turbine trips at less than 55 power (No Reactor Trip)
- C. Incorrect. ADVs are modulated manually. Requires action
- D. Incorrect. MSSVs would not lift unless an additional failure occurred

Technical Reference(s): SD-SO23-175 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: _____ (As available)

Question Source: Bank # _____
Modified Bank # X (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 X
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>002 A3.03</u>	<u> </u>
	Importance Rating	<u>4.4</u>	<u> </u>

Ability to monitor automatic operation of the RCS, including: Pressure, temperature, and flows

Proposed Question: Common 38

Unit 3 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 P-140 is feeding BOTH SGs
- SG E088 Pressure is 1000 psia and stable
- SG E089 Pressure is 1000 psia and stable
- All RCPs are OFF
- PZR Pressure is 2200 psia and slowly rising
- Thot is approximately 560 °F in both loops and stable
- REPCET is 560 °F
- Tcold is approximately 545 °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?

- 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: C

Explanation (Optional):

- A. Incorrect. LOOP; SBCS unavailable due to loss of Circ Pumps
B. Incorrect. LOOP; SBCS unavailable due to loss of Circ Pu
C. Correct.
D. Incorrect. Natural Circ exists because Tcold is close to saturation of SGs, REP CET and Thot are within 16 deg F.

Technical Reference(s): SO23-12-11, FS-3 (Attach if not previously provided)
SO23-12-1

Proposed references to be provided to applicants during examination: _____

Learning Objective: 103865 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	007 EK2.02	
	Importance Rating	2.6	

Knowledge of the interrelations between a reactor trip and the following: Breakers, relays and disconnects

Proposed Question: Common 39

Which ONE (1) of the following combinations of OPEN RTCBs will result in a Reactor Trip?

- A. Trip breakers 1, 2, 5, 6.
- B. Trip breakers 1, 3, 5, 7.
- C. Trip breakers 3, 4, 7, 8.
- D. Trip breakers 6, 7, 8, 9.

Proposed Answer: B

Explanation (Optional):

A combination of trip breakers must be open for a scram to occur. Breakers 1 and 5 and breakers 3 and 7 must be open making B the correct answer.

Technical Reference(s): SD-SO23-710 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____
 Modified Bank # X (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	008 AK1.02	
	Importance Rating	3.1	

Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Change in leak rate with change in pressure

Proposed Question: Common 40

Initial Conditions:

- An RCS Leak has occurred.
- RCS pressure is 2200 psia.
- Pressurizer level is 20% and lowering.
- The leak size is estimated at 1000 gpm.

Current Conditions:

- The RCS leak is determined to be a vapor space break.
- RCS pressure is 1100 psia and stable.
- Pressurizer level is 70% and rising.

What is the current approximate RCS leak rate?

- A. 1000 gpm
- B. 700 gpm
- C. 500 gpm
- D. 300 gpm

Proposed Answer: B

Explanation (Optional):

Leak rate is proportional to the square root of the DP. Half the original pressure will correspond to a leak rate approximately 70% of original

Technical Reference(s): Formula Sheet (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	009 EA1.17	
	Importance Rating	3.4	

Ability to operate and monitor the following as they apply to a small break LOCA: PRT

Proposed Question: Common 41

Given the following Unit 2 conditions:

- Reactor tripped from 100% power.
- A LOCA is in progress.
- Pressurizer pressure = 1870 psia.
- Containment pressure = 3.8 psig.

Which ONE (1) of the following states where RCP bleedoff flow is being directed?

- A. Volume Control Tank
- B. Reactor Coolant Drain Tank
- C. Quench Tank
- D. Containment Sump

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Normal bleedoff flow goes to VCT
- B. Incorrect. RCDT gets other drains as well as Quench Tank Drains
- C. Correct. CIAS isolates seal bleedoff and
- D. Incorrect. Containment Sump would not receive input from RCP bleedoff unless there was a leak

Technical Reference(s): SD-SO23-360 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	015 AA1.20	
	Importance Rating	2.7	

Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): RCP bearing temperature indicators

Proposed Question: Common 42

A loss of the CCW Non-Critical Loop occurred 1 minute ago.

The crew is performing actions of SO23-13-7, Loss of Component Cooling Water (CCW)/Saltwater Cooling (SWC).

RCP Thrust Bearing temperatures indicate 221°F and are rising at 1°F per minute.

Assuming the current trends continue, an RCP operating limit requiring a reactor trip will be exceeded in...

- A. 1 minute
- B. 2 minutes
- C. 3 minutes
- D. 4 minutes

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. See explanation for D
- B. Incorrect.
- C. Incorrect.
- D. Correct. Loss of CCW for 5 minutes, or temperature reaching 225 deg F requires a reactor trip

Technical Reference(s): SO23-13-6 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6537 (As available)

Question Source: Bank # _____
Modified Bank # X (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	025 AA1.08	
	Importance Rating	2.9	

Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: RHR cooler inlet and outlet temperature indicators

Proposed Question: Common 43

Given the following conditions:

- Unit 2 is in Mode 5.
- Mid Loop operations are in progress.
- A complete loss of Shutdown Cooling flow occurs.

Which ONE (1) of the following temperature indications provides valid indication for reactor core conditions?

- A. TI-8148, Shutdown Cooling Heat Exchanger Inlet temperature
- B. T351X, Shutdown Cooling Heat Exchanger Outlet temperature
- C. Core Exit Thermocouple temperatures
- D. Loop 1 and Loop 2 Tcold

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Correct. Actual RCS temperature will be indicated by CETs
- D. Incorrect.

Technical Reference(s): SO23-13-15 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6576 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	026 AA1.05	
	Importance Rating	3.1	

Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: The CCWS surge tank, including level control and level alarms, and radiation alarm

Proposed Question: Common 44

Given the following conditions:

- Unit 2 is shutdown.
- RCS Temperature is 280° F.
- RCS pressure is 300 psia.
- Train B CCW Surge Tank Level has risen from 40% to 55% in 20 minutes.
- RE-7819, CCW radiation monitor, is in Alarm.
- Pressurizer Level is 60% and stable.
- VCT level dropped from 77% to 73% in 20 minutes.

Which ONE (1) of the following components is causing the CCW Surge Tank Level rise?

- A. Spent Fuel Pool heat exchanger tube leak.
- B. Shutdown Cooling heat exchanger tube leak.
- C. CEDM Cooler leak.
- D. Steam Generator sample cooler leak.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Lower pressure than CCW
- B. Correct.
- C. Incorrect. Lower pressure than CCW
- D. Incorrect. Lower pressure than CCW

Technical Reference(s): SO23-13-7 (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 2003 NRC

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	027 AA2.05	
	Importance Rating	3.2	

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: PZR Heater setpoints

Proposed Question: Common 45

The following conditions exist on Unit 2:

- Reactor tripped from 100% power about 10 minutes ago.
- Pzr Pressure control is selected to PT 0100X and this channel has failed HIGH.
- Pzr spray valves are in MANUAL and closed; Pzr heaters are in AUTO.
- Pzr pressure – 2100 PSIA
- Pzr level fell to 28% and is recovering.
- S/G levels fell to 18% (E089), 19% (E088) and are now recovering.
- S/G pressure – 1000 psia (E089); 1010 psia (E088).

Which ONE (1) of the following is the condition of the pressurizer heaters?

- A. All Pzr heaters are on.
- B. The backup heaters and proportional heaters are on. Both 1E heater banks are off.
- C. All Pzr heaters are off.
- D. Train 'A' 1E heater bank is on, Train 'B' 1E heater bank, the backup heaters and the proportional heaters are off.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. All heaters are off because controlling channel failed high
- B. Incorrect. All heaters are off because controlling channel is failed high
- C. Correct. All heaters are controlled by Channel X, which was selected and failed high
- D. Incorrect. Backup heaters will be off if the controlling channel is failed

Technical Reference(s): SO23-13-27, Att 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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	029 EK3.11	
	Importance Rating	4.2	

Knowledge of the reasons for the following responses as they apply to the ATWS: Initiating emergency boration

Proposed Question: Common 46

Which ONE (1) of the following describes a reason for initiating an emergency boration while performing Standard Post Trip Actions?

- A. To insert negative reactivity in the event that the Main Turbine fails to trip.
- B. To ensure Technical Specification Shutdown Margin requirements are met.
- C. Emergency boration is the ONLY means available to shut down the reactor if the Manual reactor trip pushbuttons do not function.
- D. Boration flow is required because the Diverse Scram System (DSS) is not credited in the SONGS Safety Analysis.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. ATWS and turbine fail to trip are different events for the SPTAs. While boration will provide the function, the reason is different
- B. Correct.
- C. Incorrect. Other methods available, such as inserting CEAs manually, opening PG breakers.
- D. Incorrect. Although DSS is not credited, it is not the reason boration flow is required

Technical Reference(s): SO23-14-1 (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 X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	038 EA1.39	
	Importance Rating	3.6	

Ability to operate and monitor the following as they apply to a SGTR: Drawing SG into the RCS, using the "Feed and Bleed" method

Proposed Question: Common 47

Given the following conditions:

- A Steam Generator Tube Rupture has occurred on SG E-089.
- Actions of EOI 12-4, SGTR, are in effect.
- SG E-089 level is off-scale high.
- Pzr level is off-scale low.
- ECCS is operating as designed.
- E-089 has just been isolated.
- REP-CET is 500° F
- RCS pressure is 1250 psig and slowly lowering.
- SG E-089 pressure is 1050 psig and slowly rising.

Which ONE (1) of the following actions is required?

- A. Open SG E-089 MSIV to prevent overpressurization of the ruptured SG.
- B. Commence lowering RCS pressure to initiate backflow.
- C. Maintain RCS pressure greater than SG E-089 pressure to minimize RCS dilution.
- D. Raise the setpoint of SG E-089 ADV to minimize radiological release.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Would cause Main Steam Lines to fill with water
- B. Correct.
- C. Incorrect. Overfill is occurring. Keep safety valves from lifting by initiating backflow
- D. Incorrect. Raise the setpoint could potentially challenge MSSVs

Technical Reference(s): SO23-12-4 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	040 AA1.09	
	Importance Rating	3.4	

Ability to operate and / or monitor the following as they apply to the Steam Line Rupture: Setpoints of main steam safety and PORVs

Proposed Question: Common 48

An ESDE has occurred on SG-E088.

The following conditions exist:

- SG E088 pressure 20 psia stable.
- Loop 2 Lowest T-Cold was 400°F and is now rising.
- SG E089 pressure is 540 psia and lowering.
- Loop 1 T-Cold is 480°F and lowering.

What is the required setpoint for the ADV on SG-E089, per SO23-12-11 Floating Step 30, Establish Stable RCS Temperature During an ESDE?

- A. 250 psia
- B. 300 psia
- C. 350 psia
- D. 400 psia

Proposed Answer: A

Explanation (Optional):

- A. Correct. Saturation for lowest Tcold is the pressure to stabilize at.
- B. Incorrect. Close to value but provides for error
- C. Incorrect. Potential choice if wrong temperature is used
- D. Incorrect. Potential choice if wrong temperature value is used

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

SO23-12-11, FS-30

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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	054 AK1.01	
	Importance Rating	4.1	

Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): MFW line break depressurizes the S/G (similar to a steam line break)

Proposed Question: Common 49

Which ONE (1) of the following describes the characteristics of a Main Feedwater line break at the entry to the Steam Generator, downstream of the double check valves?

- A. RCS temperature lowering prior to reactor trip. SG continues to depressurize after MSIV closure.
- B. RCS temperatures lowering prior to reactor trip. SG pressure stabilizes after MSIV closure.
- C. RCS temperature rising prior to reactor trip. SG continues to depressurize after MSIV closure.
- D. RCS temperature rising prior to reactor trip. SG pressure stabilizes after MSIV closure.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Less heat is removed, causing temperature to rise
- B. Incorrect. Less heat is removed, and MSIS will do nothing to stop the depressurization
- C. Correct.
- D. Incorrect. MSIS cannot stop depressurization from a break in this location

Technical Reference(s): SD-SO23-250 (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 X10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	055 EA2.05	
	Importance Rating	3.4	

Ability to determine or interpret the following as they apply to a Station Blackout: When battery is approaching fully discharged

Proposed Question: Common 50

During a Station Blackout, the crew is preparing to perform SO23-12-11, EOI Supporting Attachments, Floating Step 26, Connect G005 Portable Generator to L411 EPPM Panel/Start-up Channel.

FS-26 is required to be performed when all 1E Instrument Bus voltages decrease below _____.

- A. 118 Volts.
- B. 108 Volts.
- C. 98 Volts.
- D. 88 Volts.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Low voltage, but not time to transfer supply
- B. Correct.
- C. Incorrect. Critically low
- D. Incorrect. Battery would be discharged at this voltage

Technical Reference(s): SO23-12-11, FS-26 (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 AnalysisX

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	056 AA2.83	
	Importance Rating	2.7	

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Instrument air pressure gauge

Proposed Question: Common 51

A loss of off-site power has occurred.

All equipment has functioned as designed.

Which ONE (1) of the following describes the Instrument Air Pressure reading on Control Room Instrument Air Header Pressure indicator PI-7666?

- A. 105 – 110 psig.
- B. 90 – 100 psig.
- C. 80 – 85 psig.
- D. 55 – 60 psig.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Normal air compressor pressure
- B. Incorrect. Backup air compressor pressure
- C. Correct. N2 backup approximately 83 psig
- D. Incorrect. Pressure at which components are failing

Technical Reference(s): SD-SO23-570 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	057 G2.4.6	
	Importance Rating	3.1	

Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.

Proposed Question: Common 52

Which of the following strategies employed by the Emergency Operating Instructions (EOI's) will extend the time the 1E Instrument Buses remain energized during a Station Black Out (SBO)?

- A. Install portable ventilation in the 1E Battery Rooms.
- B. Initiate an MSIS on a loss of A03 and A07.
- C. Place two 1E Instrument Buses on their alternate power sources.
- D. Perform 1E Battery Load Reduction within 30 Minutes.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Action will decrease hydrogen buildup
- B. Incorrect. Action will assist in controlling cooldown
- C. Incorrect. Alternate power will not be available during a blackout
- D. Correct.

Technical Reference(s): SO23-12-8 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	062 G2.4.4	
	Importance Rating	4.0	

Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Proposed Question: Common 53

Given the following conditions:

Unit 2 is at 100% power. All systems are in their normal alignments.

The following alarm is received in the control room:

- 56A09, CCW FROM RCP SEAL HX TEMP HI

The CRO determines that 2TI-9144, CCW from 2P-001 Heat Exchanger Temperature indication, is reading 145°F and RISING.

Which ONE (1) of the following describes the procedure that will be used to address the current condition?

- A. SO23-5-1.7, Power Operations, section for Rapid Shutdown.
- B. SO23-12-1, Standard Post Trip Actions.
- C. SO23-13-14, Reactor Coolant Leak
- D. SO23-13-7, Loss of CCW/SWC

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. A rapid shutdown may be performed if temperature continues to rise
- B. Incorrect. Trip not required for this condition of temperature rise. Will be handled in AOs
- C. Incorrect. RCS leak may be indicated by high temperature, but not the procedure transition for these indications
- D. Correct.

Technical Reference(s): ARP 56A09 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 55542 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	065 G2.4.46	
	Importance Rating	4.3	

Emergency Procedures / Plan Ability to verify that alarms are consistent with plant conditions

Proposed Question: Common 54

Given the following conditions:

- Unit 2 and 3 are at 100% power.
- 2PI5344A and 3PI5344A, Instrument Air Header Pressure, both indicate 95 psig and lowering slowly.
- All available Instrument Air Compressors are running.

Which ONE (1) of the following alarms is consistent with the current plant conditions?

- A. 50A22, PZR LEVEL ERROR HI
- B. 61B39, INST AIR DRYER TEMP/LVL/DP HI
- C. 61B38, N2 SUPPLY TO INST AIR HEADER ON
- D. 58A21, LETDOWN BACKPRESSURE HI/LO

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Affected at lower air pressure
- B. Correct.
- C. Incorrect. Affected at lower air pressure
- D. Incorrect. Affected at lower air pressure

Technical Reference(s): SO23-13-5 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E02 EK3.2	
	Importance Rating	2.8	

Knowledge of the reasons for the following responses as they apply to the (Reactor Trip Recovery) Normal, abnormal and emergency operating procedures associated with (Reactor Trip Recovery).

Proposed Question: Common 55

Which ONE (1) of the following describes the intent of the Reactivity Control verification step when performing SPTAs per SO23-12-1?

- A. Verify the accuracy and behavior of NIs and Startup Rate indication.
- B. Ensure the Rx is shutdown, this will ensure that the only core heat input to the RCS is from decay heat.
- C. Provide action to mitigate the potential for other events that may be caused by an ATWS.
- D. Provide immediate action in the event of an ATWS coincident with a Loss of Feedwater.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. The NIs are observed but not for accuracy.
- B. Correct.
- C. Incorrect. Actions in RNO provided for ATWS but not intent of AER. Step does not mitigate other events caused by ATWS.
- D. Incorrect. Actions in RNO provided for ATWS but not intent of AER. Step does not mitigate loss of feedwater event.

Technical Reference(s): SO23-14-1 (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E06 EK2.2	
	Importance Rating	3.5	

Knowledge of the interrelations between the (Loss of Feedwater) and the following: 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 56

Given the following conditions:

- A Loss of Feedwater has occurred.
- The crew is performing SO23-12-6, Loss of Feedwater.

Which ONE (1) of the following describes the actions taken to mitigate the event in progress in accordance with EOI SO23-12-6?

- A. Attempt to restore AFW flow. If flow cannot be restored, then trip RCPs to limit RCS heat input.
- B. Trip RCPs to limit RCS heat input. Then attempt to restore AFW flow with available AFW pumps.
- C. Attempt to restore AFW flow. If flow cannot be restored, then trip RCPs to minimize potential for RCP Seal damage.
- D. Trip RCPs to minimize the potential for RCP Seal damage. Then attempt to restore AFW flow with available AFW pumps.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. RCPs are tripped first
- B. Correct.
- C. Incorrect. RCPs are tripped first. Seal damage is not consideration for loss of feed
- D. Incorrect. RCP seal damage is not the prime consideration for this event

Technical Reference(s): SO23-14-6 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	024 AA1.25	
	Importance Rating	3.4	

Ability to operate and / or monitor the following as they apply to the Emergency Boration: Boration valve indicators

Proposed Question: Common 57

Given the following conditions:

- An ATWS has occurred and power is at 95 %.
- The CRO has started a boration in accordance with SO23-13-11, Emergency Boration of the RCS/Inadvertent Dilution or Boration.
- All equipment has operated as designed.
- SIAS has NOT actuated.
- RCS pressure is 2210 psia and trending DOWN.
- Tcold is 555 °F and slowly trending DOWN.

Which of the following valves is/are OPEN?

- A. Emergency Boration Valve HV-9247
- B. Boric Acid Make Up Tank Gravity Feed Valves HV-9240 and HV-9235
- C. Boration Block Valve HV-9257
- D. Blended Makeup to the VCT Block Valve FV-9253

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. Emergency Boration, these valves are not opened unless 9247 fails

Incorrect. Valve is a normally closed manual valve

Incorrect. For emergency boration, this valve is closed

Technical Reference(s): SO23-13-11 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	028 AA2.06	
	Importance Rating	2.7	

Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: Letdown flow indicator

Proposed Question: Common 58

Given the following plant conditions on Unit 3:

- Plant is in a normal full power alignment.
- A failure has occurred in the Pressurizer Level Control System.
- Pressurizer level is 43%.
- Pressurizer level setpoint is 48%.

Which of the following is the expected automatic response of the CVCS system?

- A. Three charging pumps in service and letdown flow at minimum.
- B. Three charging pumps in service and letdown flow at maximum.
- C. One charging pump in service and letdown flow at minimum.
- D. One charging pump in service and letdown flow at maximum.

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. Level deviation of -5%, letdown would be throttling back

Incorrect. Level deviation of -5%, additional charging will start

Incorrect. Additional charging, and reduced letdown are required

Technical Reference(s): SO23-13-27 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 55219 (As available)

Question Source: Bank # X(N56684)
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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	051 AK3.01	
	Importance Rating	2.8	

Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability on loss of vacuum

Proposed Question: Common 59

Which ONE (1) of the following states the SBCS low vacuum interlock setpoint and the reason for the closure of SBCS valves at this setpoint?

- A. 3.5" Hg to prevent damage to the Main Condenser due to overheating
- B. 10" Hg to prevent damage to the Main Condenser due to overheating
- C. 3.5" Hg to prevent overfilling the Main Condenser Hotwells
- D. 10" Hg to prevent overfilling the Main Condenser Hotwells

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Low vacuum alarm setpoint
- B. Correct.
- C. Incorrect. Wrong setpoint, wrong reason
- D. Incorrect. Wrong reason

Technical Reference(s): DBD SO23-365 (Attach if not previously provided)
2XIR05

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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	037 AA2.12	
	Importance Rating	3.3	

Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: Flow rate of leak

Proposed Question: Common 60

Given the following conditions:

- A steam generator tube leak has occurred.
- Charging Pump P-191 is in service.
- Charging Pumps P-190 and P-192 are in standby.
- Letdown flow has lowered and is currently stable at 35 GPM.
- RCS temperature is stable.
- Controlled Bleedoff flow is 1.5 GPM from each RCP.

Which ONE (1) of the following describes the size of the steam generator tube leak?

- A. 1.5 GPM
- B. 3.0 GPM
- C. 4.5 GPM
- D. 6.0 GPM

Proposed Answer: B

Explanation (Optional):

- A. Incorrect.
- B. Correct. 1 Charging pump is 44 GPM. CBO is 6 GPM (1.5 X 4). Letdown flow is 35 GPM. Therefore, $44 - 41$ at steady state = 3 GPM
- C. Incorrect.
- D. Incorrect.

Technical Reference(s): _____ (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	061 AA2.03	
	Importance Rating	3.0	

Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Setpoints for alert and high alarms

Proposed Question: Common 61

Operating which of the following will determine Containment General Area Radiation Monitor RE-7848 "High Alarm" setpoint?

- A. Depressing the AMBER Trip 1 pushbutton on RISH-7848 at Radiation Monitor Panel L405
- B. Positioning the Alarm Toggle to the SP position on RISH-7848, at Radiation Monitor Panel 2/3 L90
- C. Depressing the RED Trip 2 pushbutton on RISH-7848 at Radiation Monitor Panel L405
- D. On the Remote Display Unit for RISH-7848, at Radiation Monitor Panel L104

Proposed Answer: B

Explanation (Optional):

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

Technical Reference(s): SO23-3-2.24.1 (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 AnalysisX

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	074 EK1.08	
	Importance Rating	2.8	

Knowledge of the operational implications of the following concepts as they apply to the Inadequate Core Cooling : Definition of subcooled liquid

Proposed Question: Common 62

Which ONE (1) of the following could be an indication of the core becoming uncovered?
(Assume instruments are accurate.)

CET temperature equal to:

- A. 535°F with RCS pressure equal to 1100 psia.
- B. 570°F with RCS pressure equal to 1550 psia.
- C. 590°F with RCS pressure equal to 1350 psia.
- D. 605°F with RCS pressure equal to 1900 psia.

Proposed Answer: C

Explanation (Optional):

Checking steam tables, answer is C because it is the only answer resulting in superheated conditions, which indicate core uncover. Answers A, B, & D are at subcooled conditions.

Technical Reference(s): 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 # X
 Modified Bank # _____ (Note changes or attach parent)
 New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	A11 AA1.3	
	Importance Rating	3.0	

Ability to operate and / or monitor the following as they apply to the (RCS Overcooling) Desired operating results during abnormal and emergency situations.

Proposed Question: Common 63

The following conditions exist:

- An Excess Steam Demand Event is in progress.
- SO23-12-5 Excess Steam Demand has been implemented.
- Engineered Safety Systems equipment failures have occurred.
- STA reports that the Pressure Control SFSC is UNSATISFACTORY.
- RCS Pressure is 2175 psia.
- CET Temperature is 455°F and stable.
- Pressurizer level is 65% and stable.
- AFW is available to the unaffected SG.
- Two RCPs are running.

Which ONE (1) of the following actions will restore the RCS Pressure Control Safety Function?

- A. Perform HPSI Throttle/Stop per FS-7.
- B. Initiate a rapid RCS Cooldown to restore RCS subcooling within limits.
- C. Initiate Main Spray flow to restore RCS subcooling within limits.
- D. Ensure maximum HPSI flow to collapse RCS voids while operating pressurizer heaters as necessary to ensure the limits of SO23-12-11, Attachment 29, Post-Accident Pressure/Temperature Limits are met.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. FR-4 would direct this action, but would not improve this condition
- B. Incorrect. Cooldown has caused the SFSC to be unsat
- C. Correct. Lower to restore subcooling to <160
- D. Incorrect. Would not maximize HPSI flow in this condition. Determining voiding would indicate a misdiagnosis

Technical Reference(s): SO23-12-9 FR-4 PC-1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6907 (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	X
	55.43	_____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	A13 AK2.1	
	Importance Rating	3.0	

Knowledge of the interrelations between the (Natural Circulation Operations) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: Common 64

The plant experienced a LOCA approximately 30 minutes ago. All ESFAS actuations have occurred as required.

The following plant conditions exist:

- Pressurizer Pressure is 1800 psia and dropping slowly.
- Pressurizer Level is 5% and dropping slowly.
- RCS Hot Leg Temperature is 582°F and slowly rising.
- RCS Cold Leg Temperature is 540°F and slowly rising.
- Representative CET is 584°F and slowly rising.
- SG Pressures are 1000 psia.
- SG Levels are 24% NR and slowly dropping.
- Containment Pressure is 2.1 psig and rising slowly.
- All other indications are within required limits.

The CRS has determined that Single Phase Natural Circulation criteria are **NOT** being met.

What action will be taken to restore Single Phase Natural Circulation?

- A. Carry out the actions of SO23-12-11 Floating Step 10, Eliminate Voids.
- B. Pressurizer pressure must be reduced to allow safety injection flow.
- C. Steam Generator steaming rate must be raised to increase RCS heat removal.
- D. All charging pumps must be started to regain pressurizer level.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Pressurizer level does not indicate voids, although loss of subcooling may.
- B. Incorrect. If pressure is reduced, it may result in voiding
- C. Correct.
- D. Incorrect. Starting charging pumps will not restore heat removal

Technical Reference(s): SO23-12-11, FS-3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 103865 (As available)

Question Source:	Bank #	<u>X</u>	
	Modified Bank #	<u> </u>	(Note changes or attach parent)
	New	<u> </u>	

Question History: Last NRC Exam

Question Cognitive Level:	Memory or Fundamental Knowledge	<u> </u>
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	<u>X</u>
	55.43	<u> </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	A16 AK2.2	
	Importance Rating	3.0	

Knowledge of the interrelations between the (Excess RCS Leakage) and the following: 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 65

Given the following conditions:

- An RCS leak exists on Unit 2.
- The reactor is tripped.
- SIAS is actuated. All equipment is operating as designed.
- RCS pressure is currently 1650 psia and lowering slowly.

Which ONE (1) of the following describes the requirement for maintaining availability of secondary heat removal?

- A. Secondary heat removal availability is required because SIAS may not be providing adequate core cooling.
- B. Secondary heat removal availability is required because RCPs are no longer operating.
- C. Secondary heat removal availability is NOT required because SIAS is providing the necessary Core and RCS heat removal.
- D. Secondary heat removal availability is NOT required because Core heat removal is provided by break flow at the leak location.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. RCPs will still be operating at this pressure
- C. Incorrect. Required. SIAS is not providing cooling at this pressure
- D. Incorrect. Required. Distractor is a variation on distractor C.

Technical Reference(s): SO23-14-3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Question Source: Bank # _____
Modified Bank # X (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.19	
	Importance Rating	3.0	

Ability to use plant computer to obtain and evaluate parametric information on system or component STATUS

Proposed Question: Common 66

Which ONE (1) of the following describes the PRIMARY indication available to determine the status of the RVLMS Heated Junction Thermocouples?

- A. CR56
- B. Plant Monitoring System (PMS)
- C. Core Operating Limit Supervisory System (COLSS)
- D. Qualified Safety Parameter Display System (QSPDS)

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Subcooling is displayed, but not vessel level
- B. Incorrect. PMS is the secondary display, fed from QSPDS
- C. Incorrect. COLSS monitors plant parameters but not including RVLMS
- D. Correct.

Technical Reference(s): SD-SO23-360 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.16	
	Importance Rating	2.9	

Ability to operate plant phone, paging system, and two-way radio.

Proposed Question: Common 67

Given the following conditions:

- Unit 3 has an A06/B06 outage in progress.
- Unit 2 has experienced a LOCA
- SIAS actuated on Unit 2 10 minutes after the reactor trip.

Which ONE (1) of the following describes the MINIMUM actions required to maintain FULL OPERABILITY of the 800 Mhz radio system?

- A. Depress 'Override' and then 'Close' Pushbuttons for either Q800N OR Q800S to ensure at least one bus remains energized.
- B. Depress 'Override' and then 'Close' Pushbuttons for Q800N AND Q800S to ensure both buses remain energized.
- C. Depress 'Override' Pushbutton for either Q800N OR Q800S to ensure at least one bus remains energized.
- D. Depress 'Override' Pushbuttons for Q800N AND Q800S to ensure both buses remain energized.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Do not need to press close pushbuttons
- B. Incorrect. Do not need to press close pushbuttons
- C. Incorrect. Must push both override pushbuttons
- D. Correct.

Technical Reference(s): SO23-12-1 (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.22	
	Importance Rating	2.8	

Ability to determine Mode of Operation.

Proposed Question: Common 68

What MODE of operation would the Unit be in if the reactivity condition is 0.95 K-eff and average Reactor Coolant temperature is 300°F?

- A. Mode 2 – Startup
- B. Mode 3 – Hot Standby
- C. Mode 4 – Hot Shutdown
- D. Mode 5 – Cold Shutdown

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Temperature would be higher with a higher Keff and RTCBs closed
- B. Incorrect. Temperature would be above 350
- C. Correct.
- D. Incorrect. Temperature must be less than 200

Technical Reference(s): TS section 1, table 1.1-1 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>G2.2.13</u>	<u> </u>
	Importance Rating	<u>3.6</u>	<u> </u>

Knowledge of tagging and clearance procedures.

Proposed Question: Common 69

What tag is hung on a "Temporary Power Supply" that is used to power MCC loads during a Motor Control Center (MCC) Outage?

- A. Caution
- B. In-Test
- C. Permission
- D. Clearance

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. System is not in test, it is temporarily modified
- C. Incorrect. No permission to operate required
- D. Incorrect. Clearance tags hung for deenergization

Technical Reference(s): SO23-6-32 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(B51808)
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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>G2.2.27</u>	<u> </u>
	Importance Rating	<u>2.6</u>	<u> </u>

Knowledge of the refueling process.

Proposed Question: Common 70

Unit 2 is in Mode 6. SO23-5-1.8, Shutdown Operations, is in effect.

Prior to commencing core offload, a minimum of _____ audible Source Range NI channel(s) must be operable in the control room and a minimum of _____ audible Source Range NI channel(s) must be operable in containment.

- A. 1 1
- B. 1 2
- C. 2 1
- D. 2 2

Proposed Answer: A

Explanation (Optional):

- A. Correct. Both locations, 1 audible
- B. Incorrect.
- C. Incorrect. Only 1 required and both locations required
- D. Incorrect. Only 1 required

Technical Reference(s): SO23-5-1.8, Pg 39 of 105 (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 AnalysisX

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.2.34	
	Importance Rating	2.8	

Knowledge of the process for determining internal and external effects on core reactivity

Proposed Question: Common 71

Given the following conditions:

- A reactor startup is being performed 20 hours after a trip from 100% power.
- Estimated Critical CEA Position is Reg. Group 5 at 60 inches.
- Criticality is predicted in 5 hours.

If the startup were to proceed 1 hour later than scheduled, what is the effect on the 1/M plot data taken during the startup?

1/M plot will....

- A. accurately predict criticality at a lower CEA position
- B. accurately predict criticality at a higher CEA position
- C. inaccurately predict criticality in a conservative direction
- D. inaccurately predict criticality in a non-conservative direction

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Would predict at a lower CEA position, because 1 additional hour of Xenon removal adds positive reactivity, requiring less positive reactivity from CEAs for criticality
- C. Incorrect. 1/M should always be accurate. ECP may be inaccurate
- D. Incorrect. 1/M should always be accurate

Technical Reference(s): Xenon Curves (Attach if not previously provided)
SO23-3-1.1

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X (WTSI)
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 X
55.43 _____

Comments:
2003 IP3 Exam

Question Source: Bank # _____
Modified Bank # X (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.10	
	Importance Rating	2.9	

Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Proposed Question: Common 73

A job must be performed under the following conditions:

- Dose rate at job location is 90 mrem/hr.
- Airborne Radioactivity Area from particulates due to weld grinding:
 - Total Internal dose for the job if respirator is worn is 0 mrem.
 - Total Internal dose for the job if **no** respirator is worn is 82 mrem.
- Time to complete job while wearing a respirator is 3.5 hours.
- Time to complete job **without** wearing a respirator is 2.75 hours.

Which ONE (1) of the following describes whether a respirator will be worn, and why?

- A. No, wearing a respirator will raise total exposure.
- B. Yes, wearing a respirator will lower total exposure.
- C. No, wearing a respirator will make no difference to the total exposure.
- D. Yes, a respirator must be worn anytime airborne radiation is present.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. 315 total mr vs. 329.5 mr without respirator
- B. Correct. 315 total mr
- C. Incorrect. There is a difference if you add the internal dose
- D. Incorrect. Not if total dose would be higher by wearing a respirator

Technical Reference(s): SO23-VII-20.7 (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 X
55.43 _____

Comments:

WTSI Bank – Callaway 2005 NRC Exam

Question Source: Bank # X(57508)
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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.46	
	Importance Rating	3.5	

Ability to verify that the alarms are consistent with the plant conditions.

Proposed Question: Common 75

Quench Tank level has been rising.

Which of the following annunciators would assist the operator in determining why this is occurring?

- A. 57B17, PZR Relief Valve Open.
- B. 50A32, PZR Spray Valve Bellows Seal Failure.
- C. 50A35, Reactor Vessel Seal Leakage.
- D. 56C46, RCP Intergasket Leakage.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Would not leak to Quench Tank, but to containment atmosphere or internal to valve
- C. Incorrect. Would leak to RCDT
- D. Incorrect. Would leak to containment or RCDT

Technical Reference(s): ARP 57B17 (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

X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	007 G2.4.6	_____
	Importance Rating	_____	4.0

Emergency Procedures/Plan: Knowledge of symptom based EOP mitigation strategies

Proposed Question: SRO 76

Given the following conditions:

- Unit 2 has tripped from 100% power.
- Four (4) full length CEAs are stuck out.
- Reactor power is lowering.
- Start up Rate is negative.
- Emergency boration is in progress.

Which ONE (1) of the following describes the correct actions in accordance with SO23-12-1, Standard Post Trip Actions?

- A. Finish the Standard Post Trip Actions and diagnose a Reactor Trip Recovery event.
- B. Immediately go to the Reactor Trip Recovery.
- C. Immediately go to the Functional Recovery.
- D. Finish the Standard Post Trip Actions and diagnose a Functional Recovery entry.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Complete SPTAs first
- C. Incorrect. Complete SPTAs. Perform diagnosis
- D. Incorrect. Would diagnose a RTR

Technical Reference(s): SO23-12-1 (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 _____
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 #	015 G2.4.11	_____
	Importance Rating	_____	3.6

Emergency Procedures/Plan: Knowledge of abnormal condition procedures

Proposed Question: SRO 77

The following annunciators are received in the control room:

- 56C24, RCP P001 SEAL PRESS HI/LO
- 56B57, RCP BLEEDOFF FLOW HI/LO

The CRO determines the following for RCP P001:

- Middle seal cavity pressure = 2200 psia.
- Upper seal cavity pressure = 2115 psia.
- Vapor seal cavity pressure = 64 psia.

Which ONE (1) of the following describes the event in progress and the action required?

- Middle and Lower seals have failed. Trip the reactor and enter SO23-12-1, Standard Post Trip Actions. When Reactivity Control is verified, trip RCP P001.
- Middle and Upper seals have failed. Trip the reactor and enter SO23-12-1, Standard Post Trip Actions. When Reactivity Control is verified, trip RCP P001.
- Middle and Upper seals have failed. Initiate a controlled plant shutdown in accordance with SO23-5-1.7, Power Operations, and stop RCP P001 after the reactor is tripped and CEAs have been inserted for 5 seconds.
- Middle and Lower seals have failed. Initiate a controlled plant shutdown in accordance with SO23-5-1.7, Power Operations, and stop RCP P001 after the reactor is tripped and CEAs have been inserted for 5 seconds.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Do not trip unless 3 seals have failed
- B. Incorrect. Upper seal does not indicate failure. No trip required
- C. Incorrect. Upper seal does not indicate failure
- D. Correct.

Technical Reference(s): SO23-13-6 (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	_____
	55.43	5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	022 AA2.01	_____
	Importance Rating	_____	3.8

Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Pump Makeup: Whether charging line leak exists

Proposed Question: SRO 78

Given the following conditions:

- The plant is at 100% power.
- Three (3) Charging Pumps are operating.
- Letdown flow is 28 GPM and stable.
- VCT Level is 41% and lowering.
- Pressurizer level is 51% and lowering.
- CFMS page 122, Ctmt Sump Tank 30 minute flow indicates 132 GPM.
- TI-0221 and TI-9267, Regenerative Heat Exchanger Outlet Temperature, is rising.

The crew is attempting to locate and isolate the leak in accordance with SO23-13-14, Reactor Coolant Leak.

Which ONE (1) of the following describes the location of the leak and the action required?

- Charging Header downstream of the Regenerative Heat Exchanger. Initiate a Rapid Shutdown in accordance with SO23-5-1.7, Power Operations.
- Charging Header upstream of the Regenerative Heat Exchanger. Isolate Letdown in accordance with SO23-13-14 Reactor Coolant Leak AOI.
- Letdown Header downstream of the Regenerative Heat Exchanger. Isolate Letdown in accordance with SO23-13-14 Reactor Coolant Leak AOI.
- Letdown Header upstream of the Regenerative Heat Exchanger. Initiate a Rapid Shutdown in accordance with SO23-5-1.7, Power Operations.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. If the leak was downstream of the heat exchanger, then HX outlet temperature would be stable or lowering
- B. Correct.
- C. Incorrect. If the leak were on the letdown line upstream of the heat exchanger, then no letdown flow would be indicated and pressurizer level would be stable
- D. Incorrect. If the leak was downstream of the HX on the letdown line, pressurizer level would be stable and letdown would not be throttled back

Technical Reference(s): SO23-13-14 (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 #	_____	1
	Group #	_____	1
	K/A #	040 G2.4.16	
	Importance Rating	_____	4.0

Emergency Procedures / Plan Knowledge of EOP implementation hierarchy and coordination with other support procedures

Proposed Question: SRO 79

Given the following plant conditions:

- The plant tripped due to a small break Loss of Coolant Accident (LOCA) inside Containment.
- The Optimal Recovery Procedure for a LOCA, SO23-12-3, has been entered.

If an Excess Steam Demand Event (ESDE) were to now occur, the Control Room Supervisor will use which ONE (1) of the following procedures to mitigate the event?

- A. Reactor Trip Recovery Procedure, SO23-12-2.
- B. ESDE Optimal Recovery Procedure, SO23-12-5.
- C. LOCA Optimal Recovery Procedure, SO23-12-3.
- D. Functional Recovery Procedure, SO23-12-9.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Would not go to RTR with another event in progress
- B. Incorrect. Would be possible, but a dual event is in progress, requiring FR actions
- C. Incorrect. Already in 12-3, would have to diagnose FR entry
- D. Correct.

Technical Reference(s): SO23-12-1, SO23-12-9 (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 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	056 AA2.57	_____
	Importance Rating	_____	4.1

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: RCS hot-leg and cold-leg temperatures

Proposed Question: SRO 80

Given the following conditions:

- Time +0 min. A reactor trip has occurred on Unit 2.
- Time +10 min. While performing SPTAs 10 minutes after the reactor trip, the following alarm is received:
- 63C31, 2XR3 PROTECTION TRIP
- Time +13 min. The CRS is preparing to diagnose the event per SO23-12-1, SPTAs.

At time +13 minutes, which ONE (1) of the following describes (1) Core Delta T indication from Time +10, and (2) procedure the crew will transition to?

- A. (1) Core Delta T rises
(2) SO23-12-8, Station Blackout
- B. (1) Core Delta T lowers
(2) SO23-12-9, Functional Recovery
- C. (1) Core Delta T lowers
(2) SO23-12-2, Reactor Trip Recovery
- D. (1) Core Delta T rises
(2) SO23-12-7, Loss of Forced Circulation/Loss of Offsite Power

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Blackout not diagnosed unless DGs are failed Also
- B. Incorrect. Delta T will rise as Natural Circ sets up
- C. Incorrect. RTR not diagnosed because even though SIAS not actuated, LOOP would take precedence with loss of this transformer(2XR3)
- D. Correct.

Technical Reference(s): SO23-12-1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6897 (As available)

Question Source: Bank # _____
Modified Bank # X (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 #	_____	1
	Group #	_____	1
	K/A #	057 AA2.19	_____
	Importance Rating	_____	4.3

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The plant automatic actions that will occur on the loss of a vital ac electrical instrument bus

Proposed Question: SRO 81

The plant is at 100% power.

A loss of Instrument Bus Y01 has occurred.

Which ONE (1) of the following describes (1) automatic action that occurs, and (2) the actions you will direct after restoration of the bus?

- A. (1) Reactor Trip Paths 1 and 2 are actuated.
(2) Reset and reclose associated RTCBs at PPS Cabinet L-032 in accordance with SO23-13-18, Reactor Protection System Failure/Loss of Vital Bus.
- B. (1) Reactor Trip Paths 1 and 4 are actuated.
(2) Reset and reclose associated RTCBs at PPS Cabinet L-032 in accordance with SO23-13-18, Reactor Protection System Failure/Loss of Vital Bus.
- C. (1) Reactor Trip Paths 1 and 3 are actuated.
(2) Reset and reclose associated RTCBs locally at the breakers in accordance with SO23-12-1, Standard Post Trip Actions.
- D. (1) Reactor Trip Paths 2 and 4 are actuated.
(2) Reset and reclose associated RTCBs locally at the breakers in accordance with SO23-12-1, Standard Post Trip Actions.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. ESFAS paths 1 and 3 are actuated. RPS paths 1 and 2
- C. Incorrect. Local closure not performed for restoration
- D. Incorrect. Trip paths 1 and 2 for RPS, and local closure not performed

Technical Reference(s): SO23-13-18 (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 #	_____	1
	Group #	_____	2
	K/A #	003 G2.2.25	_____
	Importance Rating	_____	3.7

Equipment Control: Knowledge of bases in technical specifications for LCOs and safety limits

Proposed Question: SRO 82

With the Unit operating at 90% power, one full length CEA is determined to be misaligned from its group by more than 8 inches.

Which ONE (1) of the following describes the required operator action over the next 60 minutes and the Technical Specification basis for the action?

- A. Requires a reduction of thermal power providing assurance of fuel integrity during continued operation.
- B. Requires a stabilization of thermal power providing assurance that minimum Moderator Temperature Coefficient is maintained.
- C. Requires a stabilization of thermal power providing assurance of fuel integrity during continued operation.
- D. Requires a reduction of thermal power providing assurance that minimum Moderator Temperature Coefficient is maintained.

Proposed Answer: A

Explanation (Optional):

- A. Correct. SO23-13-13 requires a load reduction TS basis states reason
- B. Incorrect. Reduce power within 1 hour (SO23-13-13 first step is to stabilize)
- C. Incorrect. Reduce power within 1 hour
- D. Incorrect. Maintaining MTC in analyzed range is a reason for CEA alignment

Technical Reference(s): TS 3.1.5 basis (Attach if not previously provided)
SO23-13-13

Proposed references to be provided to applicants during examination: _____

Learning Objective: 7173 (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 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	2
	K/A #	024 G2.4.4	_____
	Importance Rating	_____	4.3

Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry level conditions for emergency and abnormal operating procedures

Proposed Question: SRO 83

Given the following conditions:

- A Turbine Load Rejection has occurred.
- The CRO manually inserted CEAs attempting to maintain Tcold on program.
- Reactor power is currently 80%.
- Pre-PDIL and PDIL alarm windows are illuminated.
- Group 6 CEA's indicate 40 inches.
- SBCS valves are modulating closed.

Which ONE (1) of the following actions is required?

- A. Trip the reactor and enter SO23-12-1, Standard Post-Trip Actions.
- B. Realign Group 6 CEA's in accordance with SO23-13-13, Misaligned or Immovable Control Element Assembly.
- C. Raise Turbine load to ensure SBCS valve closure and maintain Tcold on program in accordance with SO23-5-1.7, Power Operations.
- D. Initiate Emergency Boration in accordance with SO23-13-11, Emergency Boration of the RCS/Inadvertent Dilution or Boration.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. No trip criteria is met
- B. Incorrect. CEAs are not misaligned from their group
- C. Incorrect. Raising turbine load may cause power transient after a load reject, and CEAs below PDIL requires boration
- D. Correct.

Technical Reference(s): SO23-13-11 (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 #	_____	1
	Group #	_____	2
	K/A #	A13 AA2.1	_____
	Importance Rating	_____	3.7

Ability to determine and interpret the following as they apply to the Natural Circulation Operations: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: SRO 84

Given the following conditions:

- The reactor has been tripped from 100% power.
- Standard Post Trip Actions, SO23-12-1, have been completed.

Plant conditions are:

- RCS pressure is 2100 psia and slowly lowering.
- CET is 567 and slowly lowering.
- T_{hot} is 565°F and slowly lowering.
- T_{cold} is 545°F and stable.
- Pressurizer level (actual) is 26% and slowly lowering.
- S/G E088 and E089 level (actual) is 55% narrow range.
- Off-site power has been LOST.
- All equipment is operating as designed.

Which of the following statements is correct for the current plant conditions?

- Forced circulation is in operation and procedure SO23-12-2, "Reactor Trip Recovery" should be in use.
- Natural circulation is established and procedure SO23-12-2, "Reactor Trip Recovery," should be in use.
- Natural Circulation is established and FS-3, "Monitor Natural Circulation Established," should be in use per procedure SO23-12-7, "Loss of Forced Circulation/Loss of Offsite Power."
- Natural circulation is not established and FS-3, "Monitor Natural Circulation Established," should be in use per procedure SO23-12-7, "Loss of Forced Circulation/Loss of Offsite Power."

Proposed Answer: C

Explanation (Optional):

Per the referenced procedure, the plant conditions satisfy the criteria for determining natural circulation is established making answer D incorrect. With a Loss of Offsite power, RCPs are tripped, making answer A incorrect. Answer B is incorrect because SO23-12-2 will not apply with a loss of power. Natural circulation is established and the SRO should be using SO23-12-7 and FS-3.

Technical Reference(s): SO23-12-7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

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

Question History: Last NRC Exam S85 (Mod)

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 #	A16 AA2.2	_____
	Importance Rating	_____	3.7

Ability to determine and interpret the following as they apply to the (Excess RCS Leakage) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Proposed Question: SRO 85

The Unit is in MODE 3 progressing toward Shutdown Cooling (SDC) entry conditions for a planned outage, when annunciator 57C10 (Containment Rad Hi) begins to alarm.

The Radiation Monitor Data Acquisition System (DAS) shows rising trends on Containment airborne rad monitors RE-7804 and RE-7807 and area radiation monitors RE-7845 and RE-7848.

Based on available indications, the STA believes RCS leak rate to be 150-200 gpm.

What should be the flowpath of procedures used by Control Room personnel in response to this event?

- A. Respond to alarm 57C10 using ARP SO23-15-57.C, followed by SO23-13-14 (RCS Leak), and then SO23-12-3 (LOCA).
- B. Respond to alarm 57C10 using ARP SO23-15-57.C, followed by SO23-13-15 (Loss of SDC), and then SO23-12-4 SGTR.
- C. Immediately implement SO23-13-14 (RCS Leak), followed by SO23-12-1 (SPTA).
- D. Immediately implement SO23-13-15 (Loss of SDC), followed by SO23-12-9 (Functional Recovery).

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Rad indication is LOCA, not SGTR
- C. Incorrect. Would not use SPTAs in this condition
- D. Incorrect. Would not use FR because only 1 event is evident.

Technical Reference(s): SO23-13-14 (Attach if not previously provided)
ARP 15-57.C

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	008 A2.08	
	Importance Rating		2.7

Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effects of shutting (automatically or otherwise) the isolation valves of the letdown cooler

Proposed Question: SRO 86

Given the following conditions:

- The plant is at 100% power.
- CCW Train A and B are in service.
- CCW Train A is supplying the Non-Critical Loop and Letdown Heat Exchanger.
- TIC-223, Letdown Heat Exchanger Temperature Control, is at 100% DEMAND.
- Letdown Heat Exchanger Outlet Temperature is RISING.
- All other CCW indications are NORMAL.

Which ONE (1) of the following describes (1) the event in progress, and (2) the action that will be required to mitigate the condition?

- A. (1) CCW pipe rupture on the Letdown HX supply line.
(2) Transfer the Letdown HX to CCW Train B. Non-Critical Loop remains on Train A to maintain CCW flow balancing in accordance with SO23-2-17, Component Cooling Water System Operations.
- B. (1) CCW supply isolation valve to the Letdown HX failed closed.
(2) Transfer the Letdown HX to CCW Train B. Non-Critical Loop remains on Train A to maintain CCW flow balancing in accordance with SO23-2-17, Component Cooling Water System Operations.
- C. (1) CCW pipe rupture on the Letdown HX supply line.
(2) Transfer the Letdown HX and the Non-Critical Loop to CCW Train B in accordance with SO23-13-7, Loss of Component Cooling Water – Salt Water Cooling.
- D. (1) CCW supply isolation valve to the Letdown HX failed closed.
(2) Transfer the Letdown HX and the Non-Critical Loop to CCW Train B in accordance with SO23-13-7, Loss of Component Cooling Water – Salt Water Cooling.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. For pipe rupture, Surge tank level would be lowering
- B. Incorrect. Flow balancing is not performed in this manner
- C. Incorrect. Not a pipe rupture
- D. Correct.

Technical Reference(s): SO23-13-7 (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 #	_____	1
	K/A #	013 A2.01	_____
	Importance Rating	_____	4.8

Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; LOCA

Proposed Question: SRO 87

Unit 2 has sustained a small break LOCA and S023-12-3 "Loss of Coolant Accident" has been entered. All three HPSI pumps have FAILED.

Which ONE (1) of the following describes the action required by the CRS?

- A. Continue use of S023-12-3 until an alternate procedure is designated by S023-12-3 or the Safety Function Status Check, because the Inventory Control Safety Function Status will be UNSAT.
- B. Continue the use of S023-12-3 since the event has been diagnosed as a LOCA and all of the Safety Function Status Checks will remain SATISFIED.
- C. Return to the Event Diagnosis chart in S023-12-1 "Standard Post Trip Actions"; continue in the LOCA procedure since SI Tanks remain available for Inventory Control.
- D. Return to the Event Diagnosis chart in S023-12-1 "Standard Post Trip Actions"; continue in the LOCA procedure since LPSI remains available for Inventory Control.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Would only continue until directed by failed SFSC
- C. Incorrect. Once the diagnosis chart has been performed, continue in the EOIs and follow symptom based direction
- D. Incorrect. Once the diagnosis chart has been performed, continue in the EOIs and follow symptom based direction

Technical Reference(s): SO23-12-10 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(N5497)
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 #	062 G2.1.11	_____
	Importance Rating	_____	3.8

Conduct of Operations: Knowledge of less than 1 hour technical specification action statements for systems

Proposed Question: SRO 88

Diesel Generator 2G002 has FAILED its quarterly surveillance.

If the diesel remains inoperable, what is the MAXIMUM amount of time that may elapse prior to taking action in accordance with Technical Specifications?

- A. 1 hour
- B. 2 hours
- C. 4 hours
- D. 6 hours

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Other 3.8 tech specs related to DC distribution are 2 hours
- C. Incorrect. Other TS are 4 hours. Time placed in to make distractors symmetrical
- D. Incorrect. 6 hours to hot standby for other TS

Technical Reference(s): TS 3.8.1.1 (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, 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	064 G2.1.14	
	Importance Rating		3.3

Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.

Proposed Question: SRO 89

Given the following conditions:

- The station experienced a loss of off-site power following an ESDE on Unit 2.
- Following the loss of power, both Unit 2 Emergency Diesel Generators failed to start.
- Unit 3 Emergency Diesel Generators started and are supplying their respective busses.
- Unit 2 and Unit 3 Train A busses were cross-tied using the guidance in 10CFR50.54(x).

According to SO123-0-A7, Notification and Reporting of Significant Events, which on-site organization must be notified?

- A. Security
- B. Compliance
- C. Health Physics
- D. Emergency Preparedness

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Not a Security Event
- B. Correct.
- C. Incorrect. No Rad implications noted
- D. Incorrect. Not part of notification process for events that do not involve fires

Technical Reference(s): 10CFR50.54(x) and (y) (Attach if not previously provided)
SO123-A7

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Question Source: Bank # _____
Modified Bank # X (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 1,2,5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	103 G2.1.12	_____
	Importance Rating	_____	4.0

Conduct of Operations: Ability to apply technical specifications for a system

Proposed Question: SRO 90

The Unit is operating at 100% power.

A containment entry is in progress to perform on line maintenance.

The crew entering containment reports that the gasket on the inner air lock door has been damaged. There is a gouge across the entire sealing surface approximately 1/8 inch deep and 1/2 inch wide and they could hear air flow through the gouge before they equalized pressure.

Which ONE (1) of the following actions is required in accordance with Technical Specifications?

- A. Verify that at least the outer air lock door is closed within 1 hour, and within 24 hours lock the outer air lock door closed. Operation may then continue provided that the outer air lock door is verified to be locked closed at least once per 31 days.
- B. Verify that the inner air lock door is closed within 1 hour, and within 24 hours lock the inner air lock door closed. Be in at least Mode 3 within 6 hours and in Mode 5 within 36 hours.
- C. Verify that the outer air lock door is closed within 1 hour, and within 24 hours lock the outer air lock door closed and be in at least Mode 3 within 6 hours and in Mode 5 within 36 hours.
- D. Verify that at least the inner air lock door is closed within 1 hour, and within 24 hours lock the inner air lock door closed. Operation may then continue provided that the inner air lock door is verified to be locked closed at least once per 31 days.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Inner door is broken
- C. Incorrect. Do not have to go to Mode 3 if outer door is closed
- D. Incorrect. Inner door is inoperable, outer door must be closed

Technical Reference(s): TS 3.6.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6236 (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 1,2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	041 G2.1.33	_____
	Importance Rating	_____	4.0

Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Proposed Question: SRO 91

Following a plant shutdown, a cooldown using SBCS is in progress.

The following table is a plot of the cooldown:

<u>TIME</u>	<u>RCS T_{COLD}</u>
0800	547°F
0815	523°F
0830	499°F
0845	473°F
0900	449°F
0915	425°F
0930	398°F

Determine whether Tech Spec RCS Cooldown rate limits were exceeded, and if so, at what time were they first exceeded?

- A. Exceeded at 0900.
- B. Exceeded at 0915.
- C. Exceeded at 0930.
- D. Limits were not exceeded.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. 98 deg F in 1 hour
- B. Incorrect. 98 deg F in 1 hour
- C. Correct.
- D. Incorrect. Limits were exceeded at 0930 because c/d rate was 101 deg F for that hour

Technical Reference(s): TS 3.4.3 (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, 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	002 G2.2.25	_____
	Importance Rating	_____	3.7

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

Proposed Question: SRO 92

Which ONE (1) of the following describes ALL equipment assumed to operate at their setpoints to ensure the RCS pressure safety limit is NOT exceeded?

- A. Pressurizer Safety Valves and SG Safety Valves ONLY.
- B. Pressurizer Pressure High Reactor Trip and Pressurizer Safety valves ONLY.
- C. Steam Generator Low-Level Reactor Trip, Pressurizer Pressure High Reactor Trip, and Pressurizer Safety Valves.
- D. Pressurizer Pressure High Reactor Trip, Pressurizer Safety Valves, SG Safety Valves.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Also high pressure trip
- B. Incorrect. Also SG Safety Valves
- C. Incorrect. SG Low Level trip is not for RCS pressure safety limit
- D. Correct.

Technical Reference(s): TS basis 2.1.2 (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 _____
55.43 1

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	071 A2.09	_____
	Importance Rating	_____	2.9

Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of meteorological tower

Proposed Question: SRO 93

Given the following conditions:

- 10 minutes ago, Waste Gas Decay Tank T-083 pressure began to lower.
- Pressure currently indicates 200 psig and lowering slowly. The cause has been determined to be a stuck open relief valve.
 - 2RE-7808, Plant Vent Stack radiation monitor, indicates $5.5E^6$ $\mu\text{Ci/cc}$.
 - 2RE-7865, Plant Vent Stack/Containment Purge Wide Range Gas Monitor, peaked at $0.8E^7$ $\mu\text{Ci/cc}$ 5 minutes ago and now reads $0.5E^7$ $\mu\text{Ci/cc}$.
 - 3RE-7865, Plant Vent Stack/Containment Purge Wide Range Gas Monitor, peaked at $0.9E^7$ $\mu\text{Ci/cc}$ 5 minutes ago and now reads $0.7E^7$ $\mu\text{Ci/cc}$.
 - 2RE-7841, Radwaste Gas Surge Tank ARM, indicates 2.9 R/Hr
 - Dose projections are NOT immediately available.

Which ONE (1) of the following describes the EPIP classification, if any, for the current plant conditions?

- A. Alert
- B. Unusual Event
- C. Site Area Emergency
- D. No classification required

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. See EAL. UE conditions exceeded
- C. Incorrect. See EAL. SAE conditions met but not for enough time to declare it.
- D. Incorrect. See EAL. GE conditions appear met but time is not long enough to declare

Technical Reference(s): SO123-VIII-1 Tab A1-A3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EPIP EAL Tabs

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 #		3
	Group #		1
	K/A #	G2.1.5	
	Importance Rating	3.4	

Ability to locate and use procedures and directives related to shift staffing and activities.

Proposed Question: SRO 94

Given the following:

- Unit 2 is in Mode 1
- You are the Shift Manager on watch
- Shifts are 12 hours long
- All shifts are manned to the minimum composition per Technical Specifications
- Your relief is NOT on site for shift turnover
- You are the only Shift Manager Qualified Individual On-Site, at this time

Which of the following describes the Tech Spec requirements regarding the shift composition and required action in this situation?

- A. Cannot drop below the minimum due to your relief being absent. Remain on watch until properly relieved.
- B. Cannot drop below the minimum unless you will exceed 16 hours on watch. If 16 hours will be exceeded then leave a turnover for the oncoming SM and depart.
- C. May be one less than the minimum for two hours. Turnover to one of the Unit CRS's if your relief will be arriving within the next two hours.
- D. May be one less than the minimum while attempting to contact the absent individual. Turnover to one of the Unit CRS's and have the CRS attempt to contact the absent individual.

Proposed Answer: A

Explanation (Optional):

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

Technical Reference(s): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # X(N37982)
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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		1
	K/A #	G2.1.33	
	Importance Rating		4.0

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Proposed Question: SRO 95

Given the following conditions:

- Unit 3 is in Mode 1.
- The latest RCS leak rate data is as follows:
 - Total RCS leak rate - 10.1 GPM
 - Leakage into Reactor Drain Tank - 5.2 GPM
 - SI system check valve leakage - 1.5 GPM
 - Total primary to secondary leakage - 0.1 GPM
 - Charging Pump leakage - 1.5 GPM
 - No indication of pressure boundary leakage

Which ONE (1) of the following RCS leakage limits, if any, is being exceeded?

- A. Identified
- B. Unidentified
- C. Primary to Secondary
- D. RCS leakage is within limits

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Identified is less than 10 GPM
- B. Correct.
- C. Incorrect. Whether sleeves are installed or not, primary to secondary leakage is within limits.
- D. Incorrect. Unidentified leakage is > 1 gpm. (10.1 total – 8.3 identified = 1.8)

Technical Reference(s): TS 3.4.13 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____
Modified Bank # X (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 1, 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	2
	K/A #	G2.2.29	_____
	Importance Rating	_____	3.8

Knowledge of SRO fuel handling responsibilities.

Proposed Question: SRO 96

You are the SRO on the Refueling Floor. Refueling is in progress.

Refueling Cavity level is lowering RAPIDLY. The cause is UNDETERMINED.

The actions of AOI 13-20, Fuel Handling Accidents/Loss of Cavity or SFP Level Control, are being performed.

You are required to notify the Containment Work Manager within 5 minutes.....

- A. To verify the Spent Fuel Transfer Pool Gate is closed.
- B. To ensure Containment closure is performed prior to boiling in the core.
- C. To assemble work teams and coordinate attempts to identify and isolate the leak.
- D. To identify work in progress that may subject workers to unplanned radiological hazards due to the event in progress.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Responsibility of Ops Dept if necessary
- B. Correct.
- C. Incorrect. Ops or E-Plan org will search for leak
- D. Incorrect. HP will monitor work in progress

Technical Reference(s): SO23-13-20 (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 _____
55.43 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	3
	K/A #	G2.3.4	_____
	Importance Rating	_____	3.1

Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

Proposed Question: SRO 97

Given the following conditions:

- A General Emergency has been declared due to a LOCA with extremely high off-site radioactive release rates.
- A worker attempting to isolate an uncontrolled release has sustained life-threatening injuries in a high dose area.
- The Emergency Response Organization is planning a rescue operation.
- The estimated exposure for the rescue is 35 Rem.

In accordance with SO123-VIII-10, which ONE (1) of the following describes the restriction, if any, on attempting the rescue?

- A. The rescue may proceed without restriction since the estimated exposure is less than the limit for life saving operations.
- B. Due to the amount of expected exposure, the rescue may only proceed if a volunteer is available.
- C. A volunteer is desired, but not required, prior to proceeding with the rescue. If a volunteer cannot be located, an employee may be chosen by the Emergency Coordinator.
- D. The rescue may NOT be attempted because the estimated exposure exceeds the federal limit for life saving operations.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Not without restriction, although there is no limit for lifesaving
- B. Correct.
- C. Incorrect. Volunteer required for this amount of dose
- D. Incorrect. There is no actual federal limit for lifesaving

Technical Reference(s): _____ (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 4

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	3
	K/A #	G2.3.1	_____
	Importance Rating	_____	3.0

Knowledge of 10 CFR: 20 and related facility radiation control requirements

Proposed Question: SRO 98

Which ONE (1) of the following parameter limits is designed to ensure that radiation releases will remain within the limits of 10CFR20?

- A. Primary system activity
- B. Secondary system activity
- C. Primary to secondary leakage
- D. Liquid Waste discharge activity

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. 10CFR100 is limiting
- B. Incorrect. No actual value, just conductivity based on other factors
- C. Incorrect. 10CFR100 is limiting
- D. Correct

Technical Reference(s): ODCM (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 1 Comments:
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	4
	K/A #	G2.4.41	_____
	Importance Rating	_____	4.1

Knowledge of the emergency action level thresholds and classifications.

Proposed Question: SRO 99

Given the following conditions:

- Unit 2 is in Mode 4.
- A cable tray fire has been burning for 20 minutes below the control room floor.
- The fire has resulted in heavy smoke coming out from below the floor.
- The Shift Manager has just announced his decision to abandon the control room.

At the current time, the Emergency Plan requires which ONE (1) of the following to be declared?

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Fire would provide for UE
- B. Correct.
- C. Incorrect. No indication that control cannot be established from Remote S/D
- D. Incorrect. No indication that control is lost or cannot be established from Remote S/D

Technical Reference(s): EPIP EAL Tables, SO123-VIII-1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EPIP EAL Tabs

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	4
	K/A #	G2.4.29	_____
	Importance Rating	_____	4.0

Knowledge of the emergency plan.

Proposed Question: SRO 100

Given the following conditions:

- An ALERT has been declared.
- The Shift Manager has assumed responsibility as the Emergency Coordinator. (EC)
- The EOF and TSC are **NOT** yet activated.

Which ONE (1) of the following may the EC delegate to another individual?

- A. Re-Classifying the event in progress
- B. Terminating the event when conditions are no longer met
- C. Notifying Off-Site Agencies
- D. Making Protective Action Recommendations

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. EC must perform
- B. Incorrect. EC must perform
- C. Correct.
- D. Incorrect. EC must perform

Technical Reference(s): EPIP SO123-VIII-10 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: 6839 (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 5

Comments:
WTSI Bank